



Report of the

Planning Meeting of NHERI and EUCENTRE Collaborative Research on Earthquake Engineering

Embassy of Italy

3000 Whitehaven St NW, Washington, DC 20008

October 29 2018

Convened by

NHERI Network Coordination Office (NCO)

and

EUCENTRE Foundation



Award CMMI-1612144

November 2017

PREFACE

On July 10th 2018, the research collaboration on earthquake engineering between US and Italy got off the ground with the signing of the Letter of Agreement between Purdue University, on behalf of Natural Hazards Engineering Research Infrastructure (NHERI), and the NHERI Network Coordination Office (NCO), and the EUCENTRE Foundation on earthquake engineering research using EUCENTRE and NHERI facilities. The first Planning Meeting was held on October 29th 2018 at the Embassy of Italy in Washington, DC to discuss the details of the new research collaboration. At this meeting participated leading researchers from both countries as well as representatives from government agencies to discuss in plenary and breakout sessions the plans for NHERI and EUCENTRE collaboration.

This report contains a summary of the discussions and resolutions of this meeting.

Conveners

Alberto Pavese, Associate Professor, University of Pavia.
Advisor of the Department of Industrial Products, Foundation EUCENTRE

Fabio Germagnoli
Operative Director of the Foundation EUCENTRE

Julio Ramirez, Karl H. Kettelhut Professor of Civil Engineering
Director of NHERI-Network Coordination Office, Purdue University

ACKNOWLEDGEMENTS

The conveners would like to thank the meeting participants for making the meeting a success by generously sharing their time, experience and ideas. The participants agree that the cordial and harmonious atmosphere at the meeting, and the candid and thoughtful discussions signal a bright future for continuing the collaboration between researchers of the U.S. and Italy.

The meeting was held at the Embassy of Italy at 3000 Whitehaven St NW, Washington, DC. The participants would like to express their gratitude to Dr. Stefano Lami Moscheni, Science Counselor, for making the outstanding facilities available for this meeting. The support from Dr. Lami and the Embassy professional staff contributed enormously to the success of the meeting. We also wanted to express our gratitude to Senior Advisor Giulio Busolini for all assistance in the coordination with the Embassy of Italy. The participation of Dr. Joe Miller, Program Director, Office of International Science and Engineering from the National Science Foundation is also greatly appreciated.

The findings, recommendations and conclusions contained in this report are the consensus views of the meeting participants, and do not necessarily reflect opinions of any one individual or the policy or views of the National Science Foundation, NHERI or other organization in the U.S., nor of the EUCENTRE Foundation or the Embassy of Italy.

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Summary of the First Meeting of the NHERI/EUCENTRE Foundation Research Collaboration on Earthquake Engineering Research

The First Research Meeting of the NHERI/EUCENTRE Foundation research collaboration on Earthquake Engineering on October 29, 2018 was attended by 14 participants from the US and 8 from Italy. There was great interest on both sides in research collaborations under the formal agreement between NHERI and EUCENTRE on earthquake engineering research using EUCENTRE and NHERI facilities. The report includes a summary of the proceedings including the agenda and list of participants, presentations, recommendations and resolutions reached by the participants.

In the Opening Session Dr. Stefano Lami Moscheni, Science Counselor of the Italian Embassy welcomed all the participants, followed by opening remarks from Giulio Busulini, Former Scientific Attaché at the Embassy of Italy and Dr. Joe Miller, Program Director, Office of International Science and Engineering of the National Science Foundation. Prof. Julio Ramirez and Prof. Alberto Pavese and Dr. Fabio Germagnoli next introduced NHERI and EUCENTRE Foundation, and described the scope, terms and opportunities of the agreement between the two organizations. This was followed by a discussion and a question and answer period where all the participants offered input on the possible collaborations.

After the Opening Session, the participants convened in five theme sessions to explore possible opportunities for collaboration. The sessions were titled:

- Hazard and Experimental Techniques I
- Design Methods and Post-Event Reconnaissance
- Experimental techniques II
- Vulnerability Assessment and Vulnerability Reduction Methods
- Risk management and Emergency Crisis

The presentations can be found in at:

<https://www.designsafe-ci.org/data/browser/public/designsafe.storage.published/%2FPRJ-2256>

First Planning Meeting of the NHERI and EUCENTRE Research Collaboration

Agenda

October 29, 2018

Embassy of Italy

3000 Whitehaven St NW, Washington, DC 20008

9.00-10.45

Session 1: Introduction and Welcome Remarks

- Welcome (Stefano Lami, Embassy of Italy)
- US-Italy cooperation, state of the art and perspectives (Giulio Busulini, Former Scientific Attaché at the Embassy of Italy; Joe Miller, Ph.D., Program Director, Office of International Science and Engineering, National Science Foundation)
- Cooperation agreement presentation - Scope, terms and opportunities (Ramirez, Germagnoli/Pavese)
- Open discussion on objectives of the collaboration (All)

10.45 -11.00

Coffee break

11.00 – 12:00

Session 2: Hazard and Experimental Techniques I (Chair: R.T. Leon)

(20' presentations including 3-5' Q/A)

- Macro-, Meso-, and micro- zonation of a territory of earthquake-induced liquefaction risk (C. Lai)
- Advances in Real-Time Hybrid Simulation and Extension to Multi-Natural Hazards (J. Ricles)
- End-to-End Data Management Using the DesignSafe Cyberinfrastructure (S. Brandenburg)

12.00 -12.50

Lunch

12.50 – 13.50

Session 3: Design Methods and Post-Event Reconnaissance (Chair: C. Casarotti)

(20' presentations including 3-5' Q/A)

-The NHERI RAPID Facility: Enabling the next-generation of natural hazards reconnaissance (J. Wartman)

- Fusing Human and Machine for Post-Disaster Visual Data Analytics (S. Dyke)

-Fluid-structure Interaction of Coastal Structures: Experimentation and Hybrid Simulation at HWRL/OSU (P. Lomonaco)

13.50-14.50

Session 4: Experimental Techniques II (Chair: A. Schultz)

(20' presentations including 3-5' Q/A)

New Approaches and testing facilities integration (Alberto Pavese, Filippo Dacarro)

-Non-structural elements vulnerability assessment (R. Nascimbene)

-Risk-based design: application to seismic pounding and to buildings equipped with damping devices (M. Barbato)

14.50-15.00

Coffee break

15.00-16.00

Session 5: Vulnerability Assessment and Vulnerability Reduction Methods

(Chair: Ozgur Ozelik)

(20' presentations including 3-5' Q/A)

-Seismic isolation, applications, new technologies, code of practice (A. Pavese)

-Advanced design methods (Innovative approaches, seismic inputs) (G.M. Calvi)

-New approaches and testing facilities integration (hybrid and distributed) (A. Pavese/ G.M. Calvi)

16.00-17.00

Session 6: Risk management and Emergency Crisis (Chair: G. A. Rassati)

(20' presentations including 3-5' Q/A)

-Post-event emergency management (C. Casarotti)

-In situ testing (G.M. Calvi)

-Territorial data management, damage and risk scenarios (B. Borzi)

- Accounting for Vs Uncertainty in Seismic Site Response Analyses using the Experimental Site Signature: A Case Study of the Garner Valley Downhole Array (B. Cox)

17.00-17.30

Mechanisms for Collaboration and Next Steps (Co-chairs: Ramirez and Pavese)

Participants at the NHERI and the EUCENTRE Planning Meeting

EUCentre	Expertise	NHERI
<p>Alberto Pavese, Associate Professor, University of Pavia. Advisor of the Department of Industrial Products, Foundation EUCENTRE</p>	<p>Seismic isolation, codes of practice, experimental testing techniques</p>	<p>James Ricles (Bruce G. Johnston Professor Director, NHERI - Lehigh Facility, Deputy Director, Advanced Technology for Large Structural Systems (ATLSS) Center, Professor, Structural Engineering, Lehigh University)</p> <p>Ozgur Ozelik (Site Operation Manager and Research Scientist, NHERI- UCSD, University of California, San Diego)</p> <p>Roberto T. Leon (David H. Burrows Professor of Construction Engineering Via Dept., Virginia Tech)</p> <p>Julio Ramirez (Karl H. Kettelhut Professor of Civil Engineering and Director of NHERI-Network Coordination Office, Purdue University)</p>
<p>Fabio Germagnoli Operative Director of the Foundation EUCENTRE</p>	<p>IT, data management, cloud computing</p>	<p>Pedro Arduino (Professor, Department of Civil Engineering, University of Washington)</p> <p>Scott Brandenburg- remote participation (University of California, Los Angeles)</p>
<p>Gian Michele Calvi professor, IUSS Pavia. Advisor of the Department of Experimental Techniques, Foundation EUCENTRE</p>	<p>Design Techniques, Seismic isolation, Experimental research</p>	<p>Bill Holmes (Rutherford and Chekene Consulting California and NEHRI- Network Coordination Office)</p> <p>Gian Andrea Rassati (Associate Professor of Structural Engineering Director of the Graduate Program Dept. of Civil and Architectural Engrg & Constr Mgmt, University of Cincinnati)</p>

Chiara Casarotti Head of the Department of emergency support and rapid response at the Foundation EUCENTRE	Rapid response, agility assessment and inspection, post- earthquake support	Joe Wartman (H. R. Berg Professor, Department of Civil and environmental Engineering, U. of Washington and Director of the NHERI-RAPID Facility) Shirley J. Dyke (Professor of Mechanical and Civil Engineering, Purdue University)
Roberto Nascimbene Head of the Department of Construction and Infrastructures, Foundation EUCENTRE	Precast structures, Tanks, non- structural elements	Arturo E. Schultz, [Professor of Structural Engineering Director of Hybrid Testing (MAST and Galambos Laboratories) Dept. of Civil, Env. and Geo- Eng. University of Minnesota]
Carlo Lai Professor, University of Pavia Advisor of the Department of Risk Scenarios, Foundation EUCENTRE	Geotechnical engineering, microzonation	Brady Cox (Associate Professor, John A. Focht Centennial Teaching Fellowship in C.E., Civil, architectural and Environmental Eng., University of Texas at Austin, Co-PI NHERI-Texas Facility)
Barbara Borzi Head of the Department of Risk Scenarios, Foundation EUCENTRE	Vulnerability and risk assessment	Michele Barbato (Professor in the Department of Civil and Environmental Engineering, University California, Davis)
Filippo Dacarro Head of the Department of Experimental Techniques, Foundation EUCENTRE	Experimental techniques, design of testing apparatus	Pedro Lomonaco (Director O.H. Hinsdale Wave Research Laboratory, Oregon State University)

Meeting Resolutions

Based on the presentations, discussions and deliberations, the participants at this planning meeting of the NHERI and EUCENTRE Foundation Collaboration on Earthquake Engineering Research of October 29th 2018 formulated and unanimously adopted the following specific resolutions found in this section.

1. Explore this collaboration and believe that NHERI and EUCENTRE Foundation collaboration provides the strongest mechanism to accelerate the pace of discovery and development in engineering needed to realize the goals of an earthquake disaster resilient civil infrastructure.
2. Agree that annual research collaboration meetings to plan, accelerate the exchange of information and coordinate research should be planned. The venue for the next meeting will be Italy. The duration of the meeting will be selected to meet the needs of the project collaboration. Material to be discussed and/or shared will be distributed to the participants in advance of the meeting. The possible goals of the meeting would be to: (1) identify the appropriate characteristics of the research to be performed, (2) establish research goals of the major joint test programs, and (3) share the information obtained from ongoing projects and promote dissemination of research findings and their use in education and practice.
3. Share data pursuant to Item 7 of the agreement. The data and metadata derived from the experiments of joint research shall be stored in an electronic data repository as it is recorded for immediate access by members of the joint research team. Unless otherwise agreed by NHERI and EUCENTRE Joint Technical Coordinating Committee, data publication from collaboration projects shall be in accordance with NHERI Data Curation Guidelines making the most possible use of DesignSafe for sharing experimental data and research results. Datasets will be published with DOIs on DesignSafe based on a timetable approved by collaborating researchers.
4. Collaborate in accelerating the transfer of technology. Efforts to increase involvement of design professionals and dissemination of findings to various stakeholders should continue. It is clear that there is a significant benefit of involving design professionals in the formulation of research plans, conduct of research and interpretation of findings. Collaborate in joint publications to disseminate findings is expected to increase the value and impact of the research.
5. Facilitate data exchanges. Efforts should be increased to take advantage of currently available data to analyze it to validate underlying theory, improve analytical simulations tools and models, develop recommendations and guidelines that impact engineering design and evaluation. This effort is thought to have a high value for relatively modest cost.
6. Increase collaboration by identifying existing and perhaps initiating new mechanisms that would enable exchange of researchers from the U.S. to Italy, and from Italy to the U.S. In particular, it is recommended that exchange of students and junior researchers to participate in particular efforts focusing on synthesizing, analyzing and interpreting available data, or participate in planning and conduct of tests would be highly beneficial.

Closure

The participants believe that the first meeting of this collaboration was a success and agreed that the research collaboration meeting should reconvene in Italy in 2019.