



**European Commission  
Joint Research Centre (EC/JRC)  
&  
International Structural Assessment,  
Monitoring and control (I-SAMCO)**



# **2<sup>nd</sup> World Forum on Collaborative Research in Earthquake Engineering**

**An Invitational Workshop**  
*March 26-27, 2007, EC/JRC, Ispra (VA), Italy*

Organized by:

**European Commission, Joint Research Centre (EC/JRC)  
International Structural Assessment, Monitoring and Control (I-SAMCO)**

In collaboration with:

**Network of Earthquake Engineering Simulation (US/NSF NEES)**

Organization Committee

**Vito Renda\*, Pierre Pegon\*, Michel Geradin\*, Helmut Wenzel\*\*, Roberto Leon\*\*\***

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**March 26-27, 2007, EC/JRC, Ispra (VA), Italy**

**WORKSHOP PREMISE**

The 2<sup>nd</sup> World Forum on Collaborative Research in Earthquake Engineering follows the initiative taken by the George E. Brown Jr. Network for Earthquake Engineering Simulation (NEES), which organized, through NEESinc, the 1<sup>st</sup> World Forum on Collaborative Research in Earthquake Engineering (1WFCREE) in San Francisco on March 16-18, 2006.

The US/NSF NEES Programme is providing cutting-edge tools for researchers in the earthquake engineering field in order to accelerate the generation and dissemination of basic knowledge, facilitate the development of effective educational programs, minimize the lag between knowledge development and its application and hasten earthquake loss reduction.

Similar efforts are proceeding in parallel in Europe, Japan, China, Korea, Taiwan and other countries resulting in a large portfolio of unique testing facilities around the world interested in a broad international collaborative effort in order to agree on basic issues related to communication protocols, data curation formats and access to information.

The 1<sup>st</sup> WF in San Francisco has been held to discuss the achievements obtained in USA in laboratory related issues and facilitate possible international collaboration with research organizations from other countries engaged in laboratory testing and earthquake engineering.

At the 1<sup>st</sup> WF it has been decided the continuation of this initiative by organizing the 2<sup>nd</sup> WF in Europe. The Joint Research Centre of the European Commission offered to host the forum at Ispra (Italy) and co-organize it in collaboration with the European Network I-SAMCO (International Structural Assessment, Monitoring and Control), which plays a major role in strengthening European and international collaborations.

**MAIN RECOMMENDATIONS OF THE 1WFCREE**

The 1<sup>st</sup> WF was organized around three WGs related to Simulation, Cyberenvironments and Data Infrastructure. The summaries and recommendations of the WGs are posted at the NEES repository at the following web address:

[http://www.nees.org/About\\_NEES/Announcements/announcement.php?news\\_id=47](http://www.nees.org/About_NEES/Announcements/announcement.php?news_id=47).

The summary reports highlighted the added value intrinsic to the international collaboration for the activities relevant to the WGs and provided recommendations to guide the WGs activities for the next period. A very short summary of the recommendations, mainly focused on the first steps to foster the international collaboration, is provided in the following.

**WG-1 on “Simulation”:** *The panel reached wide consensus on the importance of international collaboration on hybrid testing and networked simulation and, as first step to overcome the main barriers, recommended the preparation of an internationally accepted Best Practices document enforcing the requirements essential to the development of multi-site simulation coordination. It should illustrate also the added value coming out from hybrid testing and distributed simulation as well as the opportunity for dissemination of knowledge and results and the formation and training of young researchers in earthquake engineering and laboratory testing.*

**WG-2 on “Cyberenvironments”:** *The panel recognized that the international earthquake engineering community embraces collaboration through cyberinfrastructure as fundamental to the future discoveries and education and recommended establishing objectives and strategies for worldwide dissemination of achievements and knowledge via collaboration and cyberinfrastructure. As first step for collaboration, a catalog of laboratory expertise, capabilities, and streaming status should be established to set the stage worldwide for international collaboration among research laboratories.*

**WG-3 on “Data Infrastructure”:** *The panel pointed out the importance of the international collaboration in data exchange/access and reached strong consensus that everyone is ready to move ahead. The collaboration, in particular among large research infrastructures, will allow building common understanding and advancing knowledge more rapidly than possible with isolated repositories. Guidelines for data modeling, archiving, and selecting experimental data based on accepted best practices have been individuated as first step for proper networked data infrastructure.*

The 1WFCREE showed to be very effective and during the few months subsequent to the forum important documents have been issued, in particular on procedures for hybrid testing and communication protocols for databases in networked environment.

## WORKSHOP OBJECTIVES

The main objective of the World Forum is to highlight the importance and added value of the international collaborative research in the field of earthquake engineering as well as the relevance of networking the state of the art large research testing infrastructures for the seismic risk reduction for the population.

The major deliverable will be an agreed resolution to be submitted to politicians and decision makers providing the main lines of a Strategic Research Agenda for International Collaborative Research in Earthquake Engineering and related roadmap.

To this purpose, the 2<sup>nd</sup> World Forum will further engage a representative international group of researchers and research administrators to discuss and promote opportunities for collaboration in earthquake engineering and laboratory testing, as well as the means necessary to facilitate this collaboration.

The workshop will thus go deeper in the discussion about infrastructure resources and technical standards needed to facilitate international collaboration. It is intended to develop the vision of how such tools can encourage the international research in construction and earthquake engineering and at the end have significant impact in improving seismic mitigation.

Special attention will be put on the collaboration among laboratories for the harmonization and advancement in testing techniques, in particular those needing collaboration for their implementation and validation as for the distributed testing, and the harmonization of the communication protocols for exchanging experimental results and related documents.

The synergy coming out from such harmonization among laboratories is the first step towards any further collaborative experimental activity in construction and earthquake engineering.

The World Forum will also seek to understand and clarify the objectives and interdependencies between major international research programs and facilities and will discuss on policies and/or agreements needed to facilitate international collaborative research.

In this framework focus will be put on the management of a common international effort for the diffusion of the knowledge, the education of young researchers and the training in experimental techniques.

## **OPPORTUNITIES FOR INTERNATIONAL COLLABORATION**

While there are significant regional differences in construction, seismic hazard, performance criteria, building technology and materials, and economic circumstances around the world, many issues in earthquake engineering are fundamental to all nations.

Because earthquakes are a worldwide phenomenon that causes considerable political and economical dislocations, substantial intellectual, physical and fiscal resources are being devoted to earthquake engineering research worldwide.

There is a deep interest in international collaboration aiming at harmonizing competences and sharing resources in order to advance in testing techniques, exchange experimental results, establish international standards for construction, set-up common research programs to optimize results versus costs.

To make effective the international collaboration, communication mechanisms should be established among international groups and organizations responsible for managing research infrastructure and resources.

Harmonization should be achieved in policies regarding intellectual property rights, test protocols, data and metadata standards, network protocols and services (including those related to security, computation, tele-presence and tele-operation).

The education in structural safety and the diffusion of a culture for disaster prevention contributes to the protection of the population against earthquakes. This can be strongly facilitated by common strategies and educational tools, which should be defined in collaboration with educational organizations, in particular Universities.

The construction industry could also be interested in collaborative research and dissemination initiatives and should contribute by highlighting their priority in technologic and prenormative research needs in view of defining internationally agreed standards, which have a major impact on a global market.

The workshop would be successful if the needs of the international community will be prioritized and a clear plan for moving forward will be formulated. The working session to be held at the World Forum should provide the vehicle for the development of this plan.

## **ORGANIZATION OF THE WORKSHOP**

The World Forum will include a combination of topical keynote lectures from Representatives of Research Programmes of relevance for the scope of the Forum, updates on collaborative activities from around the world, in particular the outcome from the 1WFCREE, and working sessions on three distinct topics.

The organizers have grouped the discussions into three broad areas as follows:

### **Hybrid testing and distributed simulation**

This topic focuses mainly on simulation, which includes both physical and computational experimentation as well as their link in hybrid testing. The main point is the advancement of standardization in testing methods and techniques, in particular for collaborative distributed testing, for optimizing the costs compared to tests outcome.

Some of the topics to be covered include an assessment of current software linking simulation and testing, the protocols used for the distribution over the internet and identification of possible platforms for future development.

### **Data infrastructure and distributed data base**

This topic centers on the development of standards for the storage, curation, and access to data and metadata generated from simulations and tests. Such standards are needed to facilitate interchange of information, reduce interpretation errors, and broaden the research pool.

The intent of this panel is to review the recent data model proposals, to go further in the standardization of the data to be exchanged, to discuss the feasibility of a distributed data-base and to elaborate a roadmap for future developments.

### **Dissemination of knowledge, education and training in a distributed environment**

This topic is focused on the technologies and tools needed for a common effort aiming at facilitating a diffused culture of safety in construction and protection of the population against potentially disastrous events as strong earthquakes.

The potentiality and specifics of a cyberenvironment for the diffusion of knowledge and the dissemination of results should be discussed. This should consist in a powerful tool for education at international level and should also provide opportunities for young researchers to complement their formation with training in recognized laboratories.

The dissemination of knowledge will support also for the realization of the global market by harmonizing competences in innovation technologies and design standards, thus being beneficial to the construction industry

## **ORGANIZATION OF THE WORKING GROUPS**

As during the 1<sup>st</sup> WF, each working group will be assigned three Chairs (from different geographic areas) leading the discussion and one Recorder. They constitute the redaction group for the preparation of the final synthetic report of the working group.

Members of the working groups will be asked to give brief opening remarks (5 minutes) about the task of their working group, introducing his/her views regarding the main issues before the

group, with a goal of generating discussion and eliciting ideas and opinions from the group about the task.

After the deliberations are completed, the redaction group will prepare a draft summary about the discussions and opinions expressed in the sessions, and will formulate specific recommendations made by the working group. The draft summary will be presented before all participants on the final day of the World Forum.

After the closure of the 2<sup>nd</sup> WF each redaction group will provide the organizers with a few pages structured WG summary and recommendation report, which will be included in the final 2<sup>nd</sup> WF summary and recommendation report.

## **DISSEMINATION PLAN**

The final 2<sup>nd</sup> WF summary and recommendation report should be disseminated in the most suitable way to reach the appropriate representatives, managers and organizations involved in the fields of relevance for the WF to highlight the importance and added value of the collaboration and facilitate, as far as possible, a culture of networking.

Many organizations have their own funds for research and/or education, but they need additional funds from national and/or international organizations to cover the additional costs for networking.

In USA the NEES Programme plays a major role in networking, as well as in improvement of existing laboratories and construction of new ones. The cyberinfrastructure developed by NEESit covers the national territory and provides a technical powerful tool to promote the collaboration and share competences and results.

As regards Europe, the European Commission (EC) is the most appropriate Authority to foster collaboration through adequate funding for well structured networked initiatives.

The European networks SAMCO (EC-FP5, Structural Assessment, Monitoring and Control) and I-SAMCO (EC-FP6, International SAMCO, co-organizing the 2<sup>nd</sup> WF) showed to be effective in networking and provided contacts and background for a better structured and finalized future initiative.

The European networking effort should move ahead from the actual goal of disseminating the EC funded research initiatives to facilitate the knowledge and technology transfer to the European industry and the national organizations.

The European Science Foundation (ESF) also played and could play a role of relevance in networking research initiatives in Europe. The EUROCORE programme provided the basis for the CONVIB Network that played a major role in supporting the advancement of the testing techniques in Europe.

The step ahead should consist in funding a structured European network for a worldwide collaboration in research and education in the advancement in structural safety, earthquake engineering and disaster prevention.

Materials presented at the World Forum will be posted on the JRC server as well as on the I-SAMCO website (<http://www.samco.org/>).

## REGISTRATION PROCEDURE

The Registration procedure to the 2WFCREE is opened via WEB and accessible at the following address (**the JRC Public Relation bureau can take in charge any modification updated until the deadline of Sunday March 11<sup>th</sup> 2007**):

<http://jrc-meeting-registration.jrc.ec.europa.eu/>

At the first access, it is necessary to "Create Users Account" (top-right of the page). The FORM duly filled is very helpful to the JRC Public Relation (PR) office for the preparation of the PASS and contacting the Attendee for any problem.

Once created the User Account, it is possible to "Login" (top-right of the page) and select, under "Current Events" (top-left of the page), the event "2WFCREE" for the Registration. The FORM duly filled allows the Hotel Reservation by the JRC and the organization of the transportation service provided by JRC free of charge.

As regards Hotel Reservation, JRC needs essentially the typology of room and the **CHECK-IN/CHECK-OUT** dates for organizing accommodation. The Registration software asks for a Hotel choice, but the Attendees will be accommodated in the Hotels reserved by JRC and listed below (but specific request to the Local Organizer).

Early Registration would be welcome since it helps the PR Officer in charge of the organization (the Registration can be accessed in any moment for **MODIFICATION** and **UPDATING**).

## HOTELS RESERVED BY JRC FOR ACCOMODATION

In order to avoid problems of room availability for the Forum, JRC reserved blocks of rooms in the following three Hotels in Angera, near the Major Lake and the JRC-Ispra:

### **Hotel dei Tigli**

Via Paletta 20  
21021 Angera (Va), I  
Tel. (+39) 0331 93.08.36; Fax (+39) 0331 96.03.33  
E-mail: [info@hoteldeitigli.com](mailto:info@hoteldeitigli.com)  
Home Page: <http://www.hoteldeitigli.com/>

### **Hotel Pavone**

Via Federico Borromeo 10  
21021 Angera (VA), I  
Tel. (+39) 0331 93.02.24; Fax (+39) 0331 96.00.80  
E-mail: [info@hotelpavone.it](mailto:info@hotelpavone.it)  
Home Page: <http://www.hotelpavone.it/>

### **Hotel Lido**

viale Libertà 11  
21021 Angera (VA), I  
Tel. (+39) 0331 93.02.32/93.06.56; Fax (+39) 0331 93.20.44  
E-mail: [lido@hotellido.it](mailto:lido@hotellido.it)  
Home Page: <http://www.hotellido.it/>

### **Hotel Belvedere**

Via Piave 11

Ranco (VA), I

Tel: (+39) 0331 97.66.09; Fax: (+39) 0331 97.57.73

E-mail: [info@hotelristorantebelvedere.it](mailto:info@hotelristorantebelvedere.it)

Home Page: <http://www.hotelristorantebelvedere.it/>

### **Hotel Conca Azzurra**

Via Alberto 53

21020 Ranco (VA), Italy

Tel. (+39) 0331.97.65.26; Fax (+39) 0331.97.67.21

E-mail: [info@concaazzurra.it](mailto:info@concaazzurra.it)

Home Page: <http://www.concaazzurra.it/>

### **Hotel TERRAZZE**

Via Varese, 79 – I-21027 Ispra (VA)

Tel. +39 0332 782523; Fax +39 0332 780908

E-mail: [info@albergoleterrazze.it](mailto:info@albergoleterrazze.it)

Home Page: <http://www.albergoleterrazze.it/>

## **ADDITIONAL INFORMATION**

The costs expected by the Attendees should be of the following order:

- The room costs about 75 EUROS per night including Breakfast,
- The Dinner cost ranges from 40 to 50 EUROS,
- The Dinner of March 26<sup>th</sup> is offered by the JRC (social event),
- The lunches are offered by the JRC in our internal facilities,
- The Breakfast is included in the Hotel price,
- Transportation from/to the Airports and from/to the Hotels and JRC site is offered by the JRC,
- No Registration fees are requested for the Forum.

## **TRANSPORTATION**

The 2WFCREE will be hosted at the JRC site in its internal Conference Facilities. Three meeting rooms have been reserved; the main one can host about 80 persons.

JRC will organize (free of charge) transportation with bus and/or service cars from/to the airports and from/to the Hotels for the duration of the Forum. The Attendee has just to provide the right Flights (or Trains) arrival/departures information when filling the Registration Form via WEB (specific check-box is foreseen for Train).

Please take note that the Airport near to JRC is the **MILANO-MALPENSA (MXP)** International Airport. At you arrival at Milano Malpensa, a JRC driver will wait at the **Airport EXIT Nb 3** and drive you at the Hotels in Angera (as regards Trains, the main stop is “STAZIONE CENTRALE MILANO” and the driver will wait in the TAXI area on the left side).

## GUIDELINES FOR THE PRESENTATIONS

The Forum will be essentially based on Invited Lectures on subjects of common interest, Regional Reports and work performed in the WGs, which will include short presentations.

The Invited Lectures should have duration of **max 20 min** and should provide information on the European and US Programmes, and related policies, supporting collaborative research in earthquake engineering (first day) and collaborative projects underway and of relevance for IT and cyberinfrastructures (second day).

The Regional Reports (first day) by the Countries (USA+Canada, Mexico, Korea, India, China, Taiwan, Europe) should have duration of **max 10 min** and relate on the advancement of the work after the 1<sup>st</sup> WFCREE. The Scientist in charge for the reporting will contact the Colleagues of his Country and collect the necessary information.

The WGs will allow short presentations by the Participants of **max 5 min** for introducing their Institution, the main interest in the field and (when applicable) the work advancement after the 1<sup>st</sup> WFCREE.

## 2WFCREE DOCUMENTS DOWNLOAD SITE

All documents related to the 2WFCREE will be posted on the SAMCO web-site at the following address:

[http://www.samco.org/network/download\\_area\\_2WF.htm](http://www.samco.org/network/download_area_2WF.htm)

The final Announcement, Tentative Agenda and List of Participants will be uploaded by the Organizing Committee after the closure of the Registration (March 11<sup>th</sup> 2007) in order to be available before the 2WFCREE venue.

The presentations will be collected by the Chairpersons during the 2WFCREE and posted on the SAMCO web-site after the conclusion of the Forum.

## MAIN CONTACTS FOR THE 2WFCREE ORGANIZATION

In case of questions, difficulties and/or any non-standard needs that cannot be arranged through the Registration, please contact the Local Organizing Committee:

### **Vito Renda**

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Tel.: (+39) 0332 78.90.21; Fax: (+39) 0332 78.90.49; Mob: (+39) 349 766.00.17

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### **Valeria Anfossi**

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## ORGANIZATION COMMITTEE AND CHAIRPERSONS

**Vito Renda\***, **Pierre Pegon\***, **Michel Geradin\***, **Helmut Wenzel\*\***, **Roberto Leon\*\*\***

(*\*JRC & Local Organizers, \*\*VCE & I-SAMCO coord, \*\*\*US-NEES Board*)

## PUBLIC RELATION AND LOGISTICS

**Valeria Anfossi**

(*JRC Public Relation Officer*)

## ORGANIZATIONS SUPPORTING THE 2WFCREE

**European Commission, Directorate General for R&TD (EC)**

(Represented at the Forum by Anna-Maria Johansson, Research Infrastructures Unit)

**European Science Foundation (ESF)**

(Represented at the Forum by Farzam Ranjbaran, EUROCORE Officer)

**US-NSF Network of Earthquake Engineering Simulation (NEES)**

(Represented at the Forum by Roberto Leon, NEES Board)

## WORKING GROUPS

<b>WG-1</b>	<b>WG-2</b>	<b>WG-3</b>
Hybrid Testing and Distributed Simulation	Data Infrastructure and Distributed Data Base	Knowledge, Education and Training in Distrib. Envir.
<b>Chairpersons</b>		
Pierre Pegon (EU)	Helmut Wenzel (EU)	Michel Geradin (EU)
Stephen Mahin (USA)	Kincho Law (USA)	Victor Saouma (USA)
Haluk Sucuoglu (Turkey)	Xilin Lu (China)	Jae-Kwan Kim (Korea)
<b>Recorders</b>		
Robert Tremblay (Canada)	Paul Schaminee (EU)	Keh-Chyuan Tsai (Taiwan)

## **WG-1: HYBRID TESTING AND DISTRIBUTED SIMULATION**

**Co-Chairs:** Pierre Pegon (EU), Stephen Mahin (USA), Haluk Sucuoglu (Turkey)

**Recorder:** Robert Tremblay (Canada)

### **Objectives:**

To discuss and highlight the reasons and advantages of hybrid testing, intended as Pseudo Dynamic (PsD) or Shaking Table (ST) testing with substructuring of part of the model.

To discuss about distributed testing (intended as performed with hardware and/or software totally or partially located in different laboratories). Highlight if it is only a technological challenge or a real opportunity for EE.

To identify the barriers to research and implementation progress in this area.

To discuss guidelines for hybrid testing and its implementation in a distributed environment.

To design a possible hybrid distributed test showing the advantage of this technology compared to classic testing approach.

### **Issues to be addressed:**

- Why do testing and simulation need to be more closely integrated than in the past?
- What are the expected benefits of hybrid (testing with substructuring) approaches and where they have led to breakthroughs be identified?
- What are the barriers hindering progress for hybrid approaches?
- What should be the hardware and software requirements for such hybrid approaches? What would change in the testing practice?
- What are the expected benefits of distributed testing implying on-line real-time coordination among testing laboratories and where distributed testing have led to breakthroughs be identified?
- What are the barriers hindering progress for distributed testing?
- What are the hardware and software requirements for such distributed testing? What would change in the testing practice?
- Do scientific challenges still exist for running hybrid and/or distributed testing (numerical schemes, coupling algorithm, network, etc.)?
- Do we need to develop a set of benchmark problems to assure the robustness of such simulations?
- What should be the characteristics of the data exchange protocols for geographically distributed test (with or without substructuring).
- What legacy requirements need to be imposed for “unofficial” and non-commercial programs in order to guarantee the quality of the results?
- Identification of weaknesses in the current practices.

## WG-1 LIST OF MEMBERS

<b>Name</b>	<b>First Name</b>	<b>Organization</b>	<b>Country</b>
<b>Altinyollar</b>	Ayhan	Joint Research Centre (JRC)	Turkey
<b>Aydinoglu</b>	Mehmet Nura	Bogazici University	Turkey
<b>Bousias</b>	Stathis	Univ Patras	EU (Greece)
<b>Bursi</b>	Oreste	University of Trento	EU (Italy)
<b>Casciati</b>	Fabio	Univ. of Pavia	EU (Italy)
<b>Crowley</b>	Helen	EUCENTRE, Pavia	EU (Italy)
<b>Deb</b>	Sajal Kanti	Indian Institute of Technology	India
<b>Dorka</b>	Uwe	University of Kasel	EU (Germany)
<b>Durukal</b>	Eser	Bogazici University	Turkey
<b>Elgamal</b>	Ahmed	University of California, San Diego	USA
<b>Erdik</b>	Mustafa	Bogazici University	Turkey
<b>Fragoso</b>	Mário R.	Lab Regional de Engh Civil (Açores)	EU (Açores, Pt)
<b>Germagnoli</b>	Fabio	EUCENTRE, Pavia	EU (Italy)
<b>Hubbard</b>	Paul	University of California, san Diego	USA
<b>Karadogan</b>	Faruk	Istanbul Technical University	Turkey
<b>Kim</b>	Chul-Young	Deputy Director of KOCED PMC	Korea
<b>Lea</b>	Jon	NEES Consortium Inc. (NEESinc)	USA
<b>Ma</b>	Quincy	University of Auckland	New Zealand
<b>Magonette</b>	Georges	Joint Research Centre (JRC)	EU (EC)
<b>Mahin</b>	Stephen	University of California at Berkeley	USA
<b>Manos</b>	George	Aristotle University Thessaloniki	EU (Greece)
<b>Meyer</b>	Jonas	EMPA	Switzerland
<b>Murià Vila</b>	David	Institute of Engineering of UNAM	Mexico
<b>Negro</b>	Paolo	Joint Research Centre (JRC)	EU (EC)
<b>Paulotto</b>	Carlo	Joint Research Centre (JRC)	EU (EC)
<b>Pegon</b>	Pierre	Joint Research Centre (JRC)	EU (EC)
<b>Perez Gavilan</b>	Juan Jose	Institute of Engineering of UNAM	Mexico
<b>Pitilakis</b>	Kyriazis	Aristotle University Thessaloniki	EU (Greece)
<b>Queval</b>	Jean Claude	CEA	EU (France)
<b>Ranjbaran</b>	Farzam	ESF (EUROCORE)	EU (France)
<b>Rassati</b>	Gian Andrea	University of Cincinnati & Trieste	EU (Italy)
<b>Ricles</b>	James	Lehigh University	USA
<b>Stojadinovic</b>	Bozidar	University of California at Berkeley	USA
<b>Sucuoglu</b>	Haluk	Middle East Technical University	Turkey
<b>Tremblay</b>	Robert	École Polytechnique de Montréal	Canada
<b>Weber</b>	Benedikt	EMPA	Switzerland
<b>Williams</b>	Martin	University of Oxford	EU (UK)
<b>Yang</b>	Yuan-Sen	NCREE	Taiwan
<b>Yim</b>	Solomon	Oregon State University	USA

## **WG-2: DATA INFRASTRUCTURE AND DISTRIBUTED DATA BASE**

**Co-Chairs:** Helmut Wenzel (EU), Kincho Law (USA), Xilin Lu (China)

**Recorder:** Paul Scheminee (EU)

### **Objectives:**

To develop a blueprint for what an international data repository may look like and outline basic policies and necessary models.

To discuss standards for the networking linkages and services provided internationally.

To define guidelines for metadata and procedures for documenting tests or analyses, including protocols for curation, communications, telepresence, and teleoperation.

To specify the characteristics of a broad common data model, at least for data exchange (upload and download) from data base to data base.

To discuss and compare the options of Central Database and Distributed Database (also with a centralized entry interface) taking into account the problems of data ownership, delay in the diffusion of results, psychological factors, etc.

### **Issues to be addressed:**

- What type and amount of data should be archived?
- How should the data processing be documented for archiving?
- Are there effective ways of merging these disparate forms of data?
- What kinds of data models are needed and how much metadata should be stored?
- How important is data curation and provenance and how should associated policies be implemented?
- How accessibility can be granted and the access can be controlled?
- How a centralized database could be compatible with the ownership of data coming from independent (non-coordinated) research programs and projects?
- What are the main technical problems to overcome for a distributed database with a unique transparent interface?
- How the security of the data repositories can be ensured?
- What will be the most appropriate organizational structure?
- Who will pay for the maintenance and upgrading of such facilities?
- Identification of weaknesses in the current practices.

## WG-2 LIST OF MEMBERS

<b>Name</b>	<b>First Name</b>	<b>Organization</b>	<b>Country</b>
<b>Bobbitt</b>	John	Petrotech Open Stand Consort (POSC)	USA
<b>Caperan</b>	Philippe	Joint Research Centre (JRC)	EU (EC)
<b>De-Canio</b>	Gerardo	ENEA (Casaccia)	EU (Italy)
<b>Fenves</b>	Gregory L.	University of California at Berkeley	USA
<b>Fowler</b>	Kevin	University of California, San Diego	USA
<b>Franchioni</b>	Giorgio	CESI Ricerca	EU (Italy)
<b>Gerk</b>	Jason	University of California, San Diego	USA
<b>Hajjar</b>	Jerome	Univ of Illinois at Urbana-Champaign	USA
<b>Hervey</b>	Holly	University of California, San Diego	USA
<b>Johansson</b>	Anna Maria	European Commission DG-RTD	EU (EC)
<b>Kostov</b>	Marin	CLSMEE	EU (Bulgaria)
<b>Lau</b>	David	Carleton University, Ottawa	Canada
<b>Law</b>	Kincho	Stanford University	USA
<b>Le Maoult</b>	Alain	CEA (Tamaris)	EU (France)
<b>Leon</b>	Roberto	Georgia Institute of Technology	USA
<b>Lu</b>	Xilin	Tongji University	China
<b>Manfredi</b>	Gaetano	University of Naples Federico II	EU (Italy)
<b>Molinari</b>	Dario	Joint Research Centre (JRC)	Italy
<b>Prota</b>	Andrea	University of Naples Federico II	EU (Italy)
<b>Renda</b>	Vito	Joint Research Centre (JRC)	EU (EC)
<b>Ruecker</b>	Werner	BAM	EU (Germany)
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**WG-3: DISSEMINATION OF KNOWLEDGE, EDUCATION AND TRAINING IN A DISTRIBUTED ENVIRONMENT**

**Co-Chairs:** Michel Geradin (EU), Victor Saouma (USA), Jae-Kwan Kim (Korea)

**Recorder:** Keh-Chyuan Tsai (Taiwan)

**Objectives:**

To discuss the importance of a diffused culture of safety in construction for the mitigation of disasters and show how the dissemination of knowledge in structural safety and earthquake engineering can take advantage from a common international effort.

To identify the barriers for the dissemination of research results to the designers and the construction industry worldwide.

To identify technologies and tools, including the implementation of a specific cyberenvironment, for a common effort for the education in structural safety and the training of young researchers.

To identify the political and management issues to reach the goal of a networked knowledge center.

**Issues to be addressed:**

- How the culture of structural safety and earthquake engineering can improve the disaster prevention and the hazard mitigation?
- How the knowledge provided by research can contribute to education and how the link between research and educational organizations should be organized?
- How it could be structured the know-how transfer and technology export to Countries in need, in particular with reference to vulnerable megacities?
- A worldwide cyberenvironment for education could be effective to this end?
- How it should be designed and implemented as regards the IT architecture?
- How the educational content should be provided and structured?
- How could be organized the training of young scientists in order to complement their knowledge by working in laboratories and research organizations?
- What is the added value that could come from a worldwide networked initiative for the dissemination of knowledge, education and training?
- Who should pay for this and how the initiative should be organized and managed?
- Identification of weaknesses in the current practices.

### WG-3 LIST OF MEMBERS

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