Issue 9 - April 2003

newsletter

supported by the DG Research
of the European Commission

SAMCO NEWS

Structural Assessment Monitoring and Control Issue 9 April 2003

contents

Published by VCE.

Monitoring and 6FP

The E-MOI Proposal has been successfully submitted on 6.3.2003 in stage 1 of the NMP Program. Detailed information about it can be found under:
http://www.samco.org/6fp

The elaboration of this proposal into a full project comprises a chance to define the future of monitoring and assessment in Europe. The structure of 6FP integrated projects allow great flexibility in the consortium, which enables anyone to join the initiative on basis of a good proposal for objectives to be worked on within E-MOI.

Forms to make proposals can be found under above mentioned link. A 1st round of collection of objectives will be done in the workshop held in Vienna from April 28th till 29th. It is advisable for anyone interested in health monitoring and assessment of the built environment to consider participation in this event.

E-MOI will be successful if we can bring together the best forces and the most ambitious researchers.

I would be delighted to meet you in Vienna end of April.

Helmut Wenzel

3rd SAMCO Workshop

Date:
28-29. April 2003
(30. April optional).

Venue:
BOKU -
University of Natural Resources and Applied Life Sciences
Exner-Haus
Peter Jordan-Straße 82
A 1190 Vienna
Room: EH 02 (1st Floor)

Registration:
Please fill in the registration form, offered at:
www.samco.org/download/ws3reg.doc

We kindly ask you to fill it in electronically, then print and sign it and send it via FAX (number given on the form) to VCE.

Programme
Please refer to the programme provided under:
www.samco.org/workshop

BOKU-University of University of Natural Resources and Applied Life Sciences, Vienna

3rd SAMCO WORKSHOP April 28 - 30. 2003

www.samco.org

E-MOI & the 3rd SAMCO Workshop

On March 6 there was the deadline for the first call in the NMP-priority of the 6th Framework Programme. The integrated project E-MOI, prepared by VCE, has been submitted to the Stage 1-evaluation. If this evaluation is successful, a detailed proposal has to be prepared and submitted for the stage 2 – evaluation. As there will most probably only be few weeks between the announcement of the evaluation result and the submission of the detailed proposal, preparation works have to be done for the case of a positive evaluation.

3rd SAMCO Workshop

Therefore the next SAMCO workshop will be devoted to E-MOI and in particular to the definition of objectives, of the consortium and the sub-projects within E-MOI, as well as the financial allocation.

The workshop will take place on 28-29 April 2003 (30. April optional) in Vienna.

Venue:
BOKU - University of Natural Resources and Applied Life Sciences
Exner-Haus
Peter Jordan-Straße 82
A 1190 Vienna
Room: EH 02 (1st Floor)

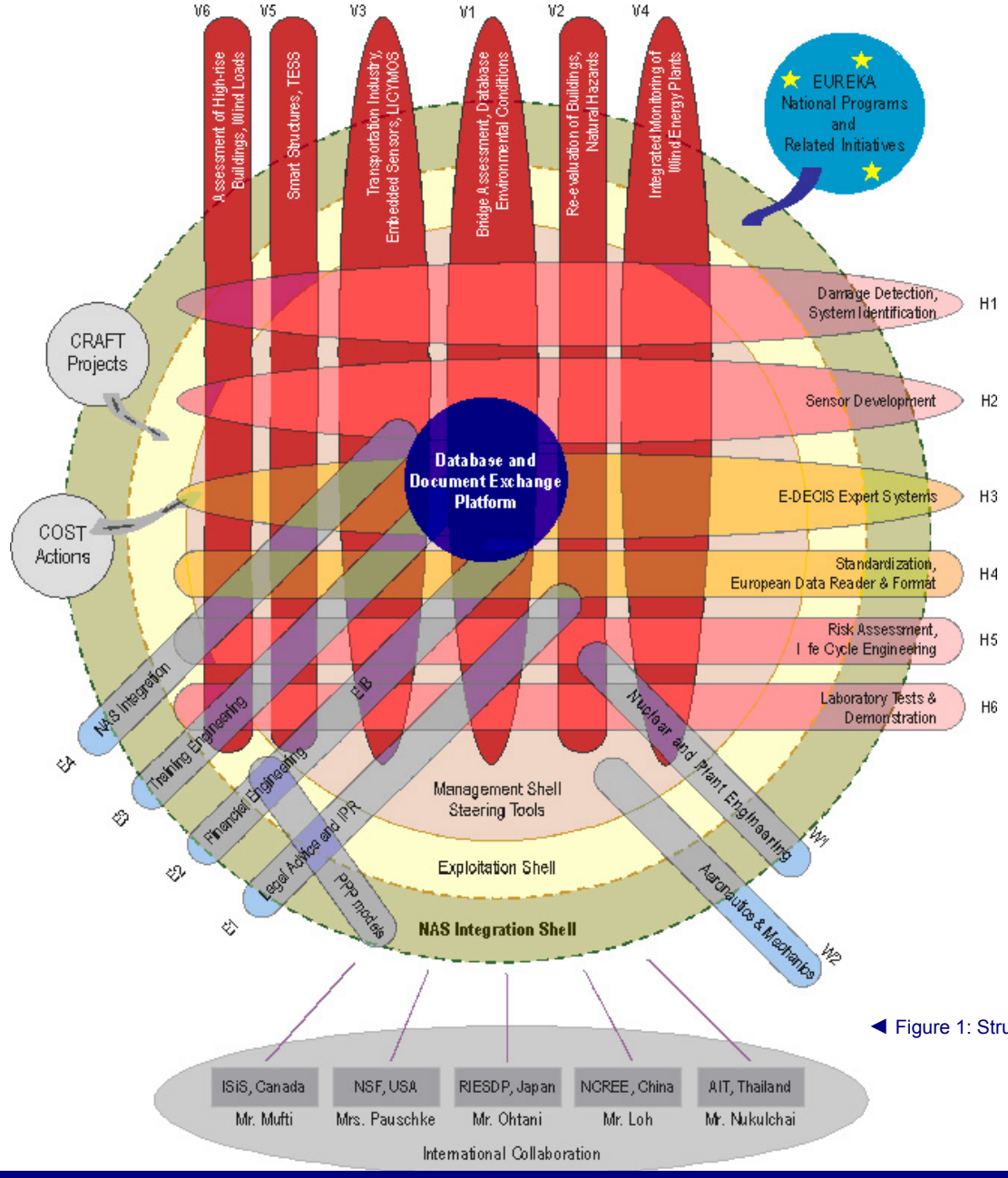
For Registration

please fill in the registration form offered at the web site and submit it to VCE. The registration form and detailed information can be found on the SAMCO web site under: http://www.samco.org/workshop

Subjects of the Workshop

The sub-projects leader, unless not all fixed yet, have to be finally determined as well as the objectives and conception of the sub-projects. For the preparation of the objectives, a form was distributed by VCE, asking the participants to make proposals for the objectives to be carried out within the sub-projects. The form can be downloaded from: www.samco.org/6fp

The focal points of the **sub-projects** have shifted since the last publication in the Newsletter Nr. 6. The actual structure and the focal points in E-MOI are shown below in **figure 2**, as included in the proposal. These subjects will be major items at the workshop.



◄ Figure 1: Structure of E-MOI

E-MOI structure

In the structure of the project (figure 1) 6 vertical main objectives, encompassing the value chain from knowledge production and technology development to their transfer are implemented comparable to traditional R & D projects. They include all principal stake holders like end users, authorities and practicing engineers to make sure that the expected impact is achieved. They are supported by 6 horizontal initiatives covering the multidisciplinary nature of the project avoiding parallel development and providing the necessary scientific and technological components. The vertical and horizontal activities shall be integrated generating first of all a common approach strong enough to become a world standard. To support this integration training, demonstration, protection and dissemination of knowledge as well as take up activities are designed. They are expressed in a demonstration shell covering all activities and for distinct support tools.
Windows to intersectoral integration are provided particular to the normally very closed societies of the nuclear industry and the aeronautics (W1 and W2). Public Private Partnership models will support the current privatisation trend in the vital transportation infrastructure sector. This includes current owners with their public sector research organisations and in particular academia and industry including SME's.

Management of the Built Asset

In E-MOI novel approaches are proposed to manage the built asset. Different disciplines will be involved and approaches, which are going beyond the traditional methods usually applied for assessment of the built environment.

The overall goal is that structural health monitoring becomes a **standard industrial technology** within the next 10 years. It is expected to be widely applied in the aeronautics, mechanical, civil and other sectors. The substantial improvement of **diagnostic methodologies**, tools and assessment processes shall be reached.

The major vision in health monitoring and asset management is:

- **The synthesis** of different methodologies from different countries and engineering areas
- **Synergy effects** and efficiency progress of health monitoring in plant control
- Improved safety assessment and lifetime prediction by decision support systems
- **Increasing of EU competitive** capacity in plant engineering
- **Increase of safety** availability and economy of European engineering structures

Figure 2 below demonstrates the proposed management and assessment process of the built environment and how the vertical and horizontal approaches of E-MOI will interact within this process.

The Consortium

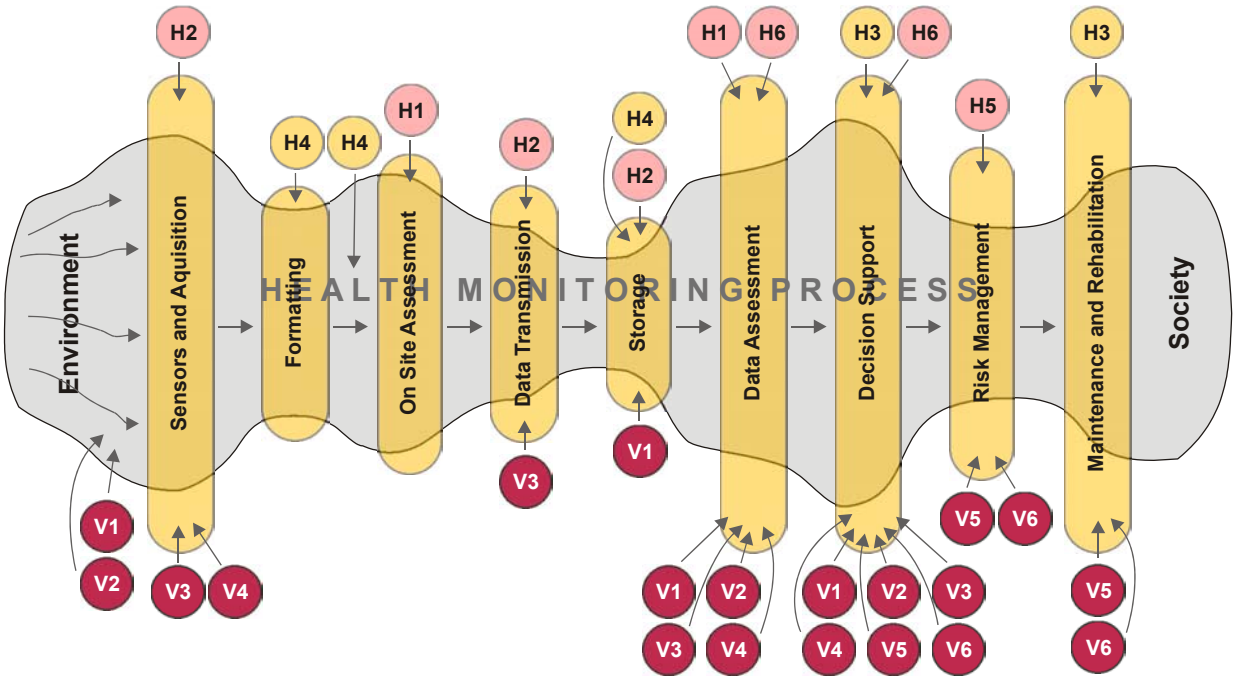
The project shall consist of a **consortium** which comprises of 5 lead partners (VCE, LMS, BRE, JRC, KUL) and core partners, from all over Europe.

The consortium comprises of:

- The core group, those 5 partners leading the project
- The core partners, 27 important participants responsible for single activities
- The project participants, about 40 important entities allocated to the several work tasks
- Objective oriented partners, about 60 partners with specific limited objectives within the project
- The academic pool, a source of excellence, ready to bid for the work defined and called for tender
- Observers, an unlimited number with special access rights to the results

International co-operation partners connected by a Memorandum of Understanding (MoU).

A major focus of this proposal is the collaboration with partners from the **Candidate Countries (CC).** They will be involved in the training activities particular, but also contribute to the technical development and the integration.



▲ Figure 2: Management and assessment process of the built environment

SIMoNET
Structural Integrity Monitoring Network - Phase 2

SIMoNET, the Structural Integrity Monitoring Network, has now commenced a second phase totally funded by industry and government organisations. It was originally an EPSRC-funded network, set up 4 years ago to facilitate communication between industrial participants, researchers and all those interested in Structural Integrity Monitoring (SIM). The steering committee already includes members from industry (ABS, Arup, Atkins, BP, Fugro, HSE, Network Rail, and TSC Inspection Systems,) and is managed by University College London. Its aims are to bring together those involved and interested in structural integrity monitoring whether users, providers or consultants, for the dissemination and exchange of information on the most up-to-date methods and developments in this field.

Recent Work in SIMoNET

The network is focussed on the internet site, http:\\www.simonet.org, which contains information on equipment, suppliers, technical review papers, reviews of previous workshops, structural monitoring activities and links to other bodies involved. This web-site has become a central information point for the network and, for example, is being used to advertise the seminars and to report on these and other events and published papers. There is also now a notification service for new items on the web site and a discussion forum is planned. Plans are underway to extend the activities to Europe, via other existing networks.

Workshops

The last workshop was held in November, with free access for members. It included 11 papers on topics such as condition assessment of pipelines and steel structures, novel stress and crack measurement instruments (ACSM, accelerometers, ACFM and eddy currents), remote sensing of rail track deterioration, and instrumentation of rail tracks, tunnels and embankments. The next seminar will take place on 2nd April 2003 in London, where presentations on advanced composites, marine technology, and earthquake engineering are planned. Industry as well as academia have been able to present at the previous 7 workshops widely varying, topical papers

On subjects such as the Millennium Footbridge, monitoring in the Channel Tunnel and bridge bashing as well as methods such as optical fibre strain gauging, acoustic emission and electromagnetic techniques.
All events have been well attended and network members, who make up the audience, have been keen to participate and make new contacts.

Newsletters

Regular newsletters are posted on the web site, with articles relevant to structural integrity monitoring. Many of these are from our member companies. Future newsletters will regularly cover the owner's view of monitoring, papers on new technologies and research projects and keep members informed about the network activities.

Aims and Objectives

These are:

- To organise seminars to present cross industry applications and techniques in SIM
- To develop a web based information source for structural integrity monitoring and areas of peripheral interest.
- To establish a chat site on the web which allows user and researchers to exchange information about state of the art technology and experience.
- To highlight needs and changes in industry requirements, for providers and users of structural monitoring.
- To establish the appropriateness of the economic and technical aspects of monitoring techniques for the management of the structural integrity of large structures and plant safety.
- To identify the latest available technology, experience in use and methods of retrieving and interpreting data.
- To encourage harmonisation of data storage and retrieval, by identifying incompatibility within systems.
- To propose general guidelines for the practice and application of structural monitoring, and to identify priorities for further development.
- To link with other relevant networks at both European and international level.

Applications

Oil and Gas platforms, Floating Offshore Structures, Jack-ups, Industrial Process Plants, Bridges, Transport (Rail, Road Vehicles, Aircraft and Ships) and Power generation.

Contact

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More information

http:\\www.simonet.org

Company Profile

Federal Institute for Materials Research and Testing

Federal Institute

BAM is a senior technical and scientific Federal Institute of the Federal Ministry of Economics and has its responsibility in the interacting fields of Material - Chemistry - Environment - Safety. It has a staff of about 1600, including over 700 scientists and engineers working in eight departments.

Department "Safety of Structures"

The expertise of the department includes the investigation and assessment of the safety, reliability and durability of building materials, components and structures. It specialises in the development of test and assessment methods for the long-term behaviour of buildings and structures and their ability to resist complex static and dynamic impacts, as well as fire attacks and environmental effects. These tasks are carried out in three divisions.

▲ Large Scale Universal Test Device

Division "Buildings and Structures"

The division "Buildings and Structures" is subdivided in three laboratories and has a staff of about 45 people including 12 scientists. It is involved in projects regarding research, development, consulting and information services concerning the main emphases:

- Structural Safety
- Fire Engineering
- Structural Dynamics & Geotechnics

The investigations in these fields rely on long-standing experience, dependable equipment of the division for in-situ measuring techniques and numerical simulations. Most of the department's large number of test facilities are operated by this division.

Technical experts of the division are acting as members of a variety of work groups and technical committees to acquire guidelines and standards.

The work of the division is initialised by requests from industry, by research projects and by consultation for the government, institutes and the private sector. International cooperation plays a major role.

Research & Development

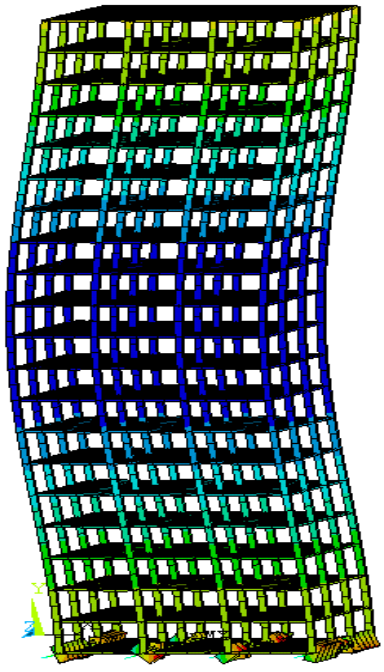
The following topics in research, development and consulting are being addressed at present:

Structural Health Monitoring:

Based on more than fifteen years experience in the development of methods and equipment for Structural Health Monitoring and their application at a variety of buildings and structures, a monitoring system relying on state-of-the-art standards is presently being developed. Load and condition monitoring procedures are being enhanced and techniques for the assessment of structures based on static and dynamic data from long-term monitoring are being improved. International standards for the application of health monitoring procedures are being prepared.

Assessment of Structures and Risk Analysis:

This covers the development of procedures to evaluate the state of fatigue and to rate the remaining fatigue life of steel structures as well as to extend service life. Models for accumulative damage material resulting from fracture mechanics are being enhanced.



▲ Simulations of wind induced vibations of tall buildings

Assessment of the load carrying capacity of building structures and its members made of steel or reinforced concrete and bricks under static, transient and fatigue loading in-situ as well as by large scale laboratory test is provided. Finite element modelling and model updating procedures applying dynamic measurement results are currently utilised to encourage this task. Tests of structures under impact and impulsive loading are carried out by special worldwide unique test facilities. Innovative risk management methods based on continuously monitored data and life-cycle assessments are used to detect existence or lacks of safety in structures.

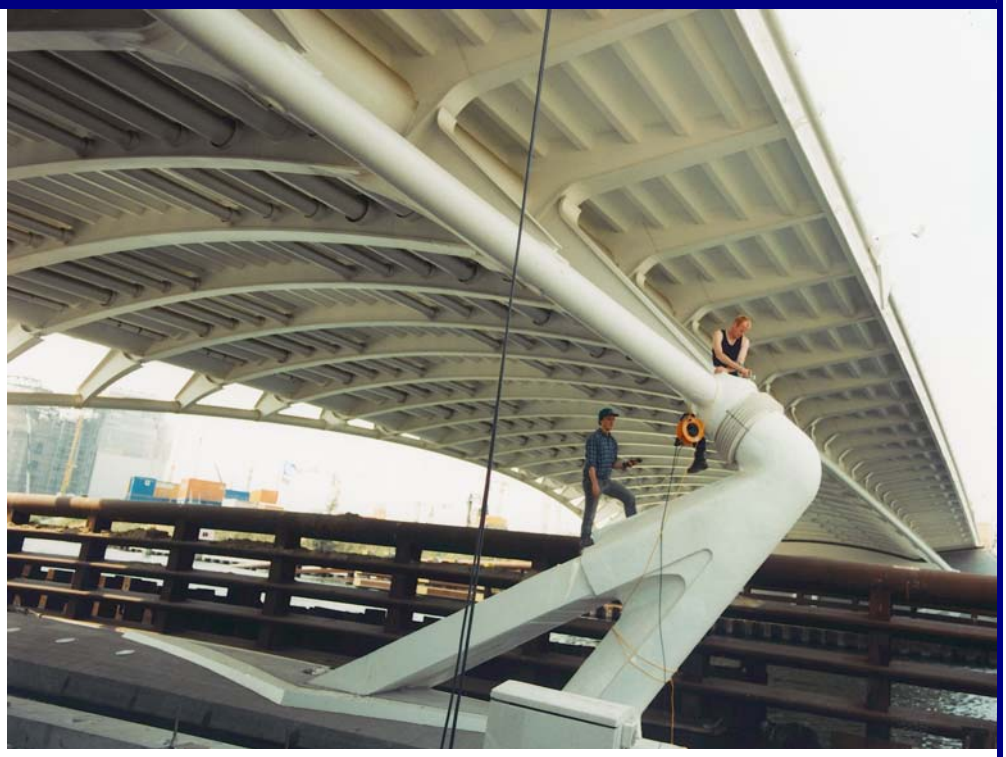
Fire Engineering:

The behaviour of building materials and components exposed to fire as well as thermomechanical loading of building components is one part of the work of the Fire Engineering laboratory. Fire resistance tests are conducted as a part of applications for approval of fire protecting systems. The theoretical studies include numerical methods to simulate and visualite heat transfer and load carrying behaviour of building structures exposed to fire. To combine the numerical and experimental knowledge, substructuring test method for applications in fire engineering are being developed. Assessment of the load carrying capacity of building structures exposed to fire are being applied. Within the standardisation work German and common European test standards and guidelines for preventative structural fire protection as well as standard calibration procedures for furnaces to test fire resistance are being developed and validated.

Structural Dynamics and Geotechnics:

Enhancing the assessment of buildings and structures based on vibration measurements is one part of the Structural Dynamics laboratory. Combining numerical simulations and results from static and dynamic in-situ testing and damage analysis and the elaboration of methods for strengthening and repairing of structures are being applied. Experimental investigations are supported by use of modern NDE procedures like seismic, ultrasonic, impact echo and dynamic pile testing methods. The development of prediction models for vibrations (source, propagation, effect on structures) and the investigation of vehicle-track-interaction of road and railway vehicles are parts of the transportation dynamics project. A large experienced field of research is the simulation of soil-structure-interaction problems.

In combination with Structural Dynamics Geotechnic problems like the investigation of settlement behaviour and short-term dynamics of railway slab tracks as well as impact loading of foundation structures (ship impact, drop test of e.g. transport casks) are being attended. Furnishing expert opinions and developing protective measures against vibrations are additional tasks



▲ Dynamic investigations of bridges

Structural components affected by fire ►

Contact

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BAM
Federal Institute for Materials Research and Testing

More information

http://www.bam.de

Announcements

IABMAS´04

Second International Conference on Bridge Maintenance, Safety and Management

Date: October 19-22, 2004.
Location: Kyoto, Japan.

Main Organizer:
International Association for Bridge Maintenance and Safety.

IABMAS

The IABMAS association encompasses all aspects of bridge maintenance, safety and management. Specifically, it deals with: Bridge repair and rehabilitation issues; bridge management systems; needs for bridge owners, financial planning, whole life costing and investment for the future; bridge related safety and risk issues and economic and other implications. The objective of IABMAS is to promote international cooperation in the fields of bridge maintenance, safety, and management for the purpose of enhancing the welfare of society.

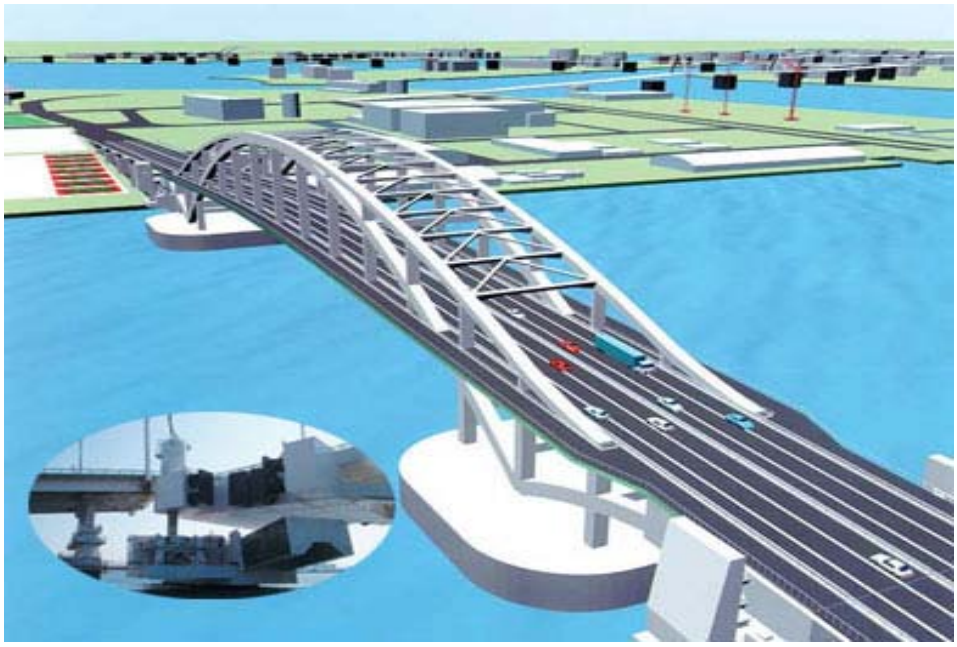
Aim of IABMAS´04

The aim of the IABMAS´04 is to bring together all of the very best work that has been done in the field of bridge maintenance, safety and management.

Submission of Abstracts

Authors should submit 300 words abstract to the Conference Secretariat by September 15, 2003, together with the preliminary registration form. Abstracts should be submitted in electronic form, as either a plain text or Microsoft word attachment to the following electronic address:
iabmas04@str.kuciv.kyoto-u.ac.jp

Abstract will be reviewed by the International Scientific Committee, and Authors will be notified regarding the acceptance of their abstract by December 31, 2003. Full eight-page papers and two-page abstracts will be due by April 1, 2004.



Call for papers

All major aspects of bridge maintenance, safety and management will be addressed:

- Assessment and evaluation
- Bridge codes
- Bridge diagnostics
- Bridge management systems
- Composites
- Design for durability
- Deterioration modeling
- Emerging technologies
- Field testing
- Financial planning
- Health monitoring
- Health performance materials
- Innovations
- Inspection
- Loads
- Maintenance strategies
- New technical and material concepts
- Nondestructive testing
- Rehabilitation
- Reliability and risk management
- Repair
- Replacement
- Safety and serviceability
- Service life prediction
- Strengthening
- Whole life costing

Venue

The IABMAS'04 Conference will be held at the Kyoto International Conference Hall (KICH). KICH is an international convention center with all modern facilities. It is located in the scenic north area of Kyoto city, verdurous and having quiet surroundings. The ancient capital of Japan, Kyoto, is nestled amongst picturesque mountains and calm waters. Since its establishment as the seat of the Imperial Court late in the 8th century, the city has prospected as a center for politics, economy, culture, and the arts. With its innumerable cultural treasures and traditional crafts, Kyoto has always attracted both domestic and foreign visitors. For details, visit the homepage KICH at:

http://www.joho-kyoto.or.jp/KICH/

Accommodation

The organizers have arranged block reservation with several hotels offering special prices for the participants of this event. For further information and reservation, please contact:

JTB Kyoto Office
Higashi-shiokoji-cho, Shimogyo-ku,
Kyoto 600-8216, Japan

email: kyoto_ei3b@kns.jtb.co.jp

More information

http://iabmas04.kuciv.kyoto-u.ac.jp/

Calendar Of Events

MAY 2003

■ **6-8.** Concrete Structures in Seismic Regions; *Athens, Greece.*
URL: http://www.fib2003.gr

■ **8-10.** Conference, Council on Tall Buildings and Urban Habitat; Strategies for Performance in the Aftermath of the World Trade Center;
Kuala Lumpur, Malaysia.
URL: http://www.cibklutm.com/

■ **7-9.** STREMAH 2003, Structural Studies, Repairs & Maintenance of Heritage Architecture;
Halkidiki, Greece.
URL: http://www.wessex.ac.uk/conferences

■ **12-14.** Fourth International Conference on Earthquake Engineering and Seismology; *Tehran, Iran.*
URL: http://www.iiees.ac.ir/see4/

JUNE 2003

■ **2-5.** ICWE International Conference on Wind Engineering; *Lubbock, Texas.*
URL: http://www.icwe.ttu.edu

■ **9-12.** Fourth International STESSA Conference – Behaviour of Steel Structures in Seismic Areas;
Naples, Italy.
URL: http://www.stessa2003.unina.it/

■ **23-25.** ASSCCA'03 - Advances in Structures Steel, Concrete, Composite and Aluminium; *Sydney, Australia.*
URL:http://www.civil.usyd.edu.au/asscca03/asscca03.htm

JULY 2003

■ **1-3.** Structural faults and repair: extending the life of bridges;
London, UK.
URL:http://www.structuralfaultsandrepair.com

AUGUST 2003

■ **22-29.** IABSE Symposium, Structures for High-Speed Railway Transport; *Antwerp, Belgium.*
URL:http://www.iabse.ethz.ch/conferences/Antwerp/Antwerp.html

SEPTEMBER 2003

■ **15-18.** 5th Symposium on Cable Dynamics; *Santa Margherita, Italy.*
URL: http://www.conf-aim.skynet.be/cable/

■ **22-24.** IABSE Symposium Metropolitan Habitats and Infrastructure;
Shanghai, China.
URL:http://www.iabse.ethz.ch/conferences/Shanghai/PI/Shanghai.html

OCTOBER 2003

■ **5-7.** Conference, Council on Tall Buildings and Urban Habitat - Tall Buildings and Transparency;
Stuttgart, Germany.
URL: http://www.ctbuh-stuttgart.de/

NOVEMBER 2003

■ **13-15.** SHMII-1'2003 Conference - Structural Health Monitoring and Intelligent Infrastructure; *Tokyo, Japan.*
URL: http://www.civil.ibaraki.ac.jp/shmii/

DECEMBER 2003

■ **1-3.** ILCDES 2003 - Integrated Lifetime Engineering of Buildings and Civil Infrastructures; *Kuopio, Finland.*
URL:http://www.ril.fi/Resource.phx/ilcdes2003/index.htx

■ **8-9.** ACI Conference - Seismic Bridge Design and Retrofit; *La Jolla, CA, USA.*
URL:http://www.concrete.org/EVENTS/conferences/conference.htm

Imprint

SAMCO News

SAMCO News is a digital newsletter accompanying the SAMCO Network. It is funded by the European Commission in the frame of the GROWTH project SAMCO CTG2-2000-33069. It is an information and communication platform for the participants of SAMCO. It is issued periodically every second month.

SAMCO News is available at
http://www.samco.org/news

Funding

The SAMCO Network is funded by the European Commission (http://europa.eu.int) within the *"Fifth European Framework Programme",FP5,* (http://www.cordis.lu/fp5) which covers Research, Technological Development (RTD) and Demonstration activities. FP5 has a multi-theme structure, consisting of Specific Programmes. These Specific Programmes are further divided into Horizontal Programmes and Thematic Programmes. One of these Thematic Programmes is the *"Competitive and Sustainable Growth"* Programme (http://www.cordis.lu/growth/) under which SAMCO is running.

SAMCO is running under the exact term:
CTG2-2000-33069
Shared-cost RTD and Demonstration project, Concerted Action/Thematic Network
Duration: 48 months

Publisher

VCE

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