



G1RT-CT-2001-05040



SAMCO Network

Workshop 5

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Vienna, 26.01.2004





Benefits from Networking

- The Objective of day 1

What does our sector need ?

End Users point of view

- The Objective of day 2

6FP NMP 2

Search for successful proposals



Day 1 SAMCO presentations

- Progress of SAMCO and objectives
- The US NEES project
- The Japanese E-DEFENSE project
- The NSF-FHWA project on Bridges



- SHM is a very scientific oriented community with no or little contact or dialog to the end users or society
- There has been no attempt on an integrated approach of the problem yet, but it has been recognised that this is most important
- The subject of sensors and sensor systems is strong in the United States and receives considerable funding
- The research community is very very fragmented with little overlapping and communication
- There are many new and exciting ideas in the pipeline
- It has been expressed that cross sector collaboration will fertilise the process and should be stimulated
- The U.S. and Japan is very research focused in this subject
- The EU is more end user oriented and showing problem solving approaches
- Europe is actually ahead in application but is loosing ground
- Reliability and decision support is a coming issue
- The U.S. is benefiting considerably from the weapons programs
- A number of useful lessons for SAMCO have been learned. Nevertheless the SAMCO initiative is very appreciated by the community
- Generally the SAMCO events are much better organised

Lessons Stanford Sept. 2003



- Much more funding goes into this sector in the U.S. and Japan.
- Nevertheless the European approach is more promising.
- Most important would be an integrated approach on the subject with a program of at least 3 Mio. € annual funding to make this thing going.
- There is a strong demand for an IP under FP6



- The kick-off of the proposed NSF-FHWA Joint Engineering Research Centre:

“Advancing States of the Art and Practice of Engineering and Management of the Highway Transportation Infrastructure”

was held at Paolo Alto in September 2003

- The initiative is intended to become a program of its own with a funding of approximately 100 Mio. US\$ raised by FHWA and NSF jointly.

Major US Activity in the Sector



- It is intended to get in front of the bridge deterioration curve. We have to stay ahead of it.
- There is a statement available which formulates the objectives. This document can be downloaded from the FHWA website.
- Particular leadership is looked for in the initiative
- In the U.S. there are a total of 600.000 bridges. 160.000 of them are deficient (50% of it for functional reasons).
- 1 Billion users cross deficient bridges every day.
- 3.000 bridges become deficient every year.
- Approximately 10.000 bridges are replaced annually.
- The costs of this is over 7 Billion US\$.

Motivation NSF-FHWA Project



- It is looked for the bridge of the future which should have considerable lower costs and longer life spans.
- Stewardship and management is a key issue in the initiative.
- Ensuring bridge safety, reliability and security are basic keywords
- The people component has to be addressed specifically.
- A demonstration projects program shall be designed to make the public aware.
- Centres of excellence shall be erected particular in the university system.
- Training courses by the FHWA shall increase the awareness of a problematic.
- A significant partnership with industry is looked for.
- An effective use of computer based training is intended.
- Outreach to future engineers shall be performed to make the profession of bridge engineers more attractive to our students.

Further Objectives of the Initiative



- On the information side there are a lot of existing systems like PONTIS and BRIDGIT which are considered to be old fashioned. A complete new approach shall be designed.
- The national bridge inventory is providing useful information but is not giving enough decision support.
- A non-destructive evaluation centre shall be created.
- A long term bridge performance program shall be designed. A representative sample of bridges (thousand of bridges) shall be chosen.
- Detailed inspection shall be implemented on these bridges by a joint team to ensure the same methods everywhere.
- Hundreds of these bridges will be instrumented and continuously monitored. The data shall be stored into a data repository.

Initiatives 2



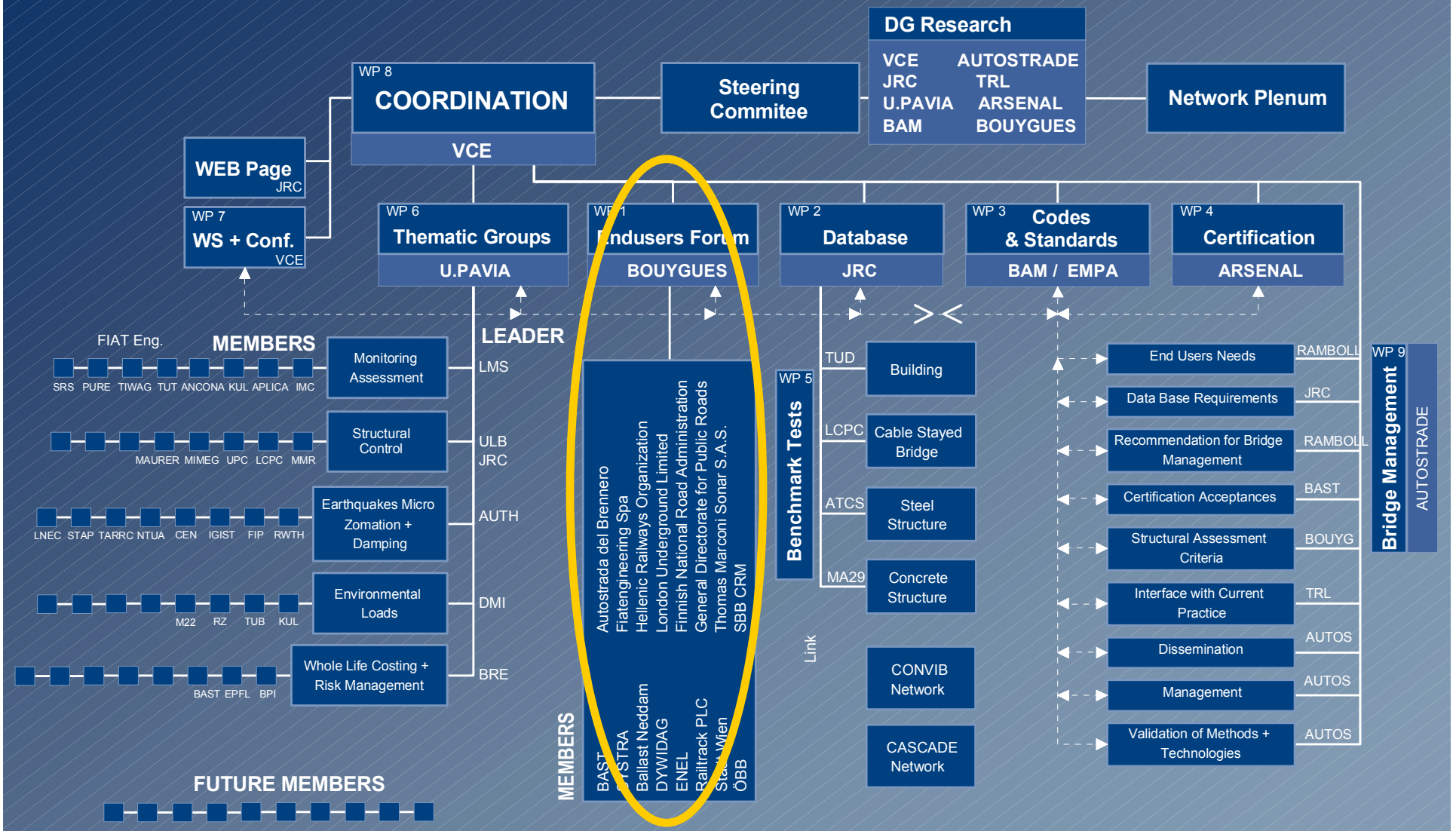
- Forensic autopsies of decommissioned bridges shall be performed frequently. There are about 10.000 bridges decommissioned every year.
- A resultant database shall be erected.
- All this shall lead to the bridge of the future.
- The next generation of decision support and management systems is envisaged.
- The technologies for that have not been discussed properly.
- The wish is for a comprehensive decision support is imminent.
- The engineering issues and technologies to be addressed are homeland security, global warming, assessment of cables and tendons (IMAC), and computing.
- The owners shall be encouraged to take greater risks on a better basis of risk assessment.
- Out of this highways for life should be created.



- Mr. McCabe explained the NSF's position on this subject. The NSF have the intent to launch an initiative on infrastructure bridges and components. There is interest in bridges in NSF, contrary to the opinion of many researchers.
- It is recognised that there is a different kind of vision of engineers in research compared to traditional base researchers. This shall be considered. An important statement was that it takes at least a program of more than 3 Mio. US\$ per year funding to create the critical mass for success. This represents the NSF experience. The operation and maintenance of the NEES program (refer to SAMCO and the NSF homepage) foresees for the operation under the name of NEES a budget of 9 Mio. US\$ per year. This is the biggest project ever and covers all the principles discussed.



- The objectives of the new research centre are matching with the objectives of SAMCO. Many interesting areas of collaboration may result from that. It has been agreed that close contact will be kept and Europe will be fully integrated into the process. The necessary rules shall be defined.
- The next meetings of the group will be on international level at the structural health monitoring workshop in Tokyo in November 2003. A major initiative also comprises the IABMAS 04 symposium in Kyoto in October 2004. A considerable contribution of Europe is asked for.
- A number of ideas developed within the SAMCO network have been taken over for the U.S. initiative. As usual they are thinking on larger scales and will probably do some of the things we will not be able to do because of limited funding. It looks absolutely essential that an integrated project in this field will counterbalance the U.S. initiative and provide the necessary structure for international collaboration.



SAMCO Organisation Chart WP1



END USER FORUM

- Mapping Process
- 182 End users identified
- Mailings (Newsletter)
- Invitation to the Workshops
- Invitation to become Members
- We now have 62 Members



Identification of End Users ✓

- Within the mapping of national key players 120 organizations have been identified
- Results are available in the database

End Users Forum ✓

End Users are invited to the SAMCO Workshops, where the current practice is discussed

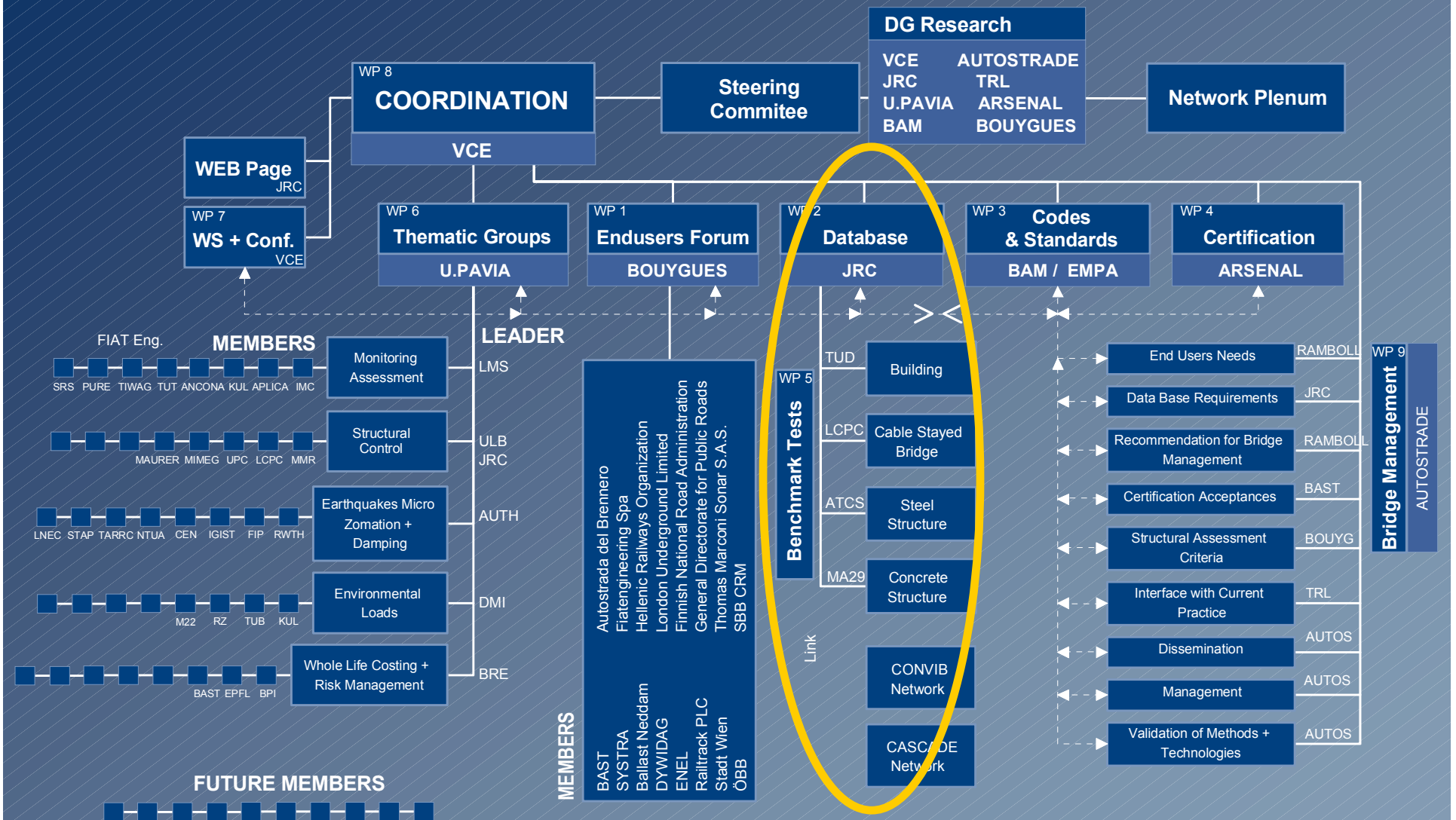
Next Workshop in Vienna
26.-27.1.2004

<u>AUMAR</u> Aumar Highways - Concessionary Joint-stock Company of th Autopista Aumar - Sociedad Anónima Concesionaria del Estado	
Spain	
<u>ÖBB</u> Aust Österre	
Austria	
<u>ÖSAG</u> Aus Österre	
Austria	

ÖSAG	
Austrian Motorway and Expressway Corporation	
Österreichische Autobahnen- und Schnellstraßen-Aktiengesellschaft	
Fields of Activity:	Government Authorities in the transportation sector
Contact Person:	
Address:	Alpenstraße 94 5020 Salzburg Austria
Telephone:	+43 662 620511 0
Fax:	+43 662 620511 59
E-mail :	
URL :	http://www.vignette.at/oe/



End Users Forum



SAMCO Organisation Chart WP2



SAMCO DATABASE

<http://samco.jrc.it>

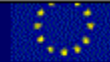
WP 2 Database

vce

Query more than 180 National Key Players



National Key Players



| Home | Sign in | Register | About | Contact | Search | Add Data | Help |

Research & Development

- Projects
- Research Institution

National Key Players

Workshops

- 2002

Summer Academy

- 2003

National Key Players are organizations and institutions, that are of importance in the field of structural assessment, monitoring and control. They are playing a major role in their special technical field. The identification was carried out on national level. Choose from below the category(s) of key player and the desired nation(s).

Search string:

Restrict search to:

- ☐ University or research institution
- ☐ Government
- ☐ Suppliers of equipment, hardware,
- ☒ Consultants
- ☒ End users and maintainers of infrastr
- ☐ Authorities in the transportation sect
- ☐ Suppliers of services in the field of S
- ☐ Authorities in Insurance
- ☐ Authorities in Certification

Country :

Cancel

Search

SAMCO Database: Key Players - Microsoft Internet Explorer

Datei Bearbeiten Ansicht Favoriten Extras ? Links



| Home | Sign in | Register

Research & Development

- Projects
- Research Institution

National Key Players

- Search Organizations

Workshops

- 2002

Summer Academy

- 2003

[AUMAR](#) Aumar Highways - Concessionary Joir
Autopista Aumar - Sociedad Anónima Concesor
Spain

[Autonomous Community of Balearic - Highway](#)
Comunidad Autonoma De Baleares - Area de Cai
Spain

[Autonomous Community of the Canary Islands](#)
Comunidad Autonoma De Canarias

Spain

[BCCB](#) British Consultants and Construction Bu
British Consultants and Construction Bureau
United Kingdom

[BRE](#) Building Research Establishment Limited
Building Research Establishment Limited

Query raw data and software tool

 Edit

This document is part of the project: **Wind Effects to High-rise Buildings**

http://samco.jrc.it/login/page.gx/_app.page/entity.htm/_app.action/entity/_entity.obj

Weather.ged - Green Eye - Reader Version 1.00

File Edit View Settings ?

Weather data from VALENTINA OBSERVATORY (Ireland)

°C

Avg Temp Max Temp Min Temp

mbar

Station Pressure Sea Level Pressure

mm

Precipitation (Rain)

9/1/1971, 12 12/10/1971, 12 3/19/1972, 12

Variable	Value
Source	

Query research projects, laboratory and benchmark tests



Research Projects



| Home | Sign in | Register | About | Contact | Search | Add Data | Help |

Research & Development

- Projects
- Research Institution

National Key Players

- Search Organizations

Workshops

- 2002

Summer Academy

- 2003

The **Projects** are full thematic descriptions, reports, results and raw tests and laboratory tests.

Restrict search to:

- ☐ Research projects
- ☐ Benchmark tests
- ☐ Laboratory tests

Class :

Search string :

SAMCO Database: Project - Microsoft Internet Explorer

Links Links anpassen Database

Adresse <http://samco.jrc.it/login/show>

Research & Development - Project

| Home | Sign in | Register | About | Contact | Search | Add Data | Help |

SEISPROTEC-JRC35 project

Seismic behaviour and repair-strengthening of masonry structures

Organization : [European Laboratory for Structural Assessment](#)

Class : Building

Type : Laboratory test

Experimental work

Objective - Internal/External

Reference materials

	manufacturer	Type	Dimension [mm]
bricks	RDB Terrecotte S.p.a	"a mano" Borgonovo rosso classico	55*120*250
hydraulic mortar lime	Inerti Ticino	Silica sand	
		Hydraulic lime	

Shear walls built in english bond

	DIMENSION [cm]										WEIGHT [kg]
	A	B	C	D	E	F	G	H	I		
Unreinforced											
SW1	166	115	115	166.3	138	189.5	139.7	189.3	24.5	-	
SW2	164	115.5	115	164.3	142.7	180.2	142	179	24.8	880.0	
SW3	153	116	114.7	153	141.5	178	141.3	178	25	877.0	
SW4	153	115	114.5	153.4	140.8	178	141	179	25		
SW5	153	115	115	153	141.2	179	141	179	25		
SW6	153.5	116.3	114.8	153	141	179.5	140.3	178.5	25		
SW7	153	116	115.5	164.5	141	179.2	141	178.5	25.5		
SW8	153.2	116	115.5	163.5	140.3	178	140.3	178	25		
SW9	153	115.5	115	153.5	142.5	180	142.7	180.7	25		
SW10	152.7	115	115.5	153	144	181	144.5	182	24.5		
SW11	152	116.3	115.3	153.5	144	182	144	183.5	25		
SW12	153	115.5	114.7	153.5	142	180	143	180.5	24.5		
SW13	153	115	114.7	153.2	142	180	143	180.7	25		
SW14	153.3	115.7	115.2	153	142.5	180.7	143	181	25		
SW15	153	115	115	153	143	181	143	181	24.5		

Classification of quasi-static tests

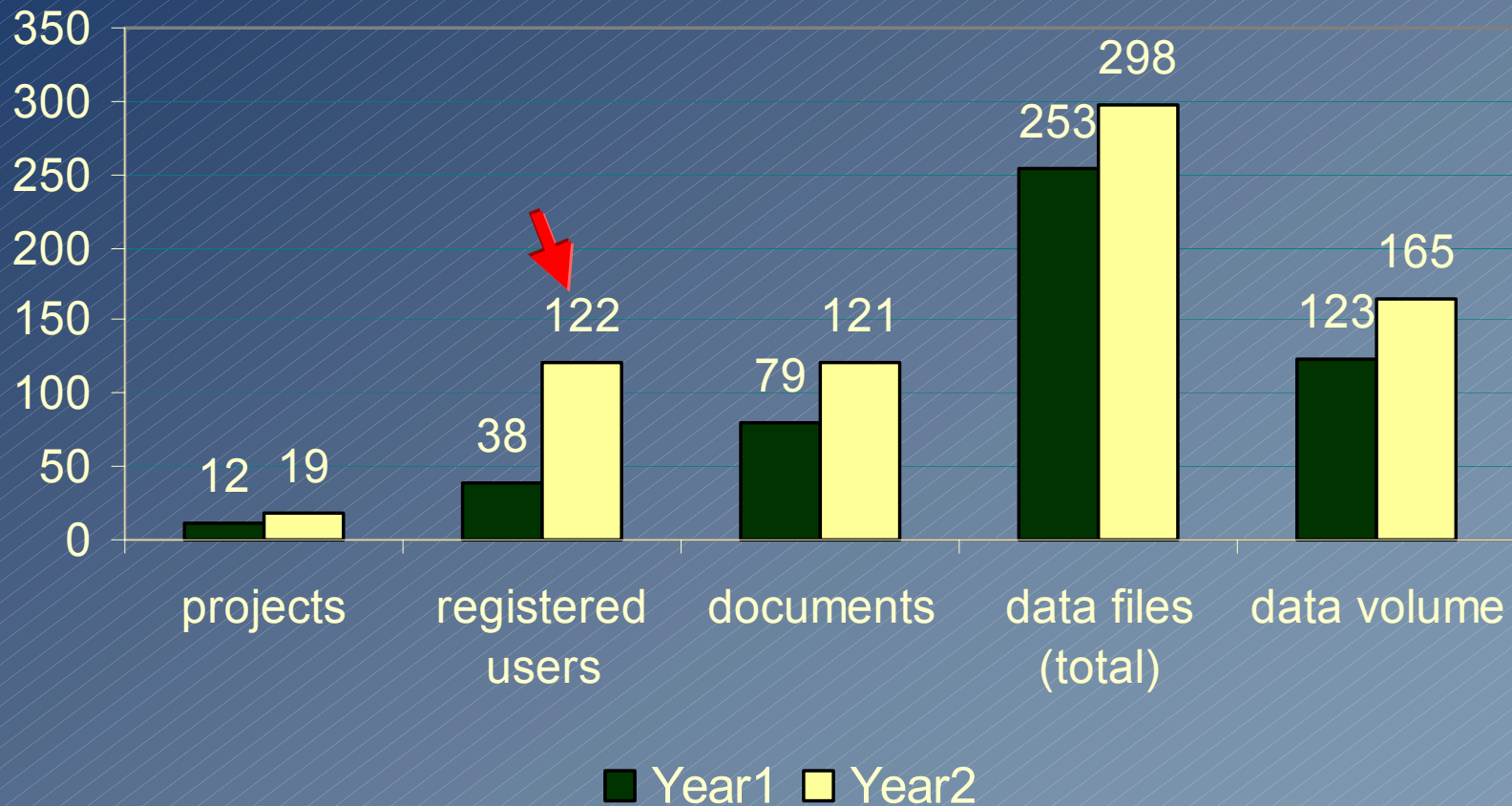
Laboratory results - Cyclic tests

Monotonic tests

Classification



Progress in the last year



WP2 Database - Present



Status Quo

✓ Know-How Transfer

19173 sessions in the last year

Papers from SAMCO Summer Academy and Workshops

Also international contributions

✓ Benchmark Tests

only few raw data -> stimulate data sharing in the future

IPR issues must be treated

WP2 Database – Present



Ongoing Task

Bridge Management Database

Objective:

problem solving tool for people working in the field of bridge management and maintenance. Give complete information about the **current practice** will be given.

- Investigated bridges
- Applied methods and techniques
- Models and algorithms
- Available tools and equipment
- Standards and certifications
- Services and service providers.

WP2 Database - Present



Future Tasks

- Treat IPR Issues
- Stimulate preparedness for data sharing




DEVELOPMENT OF A DOCUMENT EXCHANGE PLATFORM

<http://samdoc.jrc.it>

WP 2 Document Exchange Platform


vce

Password protected domain for the internal use



Document Exchange Platform

| SAMCO | DATABASE | Help |




The Document Exchange Platform is for the administration and the management of the SAMCO. Access to this platform is restricted to network partners and members.

Request a password : [mail to SAMCO](#)

User Name

Password

Sign-in



| Users | SAMCO | D

Agendas

- 01 - 15.03.2001 - Pre-Contract VCE
- 02 - 05.10.2001 - Kick Off Meeting VCE
- 03 - 27.11.2001 - Steering Committee VCE
- 05 - 11.04.2002 - Steering Committee VCE
- 06 - 12.04.2002 - Steering Committee VCE
- 07 - 12.04.2002 - 1st Workshop VCE

- CASCO-mailing list
- CDROM-Maps
- Contract
- Cost statements - members
- Cost statements - partners
- Database
- DB development
- EOI



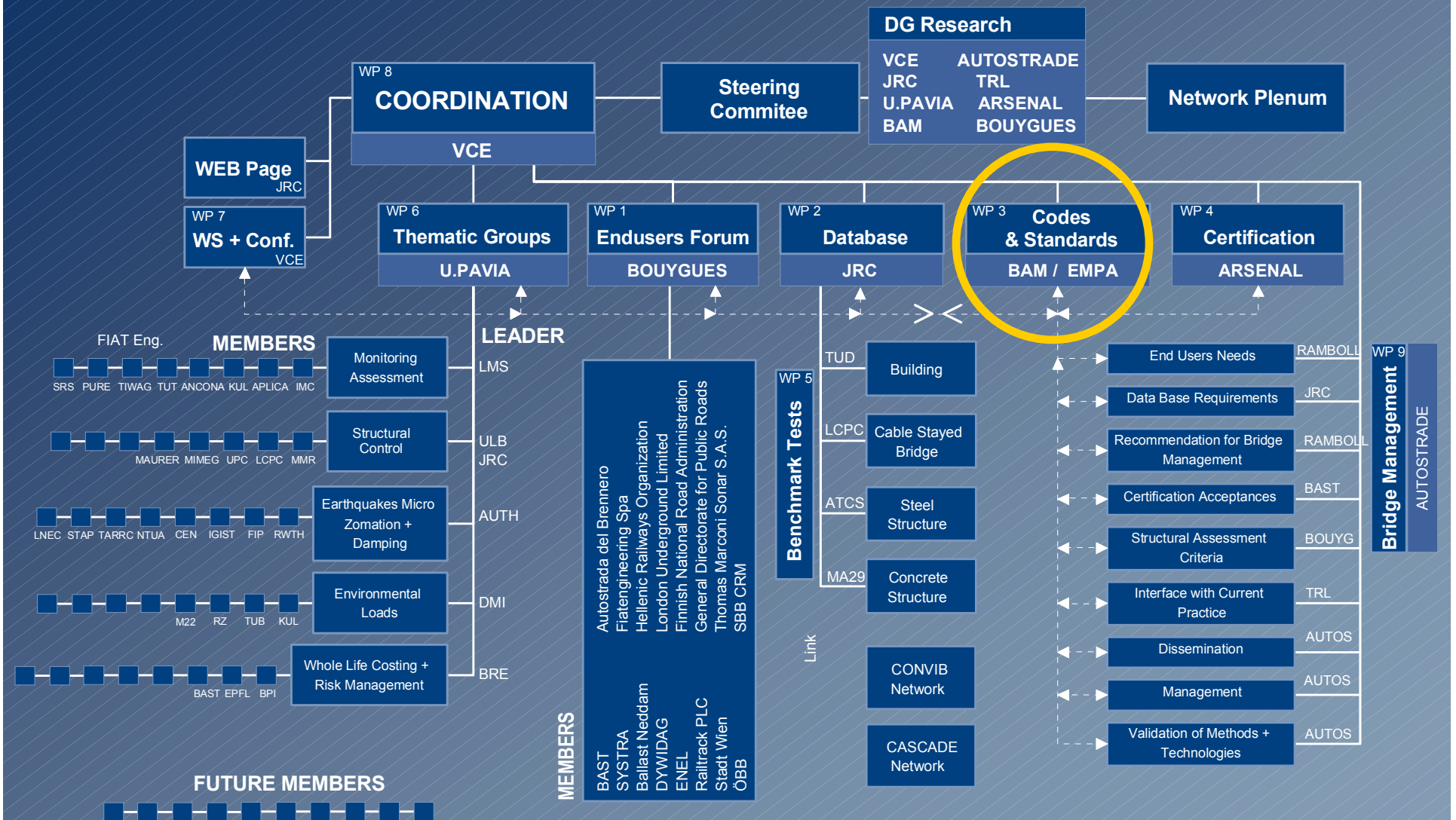
Status Quo

Full operation in the last year

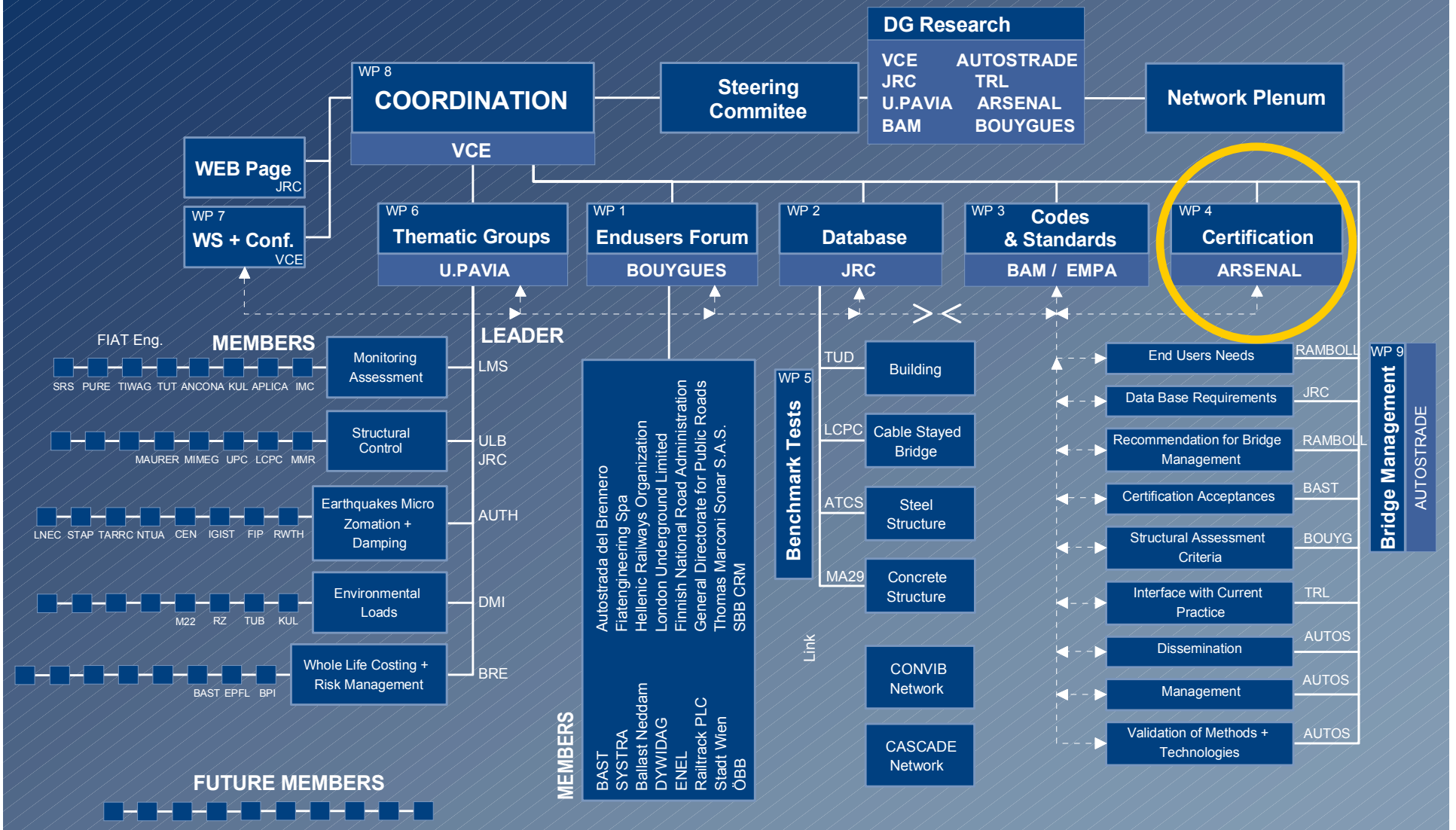
- registered users: **all SAMCO partners and members**
Unfortunately only few persons are using the tool!

- **110 documents**

for the internal management and administration of the network



SAMCO Organisation Chart WP3



SAMCO Organisation Chart WP4





Harmonization of data

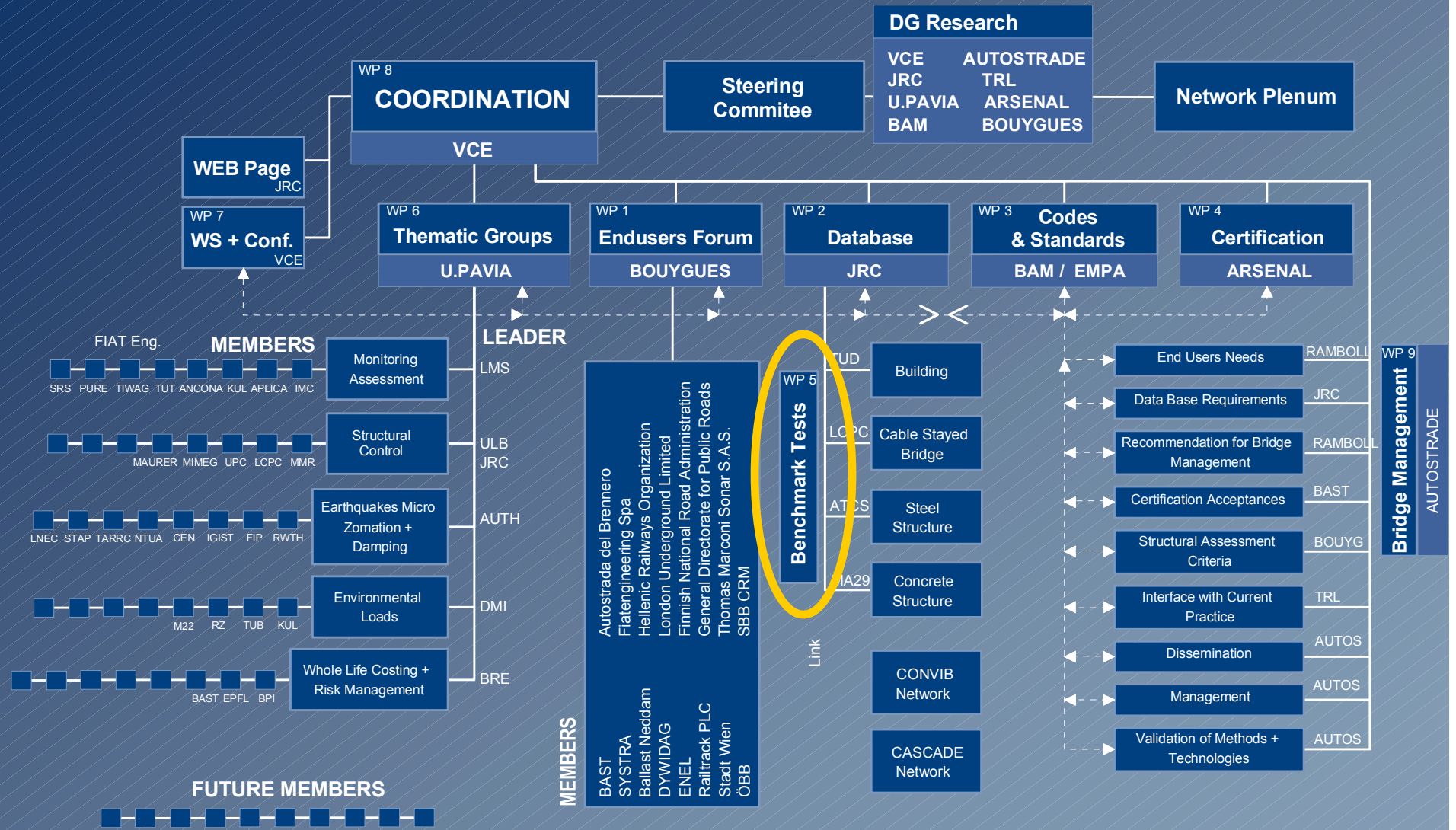
- Creation of binary data files
- Standardized metadata
- Distributed without restrictions via
 - SAMCO database
 - Green Eye Data Website
 - EU-MEDIN initiative

Green-Eye-Data



WP4 Certification

vce



SAMCO Organisation Chart WP5



High-rise Buildings in Frankfurt

Status:
Results Available



WP5 Benchmark Tests





Cable stayed Bridge “Elorn Bridge”, France

Installation of monitoring system



Status:
First Results

WP5 Benchmark Tests



Steel Bridge “Europabrücke” in Austria – Motorway bridge

Installation of a monitoring system

Status:
In Operation



WP5 Benchmark Tests



Concrete Bridge at “St. Marx” , Vienna

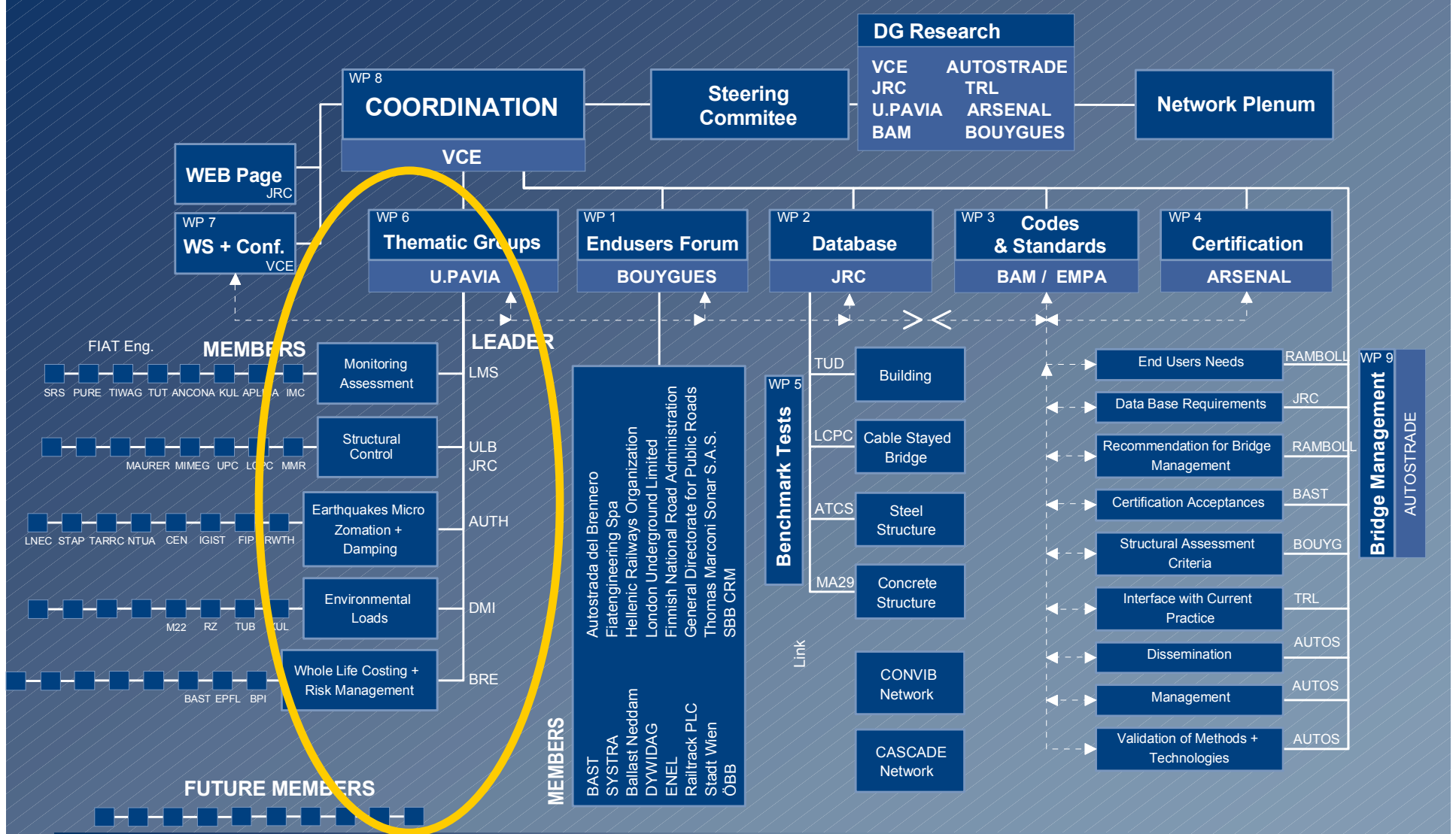
Installation of a new monitoring system

Status:
In Operation



WP5 – Benchmark Tests

vce



SAMCO Organisation Chart WP6



Building Damage at Golcuk



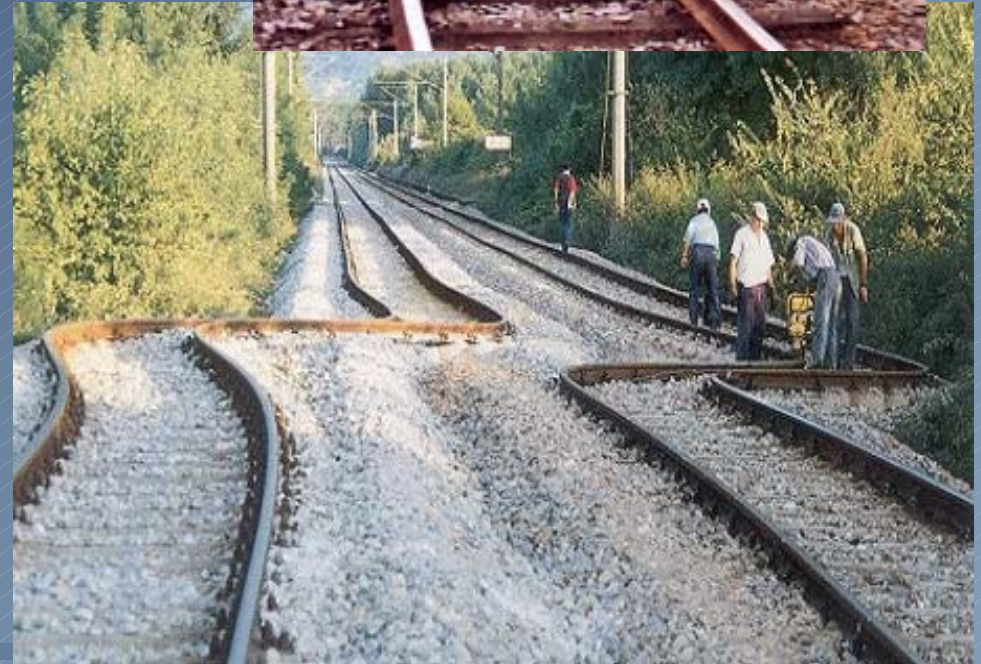
Seismic Re-evaluation NPP Temelin



Recent Problems on Bridges

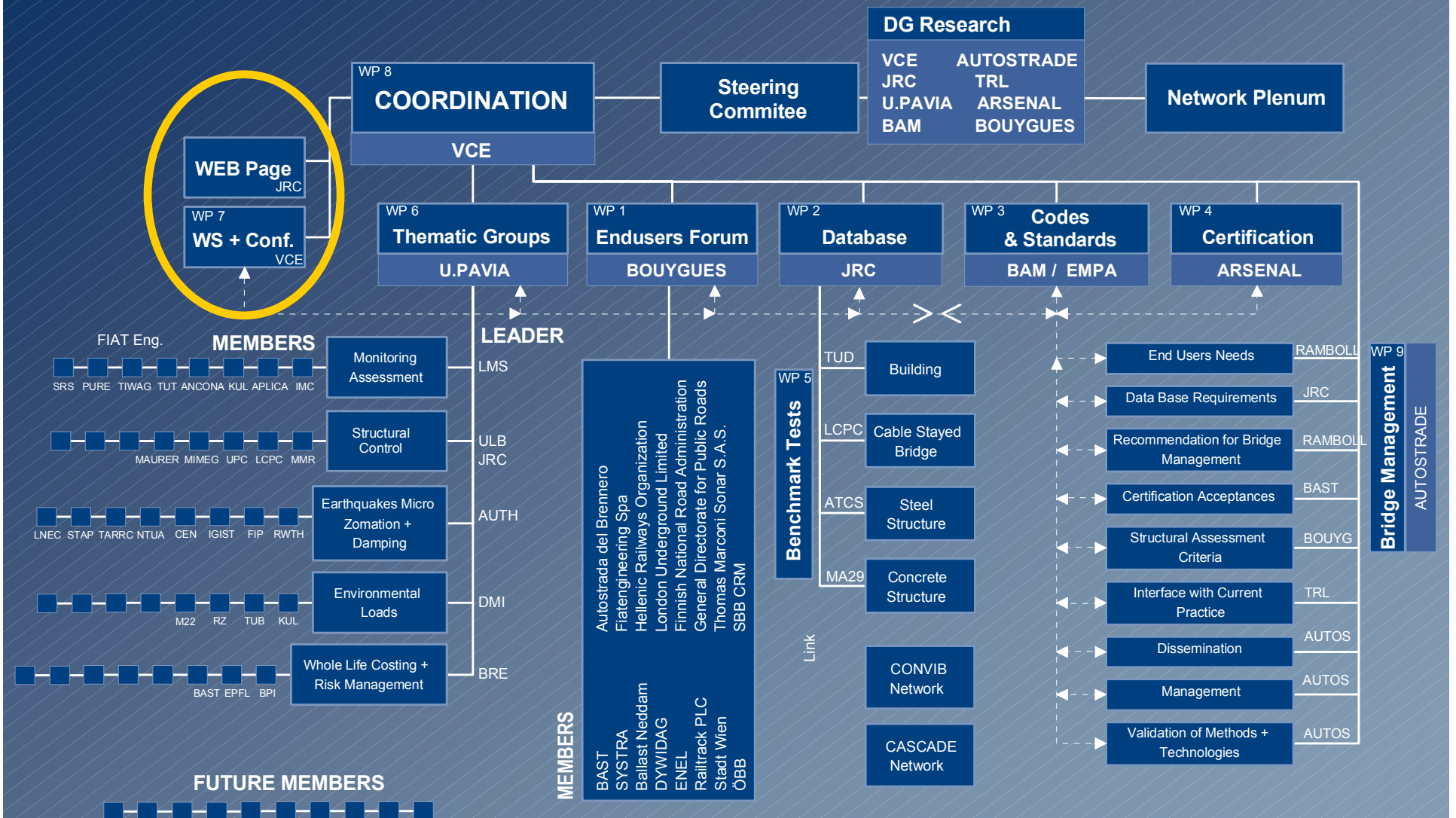


Examples from
Taiwan and Turkey



Railway related matters

vce



SAMCO Organisation Chart WP7

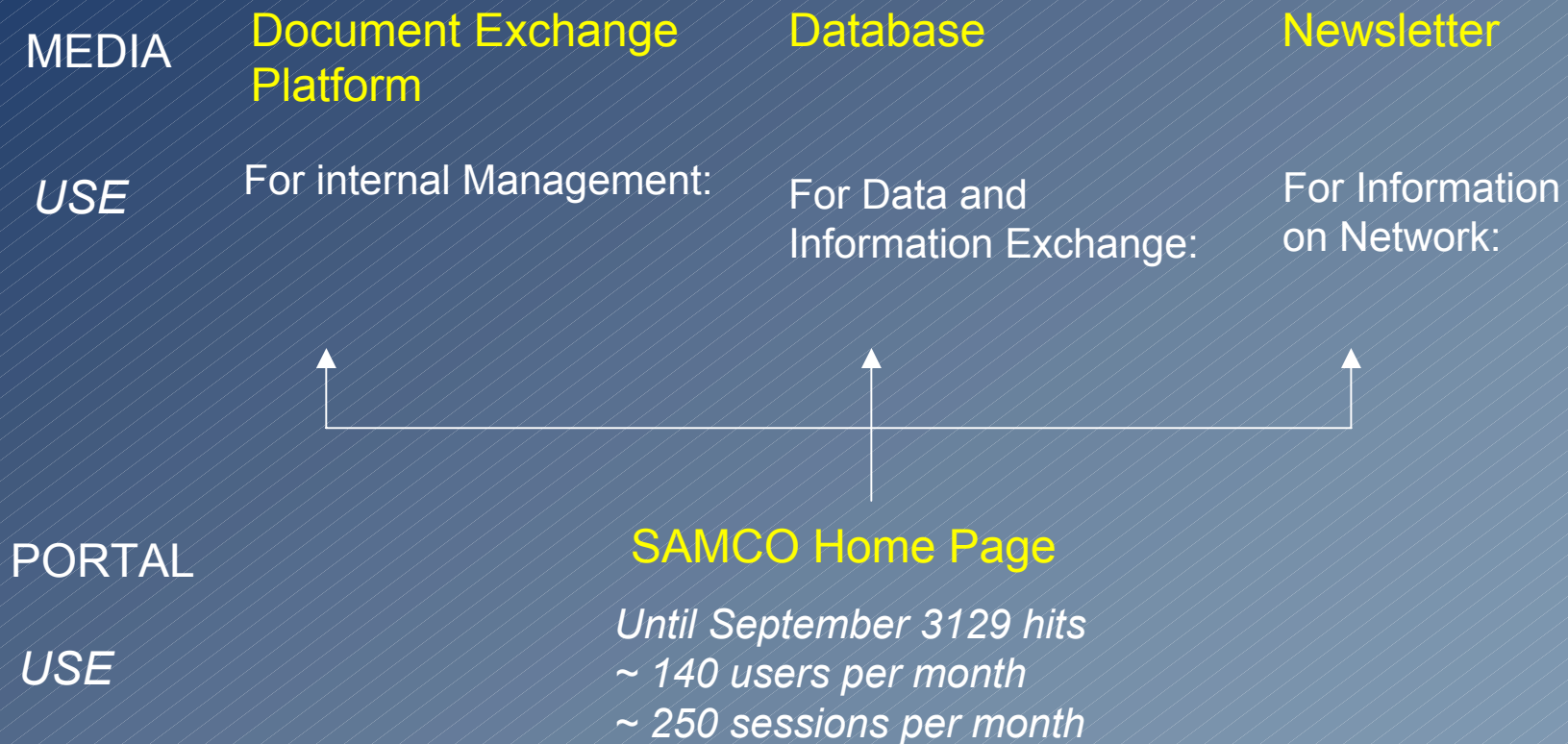




KNOWLEDGE MANAGEMENT

WP6 Knowledge Management





WP7 – Information Dissemination





SAMCO NEWS

Structural Assessment, Monitoring and Control

Building the SAMCO Network

Structural Assessment, Monitoring and Control has gained experience in our complex technical environment. The European Union supports the development and capacity building in these fields for the benefit of society. The SAMCO Network is established to concentrate the knowledge and to stimulate further development. A website is being created to provide an easy, clear of change. It encompasses and a help desk will exist to answer queries on the subject. The first Users Forum will help to bridge the gap between the European and other all the technologies in the field. The purpose of the letter is to place your interest in becoming a member of this Network. Contact about the network can be found enclosed with this letter or at the web page <http://www.samco.org>.

SAMCO offers you for free:

- Free data
- Benchmark tests
- New coding and standards
- Centre of knowledge
- State of the art technology



Newsletter

[newsletter](#) | [archive](#) | [home](#) | [site map](#)



SAMCO Newsletter

Periodisch herausgegeben von **VCE**

Want to contribute? Just send an e-mail and your comment will be published. Every company price <http://www.samco.org/news.htm>

Current Issue (Nr. 2):

Take action:

Get the current Issue:
[> Download pdf-File](#)

Browse through older Issues:
[> newsletter archive](#)

Make a contribution:
hgeier@vce.at

General

Project Overview

Organization

Calendar

Contributions!

ing at JRC

IAS Call

MCO

Summer

Practice: d Sound ch) RADE

Contact Webmaster - VCE-Vienna Consulting Engineers | last Update: 1 March 2002

<http://www.samco.org>

vce



SAMCO Newsletter



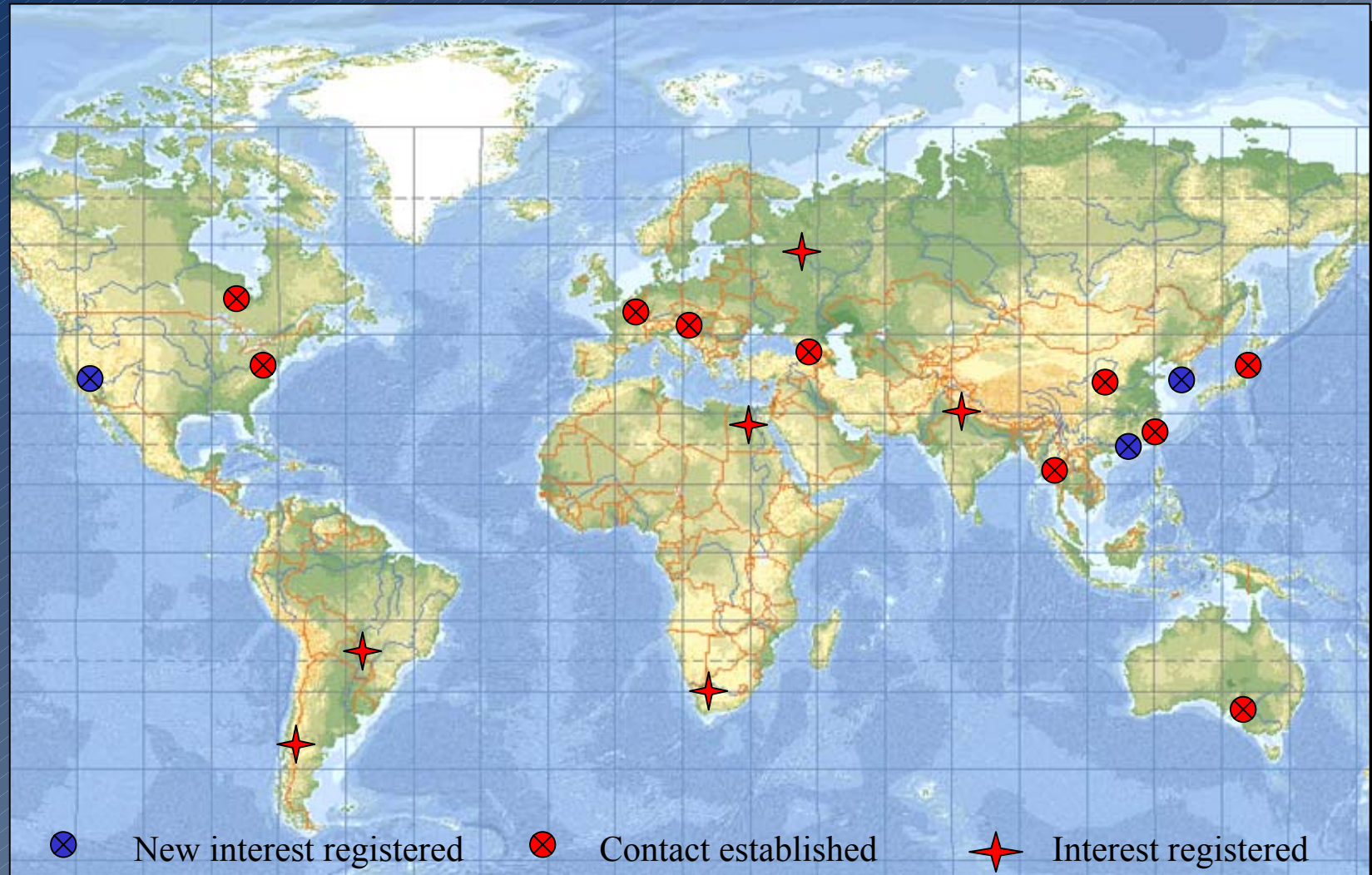
WP 7 Information Dissemination





International Cooperation

- A verbal agreement with the Australian research institute **CSIRO**
- Further contacts comprised the **NSF** project 03-512 on **sensors and sensor networks**
- Contact with the **Stanford University**, participating in a joint **FHWA-NSF** project on bridges
- Cooperation with the **U.S** and **Japan** seems to be most essential.



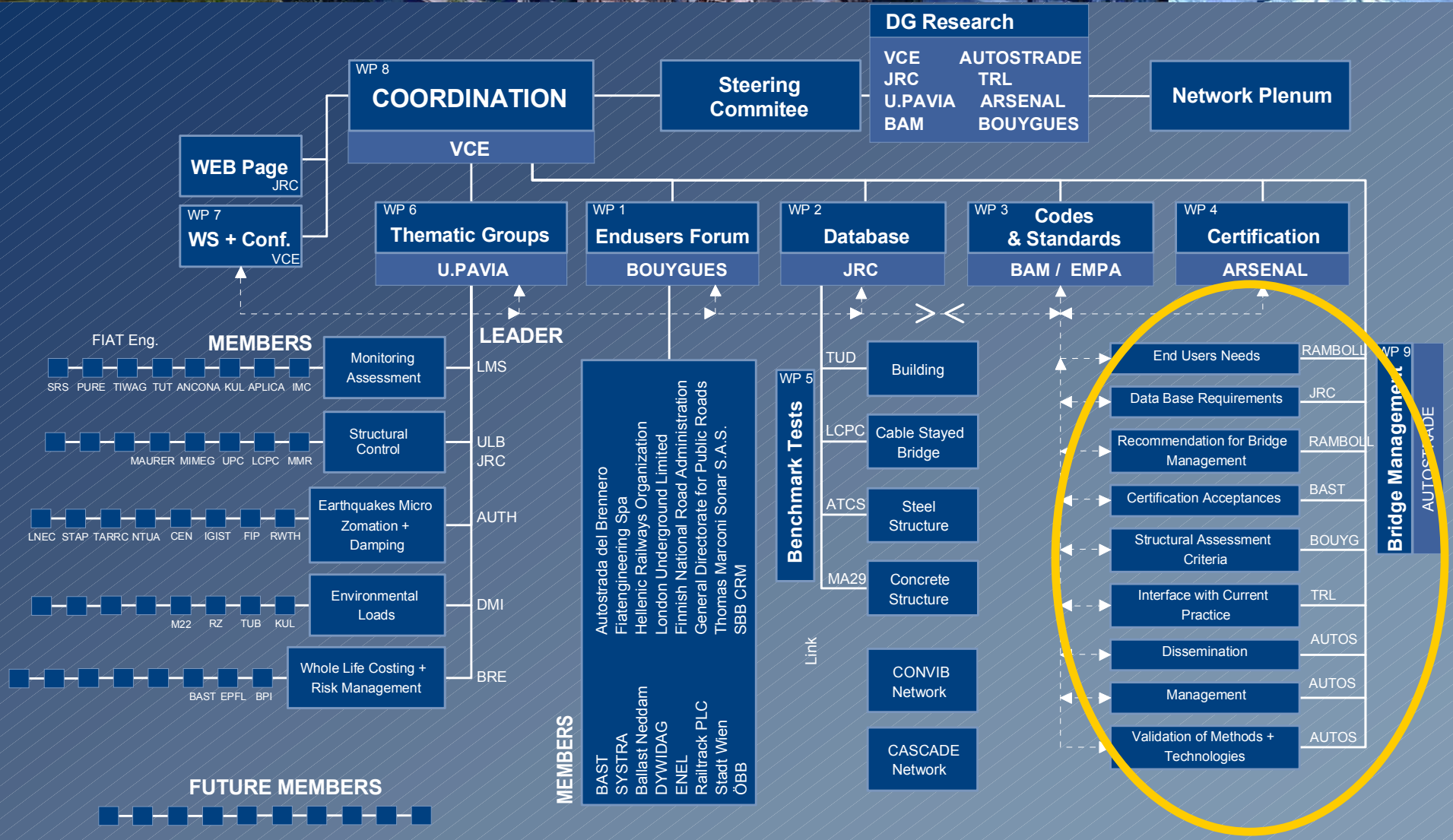
Intention: Global Initiative on SHM



International Cooperation



WP 7 Information Dissemination



SAMCO Organisation Chart WP9



- There is still a lot to do in construction related R&D
- Opportunities should be taken and tools for our work shall be developed
- There is a huge pile of existing works to be made visible and fit for reuse