

April 2014

Newsletter#5

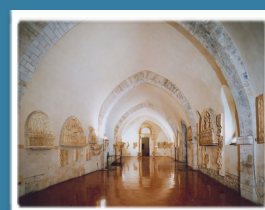
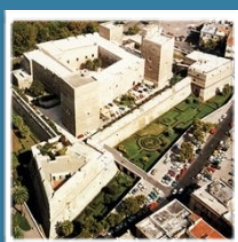
# SMARTBUILT

A tribute to the  
Project  
International



## S.M.A.R.T. BUILT CONFERENCE

An International Scientific Event



Structural Monitoring of ARTistic and historical  
BUILding Testimonies (S.M.A.R.T. BUILT)



# S.M.A.R.T. BUIL.T. INTERNATIONAL CONFERENCE

Official Press Release

SMART  
BUILT

## HISTORICAL CENTRES AMONG CULTURE, ART AND TECHNIQUES: A NEW PARADIGMA FOR RISKS PREVENTION

### BACKGROUND

S.M.A.R.T. BUIL.T. “Structural Monitoring of ARTistic and historical BUILding Testimonies” is a project funded by the European Territorial Cooperation Programme Greece-Italy 2007/2013, and led by the Polytechnic of Bari. The core idea of “S.M.A.R.T. BUIL.T.” is risks prevention, which concerns not only the prevention of loss of lives and properties, but also the preservation of artistic and historical buildings from natural hazards.

Architectural heritage is an important part of the history and identity of Italy and Greece, contributing to their economy and well being. On the other side, ancient buildings suffer a high vulnerability to dynamic loads, which may induce an unpredictable partial or total collapse. Recent past experience after L’Aquila earthquake strongly evidence this problem.

The main objectives are the implementation of procedures for the structural monitoring, the seismic vulnerability assessment, the development of guidelines for strengthening and repair of the historical buildings (in Trani and Corfu). The two historic centers are made up of many ancient and brittle masonry buildings, mostly built with local stone, representative of a widespread typology in the Mediterranean area.

To circulate and diffuse the information produced in the project as much as possible, a number of seminars and workshops have been already organized in both Italy and in Corfu, completely dedicated to the dissemination and external communication, in order to enhance the diffusion of knowledge and information, as well as the results achieved step by step by the project team, to an audience of experts such as professional architects and engineers, building officials, educators, researchers, students, masonry construction professionals, and everyone else interested in the art and science of masonry historical buildings.

### MOTIVATION

The international project “S.M.A.R.T.BUIL.T.” aims at providing to technical officials of the territorial authorities of Puglia and Ionian Islands Regions some indispensable training tools for the development and/or validation of structural restoration projects and seismic rehabilitation of historical buildings. Most of buildings of artistic value are invariably built of masonry, a material as old as the civilization and with a 10,000 years record of success and lasting qualities.

The International Conference entitled “HISTORICAL CENTRES AMONG CULTURE, ART AND TECHNIQUES: A NEW PARADIGMA FOR RISKS PREVENTION THROUGH STRUCTURAL MONITORING” is the most important action of diffusion activities of the S.M.A.R.T.BUIL.T. project and it is open to all experts in the following topics: seismic and structural monitoring, historical and artistic heritage in order to exchange experience of correlated research areas. The purpose is to make the conference a forum for dissemination of the latest scientific and technical developments and for exchange of new ideas in emerging topics of the project.

The international conference is organized in Bari (Italy) on March 27-29., 2014.

Invited lectures on specific topics strictly related with the major research issues will alternate with presentations on several topics of general interest, coming from this call for abstracts. A book of abstracts will be distributed during the conference and extended versions of selected papers will be considered for publication in peer-reviewed journals in the field of the conference.





## THURSDAY 27 MARCH

**h 16.00 p.m. REGISTRATION**

**h 16.30 p.m. OFFICIAL OPENING CEREMONY**

**Chairman: Mrs Annamaria Lorusso**

*Supervisor Castello Svevo Bari*

**Mr Salvatore Buonomo**

*Supervisor MiBac SBAP Bari Foggia Puglia*

**Mr Elio Sannicandro**

*Council Member of Bari*

**Mr Luigi Nicola Riserbato**

*Mayor of Trani*

**Mr Ioannis Trepekis**

*Mayor of Corfu*

**h 17.00 p.m. STRATEGIC DIRECTIONS ON THE PROTECTION OF ARCHITECTURAL HERITAGE**

**Mrs Maria Carolina NARDELLA**

*Manager of Regional Directorate for Cultural Heritage and Landscape of Puglia*

**Mr Eugenio Di Sciascio**

*Dean of Polytechnic in Bari*

**Mr Vincenzo Zara**

*Dean of University of Salento*

**Mr Claudio D'Amato Guerrieri**

*Senior Manager of Icar Dept (Polytechnic of Bari)*

**h 18.00 p.m. SMART BUILT PROJECT RESULTS**

**Ms Dora Foti**

*Project Manager (Polytechnic of Bari)*

**Mr Nicola Ivan Giannoccaro**

*Partner Manager P2 (University of Salento)*

**Ms Francesca De Benedictis**

*Partner Manager P3 (Trani Municipality)*

**Mr Francesco Longobardi**

*Partner Manager P4 (MiBACT)*

**Mr Stefanos Karoumbis**

*Partner Manager P5 (Corfu Municipality)*

**Mr Vassillis Chrissikopoulos**

*Partner Manager P6 (Ionian University)*

**h 19.00 p.m. Cocktail and Concert**

## FRIDAY 28 MARCH

### HISTORICAL AND ARTISTIC AREA

**Chairman: Francesca Marmo**

**9.30 – 10.00 Keynote lecture**

**OBJECTIVES AND CHALLENGES OF HISTORICAL MONUMENTS DYNAMIC MONITORING. TWO CASE STUDIES: THE COLOSSEUM AND THE TOWER OF PISA**

**Camillo Nuti, Università degli Studi Roma Tre**

**10.00 – 10.30 Keynote lecture**

**THE HARBOUR OF TRANI: URBAN HISTORY AND TOPICAL ISSUES OF PRESERVATION**

**Andrea Pane, Università degli Studi di Napoli**

**10.30 – 10.45 Coffee break**

**Chairman: Francesco Longobardi**

**10.45 – 12.00 Technical session**

**URFA: the planned city and the process of medievalization**  
**Matteo Ieva**

**On the morphology and history of roman and medieval seismic design**

**Alessandro Camiz**

**Morphological, typological and structural characters of the old centers in the center of coastal Apulia: some instruments for the safeguard and the recovery of their architectural heritage**

**Antonio Vito Riandino**

**The old city of Jerusalem between heritage and urban renewal: public buildings and typological aspects**  
**Giuseppe Francesco Rociola**

**Fire risk assessment of Italian architectural heritage: a index based approach**

**Alessandro Arborea, Giorgio Mossa, Giorgio Cucurachi**

### STRUCTURAL AREA

**Chairman: Salvador Ivorra**

**12.00 – 12.30 Keynote lecture**

**HERITAGE BUILDINGS. CONSERVATION PRINCIPLES AND STRUCTURAL VERIFICATION**

**Pere Roca Fabregat, Universitat Politècnica de Catalunya**

**12.30 – 13.30 Technical session**

**Structural behaviour of historical stone arches and vaults: experimental tests and numerical analyses**

**Marco Bovo, Claudio Mazzotti, Marco Savoia**

**Seismic behaviour analysis of classes of masonry arch bridges**

**Paolo Zampieri, Mariano Angelo Zanini, Rocco Zurlo**

**Dynamic monitoring and seismic response of a historic masonry tower**

**Antonella Saisi, Carmelo Gentile, Marco Guidobaldi, Man Xu**

**Vulnerability reduction procedures in ordinary urban management. The Urban Building Code of Faenza**  
**Caterina F. Carocci, Pietro Copani, Lucia Marchetti, Cesare Tocci**

**13.30 – 14.30 Lunch**

**Chairman: Vincenzo Gattulli**

**14.30 – 15.00 Keynote lecture**

**A NEW THEOREM FOR DAMAGE LOCALIZATION**

**Dionisio Bernal, Northeastern University, Boston**

**15.00 – 16.30 Technical session**

**Strength performance of unreinforced brick masonry walls under flexo-compression load. Analytical methods**  
**Ernest Bernat-Masoa, Lluís Gilb**

**One-year monitoring of a bell tower**

**Reto Cantieni**

**Identifying seismic local collapse mechanisms in unreinforced masonry buildings through 3D laser scans**  
**Chiara Andreotti, Domenico Liberatore, Luigi Sorrentino**

Mechanical characterization of building stones through DT and NDT tests: research of correlations for the in situ analysis of ancient masonry

Maria Antonietta Aiello, Angela Calla, Giovanni Leucci, Francesco Micelli, Maria Sileo, Emilia Vasanelli

Buildings behaviour in the urban fabric: the knowledge issue in the post-earthquake reconstruction plans

Caterina F. Carocci, Chiara Circo

Buildings behaviour in urban fabric: the safety assessment issue in the post earthquake reconstruction plans

Serena Cattari, Sergio Lagomarsino, Daria Ottonelli, Michela Rossi

16,30 – 16,45 Coffee break

**Chairman: Mariella Diaferio**

16,45 – 18,30 Technical session

In-situ investigations for the seismic assessment of existing bridges

Claudio Modena, Carlo Pellegrino, Paolo Zampieri, Mariano Angelo Zanini

Mechanical characterization of Apricena marble by ultrasonic immersion tests

Anna Castellano, Pilade Foti, Aguinardo Fraddosio, Salvatore Marzano, Mario Daniele Piccioni

Seismic behavior of a masonry chimney with severe cracking condition: Preliminary study.

F. Javier Baeza, David Bru, Salvador Ivorra, Borja Varona

Diffusive structural monitoring for a smart city in a seismic area

Andrea Colarieti, Marco Faccio, Fabio Federici, Vincenzo Gattulli, Fabio Graziosi, Francesco Potenza

Large-scale seismic vulnerability assessment method for urban centres. An application to the city of Florence

Pauline Deguy, Mario De Stefano, Giorgio Lacanna, Valentina Mariani, Maurizio Ripepe, Marco Tanganelli

Analysis of operational modal identification techniques performances and their applicability for damage detection

Andrea Antonio Rizzo, Nicola Ivan Giannoccaro, Antonio Messina

Input Deconvolution in Linear Time Invariant Systems

Dionisio Bernal, Alessia Ussia

## SATURDAY 29 MARCH

### COMPUTATIONAL AND TECHNOLOGICAL AREA

**Chairman: Andreas Floros**

9,30 – 10,00 Keynote lecture

EARTHQUAKE PROTECTION OF MONUMENTS, OF THEIR CONTENT AND ATTACHMENTS BY AN UNDERGROUND SUSTAINABLE EARTHQUAKE REDUCTION SYSTEM

Carydis Panayotis, National Technical University of Athens

10,00 – 10,30 Technical session

Building Vulnerability: An Interdisciplinary Concept  
Vassilios Chrissikopoulos, Maria Psiha, Panayiotis Vlamos

Dynamic testing of masonry towers using the microwave interferometry

Carmelo Gentile, Antonella Saisi

10,30 – 10,45 Coffee break

**Chairman: Panayotis Vlamos**

10,45 – 12,15 Technical session

Hearing the buildings: Smart Monitoring through Advanced Sonification Approaches

Vassilios Chrissikopoulos, Andreas Floros, Elena Vlamou

A dynamic identification of a historical building using accelerometers with interface modules and a digital synchronization method

Iro Armeni, Markos Avlonitis, Nicola Ivan Giannoccaro, Sozon Papavaslopoulos, Luigi Spedicato

A NN-based approach for monitoring early warning of risk in historical buildings via image novelty detection

Leonarda Carnimeo, Rosamaria Nitti

A Wireless Sensor Network Innovative Architecture for Ambient Vibrations Structural Monitoring

Vassilis Chrissikopoulos, Eleni Kavvadia, George Koufoudakis, Konstantinos Oikonomou

Probabilistic information dissemination aspects in wireless sensor networks located in historical buildings

Konstantinos Skiadopoulos, Konstantinos Oikonomou

Synchronization Issues in an Innovative Wireless Sensor Network Architecture Monitoring Ambient Vibrations in Historical Buildings

George Koufoudakis, Emmanouel Magkos, Konstantinos Oikonomou, Nikos Skiadopoulos

Poster session

Non-destructive techniques and monitoring for the damage evolution detection on masonry structures in an ancient urban landslide area

Rosella De Cadilhac, Dora Foti

Seismic response of a historic masonry construction isolated by stable unbonded fiber-reinforced elastomeric isolators (SU-FREI)

Anna Castellano, Pilade Foti, Aguinardo Fraddosio, Salvatore Marzano, Gemma Mininno, Mario Daniele Piccioni

Dynamic analysis of an historic fortified tower  
Mariella Diaferio

Identification of the modal properties of a building of the Greek heritage

Mariella Diaferio, Dora Foti, Nicola Ivan Giannoccaro

Hybrid Model for Measurement of Building Vulnerability  
Adamantia Pateli, Maria Psiha, Panayiotis Vlamos

12,15 – 12,30

Closing ceremony



## S.M.ART. BUIL.T. Project International Conference

Official web-site





## TOPICS

The main topics are divided into three areas:

### I. HISTORICAL AND ARTISTIC AREA

- Typological and morphological characters of historical centres
- Historical aspects and general methodology of historical centres
- Conservation and restoration of historical buildings

### II. COMPUTATIONAL AND TECHNOLOGICAL AREA

- Sensor-based monitoring infrastructures on historical buildings
- Ambient vibration testing for structural monitoring
- Mathematical modeling for early vulnerability assessment

### III. STRUCTURAL AREA

- Dynamic identification and structural monitoring of historical buildings
- Analytical and numerical approaches
- Seismic analysis and vulnerability assessment
- Case studies

## KEY-DEADLINES

- December 16, 2013: deadline for draft papers;
- January 31, 2013: acceptance of the papers and elaboration of a draft program by the organizing committee;
- February 28, 2014: deadline for revised papers;
- March 27/29, 2014: International Conference;
- End April, 2014: conference proceedings published on an ISBN book.

## VENUE

"Castello Svevo", Bari, Italy.

## REGISTRATION

No registration fee is charged.

## LANGUAGE

The official language of the conference is English.

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Arch. PRETE F. (Italy, *Polytechnic of Bari*)

## PAPER SUBMISSION

Authors can submit draft papers on the conference website ([www.smartbuilt.eu](http://www.smartbuilt.eu) soon available) filling a special form, **before December 16th 2013**.

All submissions should include a **title**, **author names** and **affiliations** and **indicative key-words**, specifying the **scientific area** which they belong to.

The papers should not be longer than **6 pages**.

**Camera-ready guidelines** with paper template in letter-sized PDF will be sent afterwards for final submission.

Only presented papers will be accepted for publication in a special session of the *International Journal of Advanced Structural Engineering (IJASE)*.

Contact: [smartbuilt.comunicazione@gmail.com](mailto:smartbuilt.comunicazione@gmail.com)

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CONFERENCE  
DETAILS



European Territorial Cooperation Programme

**Greece - Italy  
2007-2013**

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## S.M.A.R.T. BUIL.T.



### Structural Monitoring of ARTistic and historical BUILDing Testimonies

#### About the newsletter

The S.M.A.R.T.BUIL.T. NEWSLETTER is published every 4 months, containing information about the progress and the outcomes of the project.

It is electronically distributed in portable document format (pdf). Printed copies can be supplied on demand.

For any additional information regarding this publication, you may contact the publication coordinator via e-mail, using the address [smartbuilt.bari@gmail.com](mailto:smartbuilt.bari@gmail.com)