CIMNE

1987-2012

International Center
for Numerical Methods
in Engineering

2011

Centres de recerca
de Catalunya

ACTIVITY REPORT
2011

GOVERNING BODIES

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UPC [1]

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UPC [1]

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UPC [1]

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Mechanical Engng. department, New Mexico, USA

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Universidad Nacional del Litoral, Santa Fe, Argentina

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UPC [1]

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Polish Academy of Sciences, Warsaw, Poland

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University of Stuttgart, Alemanya

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UPC [1]

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Universidad Politécnica de Madrid

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Universitat de Padova, Itàlia

Sr. Honorio Sierra
Universidad Politécnica de Madrid

Dr. Benjamín Suárez
UPC [1]

Dr. Jacques Périaux
Catedràtic UNESCO de Mètodes Numèrics en Enginyeria, UPC

[1] UPC: Universitat Politècnica de Catalunya
[2] CERCA: Centres de Recerca de Catalunya
[3] GC: Generalitat de Catalunya

CONTENTS

PRESENTATION

The International Center for Numerical Methods in Engineering (CIMNE) is a research organization created in 1987 at the heart of the prestigious Technical University of Catalonia (UPC) as a partnership between the Government of Catalonia and UPC. The aim of CIMNE is the development of numerical methods and computational techniques for advancing knowledge and technology in engineering and applied sciences.

CIMNE's headquarters are located at the heart of the Technical University of Catalonia (UPC) in Barcelona. CIMNE has also premises at different buildings in several campus of UPC. CIMNE has also offices in Spain in Madrid, Terrassa, Castelldefels and Ibiza. In 2005, CIMNE started its international expansion and since then has created the following international branches: CIMNE Latinamerica (Non profit Foundation in Santa Fe, Argentina); CIMNE USA (Non profit Corporation in Washington DC, USA); CIMNE Singapore (Non profit Corporation in Singapore) and soon it will also be present in Beijing (China).

CIMNE employs some 200 scientists and engineers who work in the different offices of CIMNE around the world (Barcelona, Madrid, Washington DC [USA], Singapore, Santa Fe [Argentina], Beijing [China]). CIMNE has also established a network of 28 Classrooms and Joint Labs in partnership with Universities in Spain and 10 Latin American countries.

The research and technology development (RTD) activities of CIMNE cover a wide spectrum of topics ranging from classical engineering fields such as civil, mechanic, environmental, naval, marine and offshore, food, telecommunication and bio-medical engineering, computer sciences and applied sciences such as material sciences, bio-medicine, computational physics, nature, social and economic sciences and multimedia sciences, among others.

Over the last 25 years, CIMNE has taken part in over 2000 RTD projects in cooperation with some 500 enterprises, universities and research centers worldwide.

The RTD activities of CIMNE are complemented by education and training activities via Master Courses, short courses and seminars, and CIMNE Coffee talks. CIMNE scientists supervise doctorate students in cooperation with several universities in Spain and worldwide.

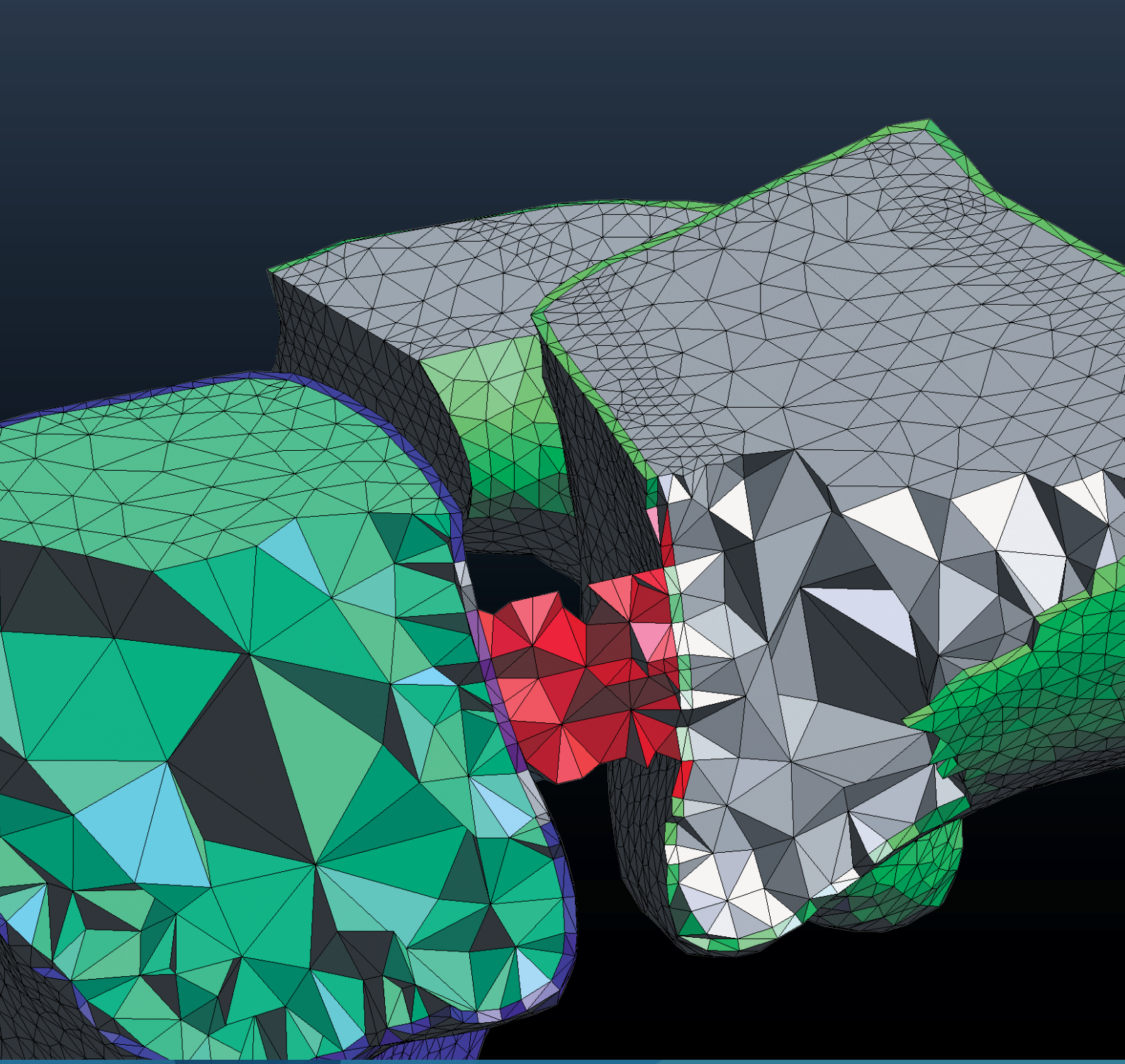
The publications Department of CIMNE publishes books, monographs, research reports and technical reports. The Congress Department of CIMNE organizes international conferences and workshops in the different areas of CIMNE. It has organized 140 conferences since 1987.

CIMNE has a vocation for transferring the scientific and technical outputs from RTD projects to the industrial sector. This is effectively carried out in cooperation with companies from different sectors that exploit and market CIMNE technology. CIMNE has actively promoted the creation of spin-off companies, some of them totally or partially owned by CIMNE, that play an important role in the industrialization and exploitation of CIMNE technology.

CIMNE maintains close cooperation links with many universities and RTD centers in the field of computational engineering and sciences worldwide. CIMNE has access to the computing facilities of several supercomputer centers in Spain and Europe.

CIMNE has been identified as one of the International Centers of Excellence on Simulation-Based Engineering and Sciences in a recent National Science Foundation (NSF) report [Glotzer et al., WTEC Panel Report on International Assessment of Research and Development in Simulation Based Engineering and Science. World Technology Evaluation Center (wtec.org), 2009].

The following sections briefly explain the activities of CIMNE on education, dissemination, research and technology transfer in 2011. We also describe the RTD lines of the CIMNE departments and the spin-off companies and products developed at CIMNE.



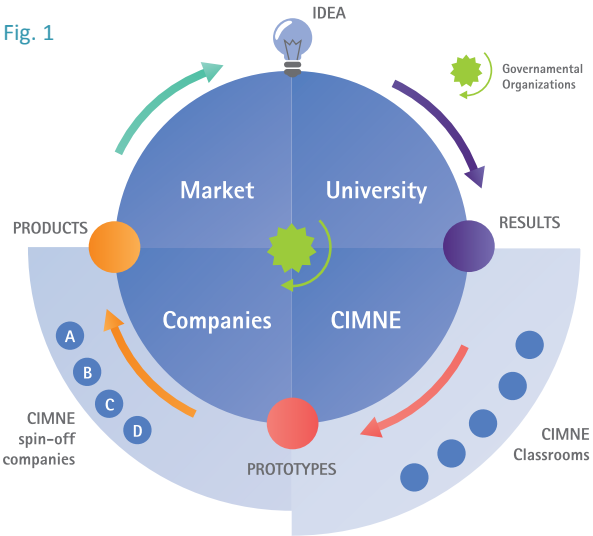
ABOUT CIMNE

A vocation for research and technology tranfer

The Cycle of Ideas

The mission and activity of CIMNE can be clarified if we examine what we call the Cycle of Ideas. Figure 1 shows a scheme of the transit of an idea, from the instant it originates until it is transformed in an industrial and commercial success. Similarly to what happens in biological and environmental cycles (the water cycle or the cycle of plants, for instance), the cadencies and tempos are very important in the Cycle of Ideas.

Fig. 1



Ideas (and here we basically refer to scientific advances) usually originate in university environments, where many professionals have the mission of thinking, studying, investigating and eventually discovering new areas of knowledge. The idea (the new discovery) would be equivalent to a seed, in the sense that even being very important (essential) it is far from becoming a fruit.

The idea matures in its "tour" by the first quadrant of the Cycle (the University) until it produces tangible results (thesis, papers, computer programs, physical devices, etc.). These "results", if they are not filed and protected, can be easily lost. This leads to undesirable repetitions or duplications.

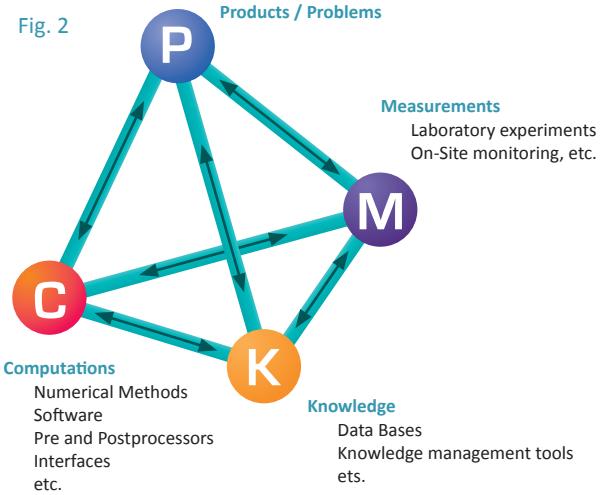
What to do then with the results of an idea? The best is that they can evolve until they reach the level of a prototype; i.e. until they became something (a software code, a system, a device, etc.) that works in a contrastable manner. The transit of a result to a prototype is not a trivial one and it demands an organization, efficient and capable staff and resources. The best alternative is, therefore, that the idea follows its route on specialized institutions, adjacent to the university, such as CIMNE, with the specific mission to transform knowledge into tangible things (prototypes). The prototype develops into a product within a company. The cycle follows with the marketing of the product and ends up with the reinvestment of part of the profits in the development of new ideas.

The magic tetrahedron

The overall RTD mission of CIMNE has evolved over the years towards providing comprehensive solutions for solving problems that affect human beings. This can be achieved by integrating existing knowledge in a particular field with quantitative information emanating for prediction methods (i.e. computational-based techniques) and experimental measurements. The link between these four concepts: the problem to be solved, computational methods, experimental methods and existing knowledge is well represented by the so-called magic tetrahedron shown in Figure 2 below.

Each of the nodes in the tetrahedron is connected to the other three by lines that represent information pipelines (possibly internet). The intensity of the flow along the lines that interconnect two nodes would vary depending on the requirements for solving the problem.

Fig. 2

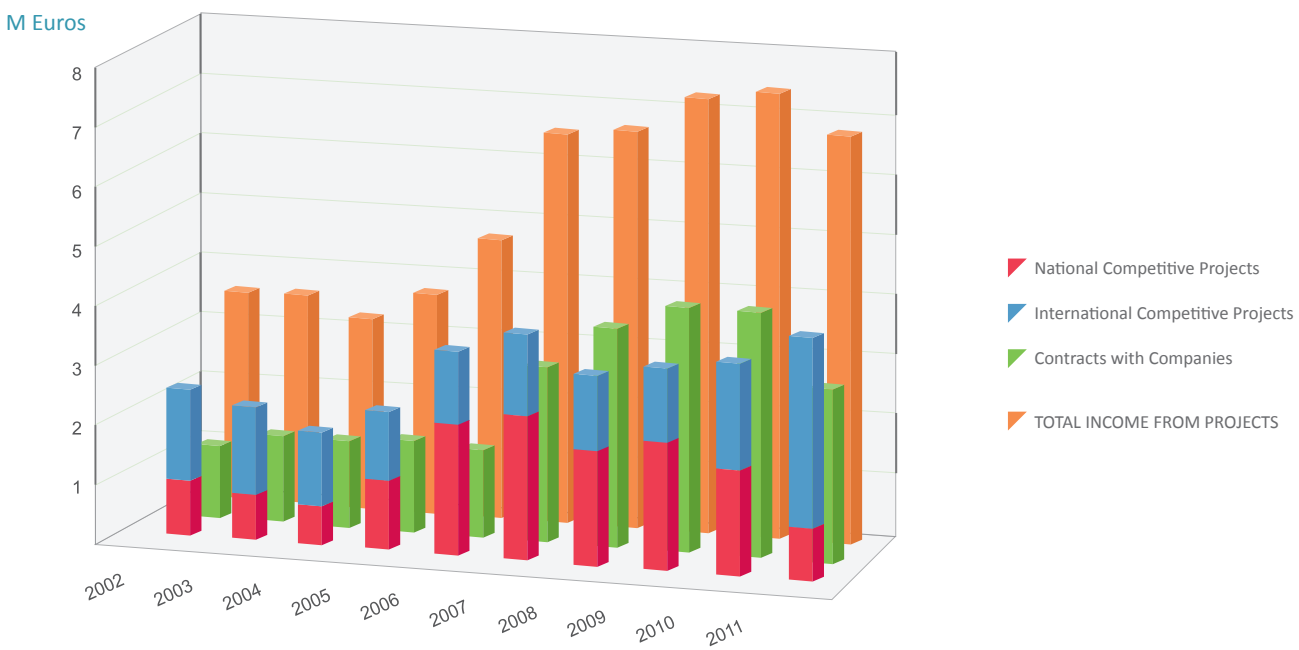


CIMNE in few numbers

	2011	From '87
Courses and Seminars	11	**480**
Conferences	17	**110**
Publications	54	**1333**
Books	7	**130**
Monographs	8	**193**
Research Reports	21	**370**
Techincal Reports	18	**625**
Educational Programs	0	**15**
Contracts with industry	71	**919**

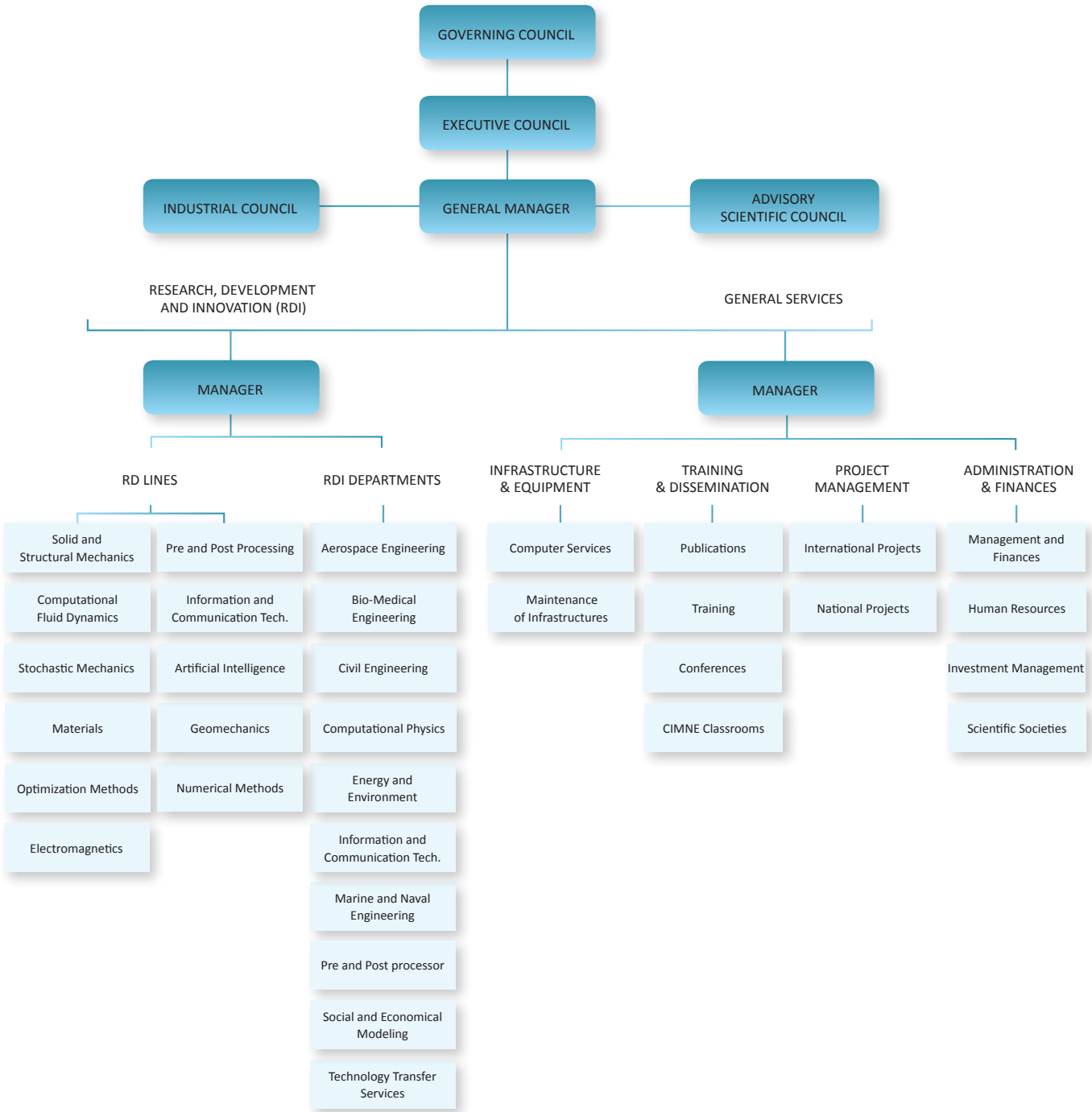
	2011	From '87
Creation of new companies	1	**4**
Competitive Research Projects	40	**571**
European Projects	11	**177**
National Projects	29	**391**
International Projects	0	**3**
Staff		**226**
Post Doctoral Researchers		**44**
Affiliated Scientists (UPC)		**14**
RTD staff		**92**
PhD Students		**42**
Administration and services staff		**34**

Income from projects



Organization chart

The structure of CIMNE will evolve in accordance with the following chart:



DIRECTOR	VICE-DIRECTOR
OÑATE Eugenio	UBACH Pere-Andreu

Research Development and Innovation area

RESEARCH STAFF

The number of scientists working at CIMNE during 1987-2011 and in 2011 is listed below, grouped by country of origin.

	2011	87-11
Argentina	10	59
Australia	1	3
Austria		2
Belgium	2	5
Bolivia		3
Brazil	3	8
Bulgaria	1	1
Chile	5	8
China	1	7
Colombia	13	18
Costa Rica	1	1
Cuba	2	6
Czech Republic	1	6
Dominican Republic	2	2
Ecuador	1	2
Egypt		1
Ethiopia	1	1

	2011	87-11
France		12
Germany	3	28
Greece		1
Holland	1	4
Hungary		1
India	1	11
Iran	4	7
Ireland		1
Italy	10	18
Japan		4
Korea		1
Luxembourg	1	1
Mexico	6	16
Morocco	1	2
Panama		1
Peru	1	4
Philippines	1	1

	2011	87-11
Poland	1	3
Portugal		2
Romania	1	5
Russia	1	1
Serbia		2
Slovenia	1	1
Spain	142	212
Sweden		1
Switzerland		1
Thailandia		1
Tunisia	1	1
Turkey	1	2
United Kingdom	9	1
United States	2	3
Uruguay	2	2
Venezuela	2	6
Vietnam		1
TOTAL	226	494

SENIOR SCIENTISTS

IDELSOHN Sergio Rodolfo — Icrea Research Professor

PERIAUX Jacques Francis — UNESCO Prof. on Num. Met. Eng.

AFFILIATED SCIENTISTS FROM TECHNICAL UNIVERSITY OF CATALONIA (UPC)

AGELET Carlos
ALONSO Eduardo
BARBAT Alex
BUGEDA Gabriel
CANET Juan Miquel
CERVERA Miguel
CODINA Ramón
CHIUMENTI Michele
DÍEZ Pedro
GENS Antonio
HUERTA Antonio
MIQUEL Juan
OLIVELLA Sebastià
OLIVER Xavier
OLLER Sergio H.
OÑATE Eugenio
PRÍNCIPE Ricardo Javier
SUÁREZ Benjamín

POST DOCTORAL RESEARCHERS

ARNAU Pedro A.
BADÍA Santiago I.
BAIGES Joan
BARBIERI Manuela
CANTE Juan Carlos
CARBONELL Josep Maria
CARREÑO Liliana
CERROLAZA Miquel
DADVAND Pooyan
DANOV Stoyan Viktorov
DI CAPUA Daniel
DI MARIANO Alessandra
FLORES Roberto
GAMBOA Gonzalo
GARCIA Julio
GARITTE Benoit
GARRIGA Adan
GONZALEZ Jose Manuel
HANGANU Alex
HOFFMANN Christian Amadeo
JORDANA Francesc De Paula
LEE Dong Seop
LÓPEZ Roberto
MAIDANA Augusto
MARTI Jaime Emilio
MARTI Julio M.
MARTÍN Alberto Francisco
MARTINEZ Javier
MOKNI Nadia
MORA Francisco Javier
NADUKANDI Prashanth
OTIN Rubén
PINYOL Nuria
PONS Jordi
RASTELLINI Fernando
ROJEK Jerzy
ROMERO Enrique
ROSSI Riccardo
RYZHAKOV Pavel
SALOMÓN Omar
SERVAN Borja
VARGAS Pablo
WEYLER Rafael
ZÁRATE Francisco

RTD STAFF

ALLONA Miguel
ARASA Jordi
AULEDA Meritxell
AVILA Matias
BLANCO Alejandro
BORDONE Maurizio
CAMPÀ Francesc
CARBAJOSA Jesus
CARBONELL Jordi
CARLES Albert
CASALINUOVO Josefa
CASANOVAS Jorge
CASTAÑO Victor
CASTELLS Aleix
CELADA Ulric
CELIGUETA Miguel Angel
CID Alexis
CIPRIANO Javier
CIPRIANO Jordi
COLL Abel
COMA Marti
CORTÉS Fernando
DAVILA Mariolly
DAVIS Meredith France
DEU Amadeu
DI FONZO Mario
DIEGO Javier
ESCOLANO Enrique
FABREGAS Gerad
FERNÁNDEZ Luis Jorge
FERRIZ Alberto
FRANZOLINI Pablo Martin
FRUITOS Oscar
GAMIZ Alejandro
GÁRATE Francisco Javier
GARCIA Daniel
GENS Nuria
GIMENEZ Raúl
GONZALEZ Nubia
GONZÁLEZ Ricardo Adrián
IRAZÁBAL Joaquín
JEREZ Francesc
JIMENEZ Jordi
KAMRAN Kazem
KOUHI Mohammad
KUHNT Andreas
LABRA Carlos Andres
LARESE DE TETTO Antonia
LATORRE J. Salvador
LLACAY Bárbara
MARTÍNEZ Ana
MAS Ricard
MELENDO Adrià
MESEGUER Álvaro
MIRÓ Jaume
MOLINA Gabriel
MONROS Anna
MOR Gerard Jordi
MORAN Rafael
MUÑOZ Christian
NAVARRO Naeria
OÑATE José Luis
ORTEGA Enrique
PASENAU Miguel
PEFFER Gilbert
PÉREZ José
PÉREZ Jorge Suit
PÉREZ Daniel
PINTO Andrés E.
PRIEGUE Angel
RAMÓN Anna
RENDA Fabio
ROCA Javier
ROETTING Tobias
ROIG Carlos A.
SAGRISTÀ Sonia
SALAZAR Fernando
SALICHS Sergi
SAN MAURO Javier
SÁNCHEZ Hans Paul
SAU Núria
SCAMUZZI Marco
SOUDAH Eduardo
TARRAGÓ Daniel
TENA Alberto
TOPRAK Erdem
TOUS Javier
TRUCO Jordi
UBACH Pere Andreu
VALERO Sergio
VILANOVA Ramon
ZAMBRANO Gustavo Eduardo
ZAVALA María Dolores
ZINGGERLING Claudio

PHD STUDENTS

ABADIAS David
ARRUFAT Ferran
BARBOZA Ramón
BECKER Pablo Agustín
BOZKUS Hayrullah Kerim
CAICEDO Manuel Alejandro
COLOMES Josep Oriol
COMELLAS Ester
COTELA Jordi
DE POURQ Katrien
DE SIMONE Silvia
DIALAMISHABANKAREH Narges
ESPINOZA Hector Gabriel
FERRER Alex
FRANCI Alessandro
GARCIA Maria Del Mar
GAVIDIA Giovana Elizabeth
GERMAN Arnel
GÓMEZ Rodrigo Andrés
GRAN Meritxell
GURKAN Ceren
HAIDER Jibran
HIERRO Alba
HOSSAIN Md Naim
JARAUTA Alexandre
JURADO Anna
KAWAI-THEVENIN Aude
LESMANA Herry
LODI Chiara
LONDOÑO Juan Pablo
NUÑEZ Francisco
ORTIGOSA Inmaculada
OTERO Fermin Enrique
PLANAS Ramón
POYA Roman
RAHEEL Ahmed
RODRIGUEZ Juan Manuel
SAMAT Sergio
SCHEIBER Laura
SERRANO Alejandro
SILVA ARAUJO Virginia
VAHER Sander
ZAKHARI Monica
ZHAN Zhifeng

General services area

CIMNE's administration staff has specialized to cope with the increasing needs of CIMNE in a wide range of areas.

The following persons form CIMNE's administration team:

GENERAL SERVICES MANAGER

VICIANA Mª Ángeles

DIRECTOR SECRETARY

ALBERICH Mercè

SECRETARIAT AT CASTELLDEFELS

GARCIA Núria

ADMINISTRATION AND FINANCES

LINARES Mª Carmen
CATALAN Valentín
DE LA ROSA Francisco José
BERNAL Thaydy L.
LUQUE Cristina

PROJECT MANAGEMENT

FONT Anna
PÉREZ Sandra
DU PENHOAT Maëlle
CASANOVA Roger
CUADRAT Daniel
HERRERO Elena
MARTÍN Elena

CONGRESS AND WORKSHOPS

FORACE Cristina
ARANDA Laia
BAZZANELLA Alessio
POTOKAR Iztok
SILHANKOVA Alicia Marcela

PUBLICATIONS

SAMPER Mª Jesús
STILMANN Adriana
LÓPEZ Sonia
ESCLUSA Clara

CIMNE CLASSROOMS

GARCÍA-SICILIA Francisca
MORA Javier
SAGRISTÀ Sònia

SYSTEMS

ALONSO Miguel
BURGOS Alberto
GONZÁLEZ David
LOZANO Joaquim
MOLL Felip

MASTER COURSE

ZIELONKA Lelia
OLEA Marga

PERSONNEL

LINARES Merce
LATORRE Irene

Visiting scientists

CIMNE promotes the visits of professors and scientists from around the world working on research and educational projects.

List of visiting scientists in the year 2011:

Prof. Masayoshi Akiyama,
Kyoto Institute of Technology, JAPAN

Prof. Olivier Allix,
LMT, École Normale Supérieure (ENS) de Cachan, FRANCE

Prof. Francisco Armero,
The University of California at Berkeley, USA

Prof. Pinhas Z. Bar-Yoseph,
Faculty of Mechanical Engineering, ISRAEL

Prof. Gustavo Bono,
Universidade Federal de Pernambuco - UFPE, BRASIL

Prof. Thomas E. Boothby,
The Pennsylvania State University, USA

Prof. Bijan Boroomand-Ghahnavieh,
Isfahan University of Technology, IRAN

Prof. Omar Darío Cardona,
Universidad de los Andes, COLOMBIA

Prof. Alberto Cardona,
Universidad Nacional del Litoral, ARGENTINA

Prof. Miguel Cerrolaza,
Universidad Central de Venezuela, VENEZUELA

Prof. Carlos A. Felippa,
University of Colorado at Boulder, USA

Prof. Fernando Flores,
Universidad Nacional de Córdoba, ARGENTINA

Prof. Michael Ghosn,
University of New York, USA

Prof. Sergio Idelsohn,
Universidad Nacional del Litoral, ARGENTINA

Dr. Alex Lee Khueh Hock,
CIMNE-Singapour, SINGAPORE

Prof. Rainald Löhner,
The George Mason University, USA

Prof. Arthur Marczewski,
Institute of Fundamental Technological Research, POLAND

Prof. Norberto Nigro,
CIMEC-INTEC, ARGENTINA

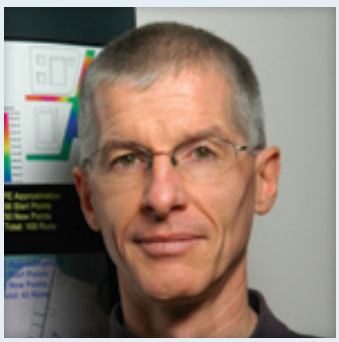
Prof. Jacques Périaux,
Càtedratic Unesco de Mètodes Numèrics en Enginyeria, FRANCE

Dr. Mauricio Pohl,
Universidad Centroamericana “José Simeón Cañas” UCA, EL SALVADOR

Prof. Vivian Andrea Ulloa,
Universidad Politécnica de Valencia, ESPAÑA

Prof. Marcelo Venere,
Universidad Nacional del Centro de la Provincia de Buenos Aires, ARGENTINA

Prof. Carlos A. Felippa



Prof. Rainald Löhner

Prof. Miguel Cerrolaza


España
Washington DC
Cuba
México
Venezuela
El Salvador
Brasil
Colombia
Perú
Argentina
Santa Fe
Chile
Pekin
Singapore

WHERE WE ARE

Branches in Spain

Background and location

The International Center for Numerical Methods in Engineering (CIMNE) was created in 1987 under the auspices of UNESCO by the Generalitat de Catalunya (the autonomous government of Catalonia). CIMNE has its own juridical status as a consortium between the Generalitat de Catalunya and the Universitat Politècnica de Catalunya.

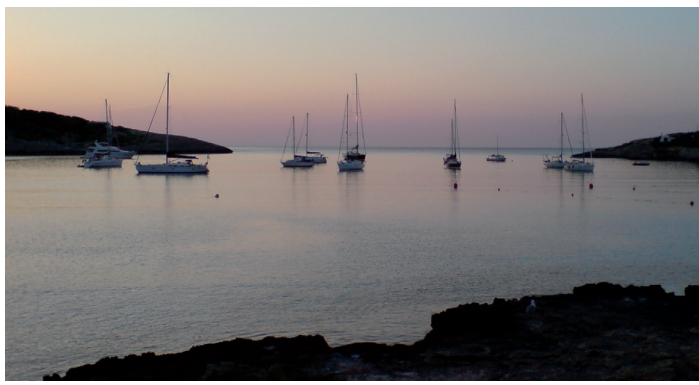
The central offices of CIMNE cover an area of 800m^2 in one of the buildings of the North Campus of the Technical University of Catalonia (UPC) in the heart of the Escola Tècnica Superior d'Enginyers de Camins, Canals i Ports (School of Civil Engineering).

CIMNE also has offices in Terrassa, Madrid, Castelldefels, Ibiza, Washington, China, Santa Fe, Singapore and space for RTD and training activities in the 28 CIMNE Classrooms distributed around the world.

CIMNE has a branch in the following Spanish cities:

BARCELONA — *Picture: Port of Barcelona*

MADRID — *Picture: Gardens of El Escorial, Madrid*



IBIZA — *Picture: Creek in Ibiza*

CIMNE - BARCELONA

International Center for Numerical Methods in Engineering
The main branch of CIMNE is in Barcelona, it was created in 1987. CIMNE - BARCELONA covers an area of 800m^2 in the North Campus of the UPC.

Edifici C-1, Campus Nord UPC - Gran Capità, s/n
08034 Barcelona, Espanya
Tel. 34 - 93 205 70 16 - Fax 34 - 93 401 65 17
cimne@cimne.upc.edu - www.cimne.com

Aereal view of CIMNE - Barcelona

Main entrance of CIMNE - Barcelona

Reception

CIMNE - TERRASSA

CIMNE - TERRASSA was created in 2001. CIMNE - TERRASSA covers an area of 150m^2 and houses the department of Building Energy and Environment (BeeGroup).

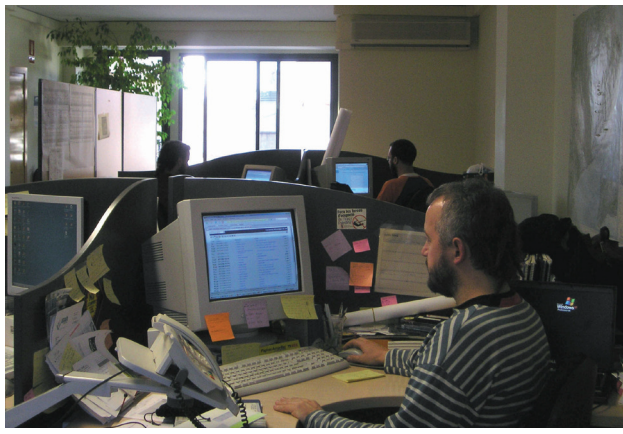
Dr. Ullés, 2, 3 - 08224 Terrassa, España
Tel. 34 - 93 789 91 69
Fax. 34 - 93 788 31 10

beegroup
building energy and environment

CIMNE

Building housing Bee-Group in Terrassa

Working area



Working area

CIMNE - MADRID

On May 2008 CIMNE inaugurated a new office in Madrid situated in the center of the city. It has 150m^2.

CIMNE - MADRID
Paseo General Martínez Campos nº41
28010 Madrid, España
Tel. 34 - 91 319 13 59

Building

Working area

Reception - Entrance hall

CIMNE - IBIZA

In 2009 CIMNE inaugurated the CIMNE - IBIZA branch. It has 80m^2 and is located in city of Ibiza.

Bisbe Azara, nº4 3º-2ª
07800 Eivissa
Tel. 34 - 971 93 11 94

CIMNE - IBIZA Main entrance

Working area

Ibiza beaches

CIMNE - CASTELLDEFELS

CIMNE-CASTELLDEFELS was inaugurated on October 15th 2008. The facilities are located in the Campus of the UPC in Castelldefels, in a new building of 3000 m^2 constructed and shared in collaboration with the UPC.

Campus del Baix Llobregat
Edifici C3, despatx 303, 3ºpl.
Esteve Terradas n. 5 - 08860 Castelldefels, Barcelona
Tel. 34 - 93 413 41 86

Classroom

Meeting room

Lounge

Main entrance

International Branches

During the last years CIMNE has expanded its presence in different geographical areas in the world. The objective is to participate in international RTD projects in cooperation with research centers, universities and enterprises of different countries.

In the following lines we briefly present the recent experiences in the establishment of CIMNE in Latin America, USA, Singapore and China.

Washington, USA

China

Santa Fe, Argentina

Singapore

CIMNE in Latin America

The presence of CIMNE in Latin America was initially implemented via the CIMNE Classroom Network. This network has 18 Classrooms in different Latin American countries (Argentina (4), Mexico (3), Brasil (2), Colombia (2), Cuba (1), Chile (1), El Salvador (1), Perú (1) and Venezuela (3)).

The formal establishment of CIMNE in Latin America was achieved by the creation of a Foundation to foster the activity of CIMNE in that region.

This new CIMNE-Latin American Foundation (FCL) is located in the city of Santa Fe (Argentina), the place where the first CIMNE Classroom in the Latin American region was created in cooperation with the University of Litoral. The activity of CIMNE in the region is coordinated by Mr. Piazzese; civil engineer and CIMNE researcher from January 2002 to March 2007.

RTD PROJECTS

SADMA - Desarrollo de un sistema de apoyo a la decisión para monitorización y gestión sostenible de edificios históricos del patrimonio cultural usando nuevas tecnologías. AECID-Agencia Española de Cooperación Internacional para el Desarrollo.
01/01/2011 - 31/12/2011

VIS - Estudios de vulnerabilidad por inundaciones en la región hidrográfica Mandinga-Comapala (El Salvador). AECID-Agencia Española de Cooperación Internacional para el Desarrollo.
01/01/2011 - 31/12/2011

CAPRA 2.0 - Probabilistic disaster risk assessment. THE WORLD BANK GROUP
24/09/2010 - 31/01/2012

Risk Financial Protection - Technical Assistance to Design a Risk Financial Protection Strategy, a Specific Financial Instrument and a Policy Recommendation for Urban Water and Sanitation Utilities in Peru. THE WORLD BANK GROUP.
20/09/2010 - 20/05/2011

GUYANA - Design and Implementation of an Integrated Disaster Risk Management Plan (ATN/OC-11718-GY) Risk Indicators and Flood Risk Evaluation for Guyana.
01/11/2010 - 01/11/2011

GEM - Global Earthquake Consequences Database. THE GEM FOUNDATION.
15/11/2010 - 15/11/2013

FCL meeting room


J. Piazzese Director of FCL

CIMNE in the US

CIMNE has developed a number of RTD projects funded by several US organizations such as the Interamerican Development Bank (BID), the World Bank and the Office for Naval Research, among others.

In 2010 CIMNE created a non-profit corporation named CIMNE-USA with the aim of fostering the scientific and technological activities of CIMNE in that country. The new organization is located in the city of Washington DC and is jointly directed by Mrs. Francisca García-Sicilia and Dr. Dave Cranmer. Mrs. García-Sicilia has been a director of international liaison activities in CIMNE for the last five years. Dr. Cranmer is a senior scientist of the National Institute of Standards and Technology (NIST) in the US and advisor of many companies.

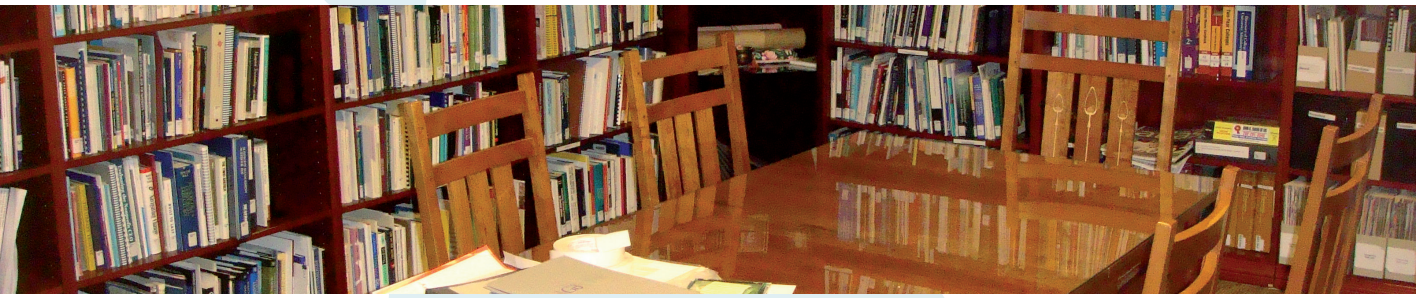
In the period 2009-2012 CIMNE-USA has taken part in different RTD projects in the US in cooperation with universities, research centers and enterprises in that country.

RTD PROJECTS

T-CRAFT - EVALUATING PERFORMANCE OF THE AIR CUSHION, AND SEALS OF A SES T-CRAFT IN THE PRESENCE OF WAVES; AND MANEUVERING IN SHALLOW WATERS
01/04/2010 - 31/03/2012

Modeling and simulation of the drill bit region. WEATHERFORD INTERNATIONAL INC.
23/12/2010 - 30/06/2011

Risk Financial Protection - Technical Assistance to Design a Risk Financial Protection Strategy, a Specific Financial Instrument and a Policy Recommendation for Urban Water and Sanitation Utilities in Peru. THE WORLD BANK GROUP.
20/09/2010 - 20/05/2011



Meeting-room in CIMNE-USA

C. Callejón

D. Cranmer

CIMNE in Singapore

In recent years CIMNE has developed a close relationship with the Institute of High Performance Computing (IHPC) of Singapore. IHPC is a prestigious RTD organization belonging to the A*Start National Agency of the Singapore Government. This relationship has lead to the signing of a cooperation agreement between CIMNE and IHPC aiming to the development of joint RTD projects.

Several visits and interchange have taken place from 2009 between scientists from CIMNE and IHPC. The visits have served for defining a number of RTD projects of interest to both organizations. We note the course on the use of the CIMNE codes GiD and Kratos taught at the IHPC premises on October 2009 by CIMNE scientists Abel Coll, Enrique Escolano and Pooyan Dadvand.

The increasing cooperation between CIMNE and IHPC has motivated CIMNE to create a new organization in Singapore, named CIMNE-Singapore, with the objective of fostering RTD activities and projects in the South East Asia region in cooperation with IHPC. The director of CIMNE-Singapore is Dr. Alex Lee, a scientist in IHPC.

RTD PROJECTS

NITTO - An integrated Software System for Modelling and Simulating Blood Flow in the Cardiovascular System to Determine the Mechanical Properties of the Vessel Walls.
NITTO DENKO
01/12/2010 - 31/08/2011

Development of numerical methods for fluid-structure interaction problems CIMNE - IHPC
01/2009-12/2012

ACTIVITIES

Organization of the International Workshop on Advances in Computational Methods for Fluid-Structure interaction
27-29 April 2011, Singapore

Support to the activities of the companies OMNI Ltd and Build Air Asia-Pacific Ltd.

Support to the activities of the compay COMPASS Ingeniería y Sistemas SA

P. Dadvand, X. Lu and A. Lee (Director of CIMNE Singapore)

Constitution of CIMNE Singapore (May 2010)

CIMNE in China

CIMNE has promoted various RTD projects in collaboration with research centers, universities and enterprises in China.

The result of this ongoing collaboration includes the coordination of projects Aerochina I and II of the EC, the participation in the project financed by the Chinese government on natural risks, different projects on Aeronautics Program of the EC (FP7) and cooperation works in topics related to the analysis of harbours and marine structures under sea waves using soffware codes developed at CIMNE, which began with the visits of scientists Mr. Miguel Angel Celigueta and Mr. Fernando Salazar, and various visiting of scientists from China. On May 26th 2009 an agreement was signed between CIMNE, the Chinese Academy of Sciences and the Guangzhou Zhongjiao Erhang Engineering Design & Consultation Co. Ltd.

In 2010 CIMNE promoted the creation of a new organization under the name CIMNE-Pekin, coordinated by Professor Ming Wu Yuan of Beijing University, which is responsible for promoting and coordinating the activities of R + D + i.

RTD PROJECTS

GRAIN: GReener Aeronautics International Networking
FP7 - COOPERATION
EUROPEAN COMMISSION
Coordinator: CIMNE
Participants: INRIA, AIRBUS, ALENIA, EADS-IW, RR, INGENIA, NUMECA, SHEFFIELD, BIRMINGHAM, CIRA, VKI, AIRBORNE, LEITAT, CERFACS, CRANFIELD and 13 chinese partners.
1/10/2010- 30/09/2012

MARS: Manipulation of Reynolds Stress for Separation Control and Drag Reduction
FP7, EC-EUROPEAN COMMISSION
Coordinator: CIMNE
Participants: 18 companies and RTD organizations from EC and China

COLTS: Casting of large Ti structures
Programa: FP7 - COOPERATION (2010-2013)
Finançat per: EUROPEAN COMMISSION
Líder: IRC-Bham
Participants: INGENIA, AIRBUS, EADS, Rolls Royce, Calcom ESI, ESA and 7 chinese partners
1/10/2010- 30/09/2013

Prof. Eugenio Oñate and Prof. Ming Wu Yuan

Sònia Sagristà — China Liaison Representative

CIMNE Classrooms and Joint Labs

CIMNE Classrooms are physical spaces for cooperation in education, research and technological development (RTD) activities created jointly by CIMNE and one or several universities. CIMNE Classrooms promote educational and training activities for graduate and postgraduate levels and the development of RTD projects in cooperation with companies.

The next page lists the CIMNE classrooms created since 2000:

Circles denote the countries where CIMNE-Classrooms and Joint Labs have been created.

In Spain

FERROL CLASSROOM – CIMNE (SPAIN)

Universidade da Coruña
Directors: Pablo Fariñas y Alfonso García
Created on: 29/January/2001
Activity: Application of numerical methods to problems related to marine engineering.

EUETIB CLASSROOM – CIMNE (SPAIN)

Escuela Técnica de Ingeniería Industrial
Directors: Gabriel Bugeda y Daniel Di Capua
Created on: 18/July/2001
Activity: Simulation of sheet metal stampings, mold filling and structural calculations.

UVA CLASSROOM – CIMNE (SPAIN)

Universidad de Valladolid
Director: Antonio Foces
Created on: 18/April/2002
Activity: Civil engineering projects, ports, marine, industrial, aerospace and architecture.

FNB CLASSROOM – CIMNE (SPAIN)

Facultad de Náutica de Barcelona
Director: Julio García
Created on: 1/March/2002
Activity: Applications of numerical methods to problems related to marine engineering.

UL CLASSROOM – CIMNE (SPAIN)

Universidad de Lleida
Directors: Manuel Ibáñez y Jordi Cipriano
Created on: 24/July/2004
Activity: Numerical methods applied to physics teaching buildings and renewable energy online.

ETSEIAT CLASSROOM – CIMNE (SPAIN)

UPC deTerrassa
Director: Roberto Flores
Created on: 20/April/2007
Activity: Industrial and aeronautical engineering.

CEAV CLASSROOM – CIMNE (SPAIN)

Centro de Estudios Avanzados
Director: Gabriel Molina
Created on: 16/October/2010
Activity: Environment, information and communication technology and tourism.

UPM CLASSROOM - CIMNE (SPAIN)

Universidad Politécnica de Madrid
Director: Rafael Morán
Created on: 25/May/2010
Activity: Applications of numerical methods in civil engineering.

In Latinamerica

INA CLASSROOM – CIMNE (ARGENTINA)

Instituto Aeronáutico Universitario
Director: Carlos Sacco
Created on: 5/September/2002
Activity: Applications of numerical methods to problems related to fluid mechanics, structures, heat transfer, etc.

FICH CLASSROOM – CIMNE (ARGENTINA)

Universidad Nacional del Litoral
Director: Sergio Idelsohn
Created on: 28/October/2002
Activity: Applications of numerical methods to problems related to water resources, mechanical engineering and computer engineering.

UNT CLASSROOM – CIMNE (ARGENTINA)

Universidad Nacional de Tucumán
Director: Guillermo Etse
Created on: 01/November/2002
Activity: Development of computational models of bridges (degradation and repair mechanisms).

UNSA CLASSROOM – CIMNE (ARGENTINA)

Universidad Nacional de Salta
Director: Dr. Liz Nallim
Created on: 10/April/2008
Activity: Development of computer models for application in civil engineering.

UNER CLASSROOM – CIMNE (ARGENTINA)

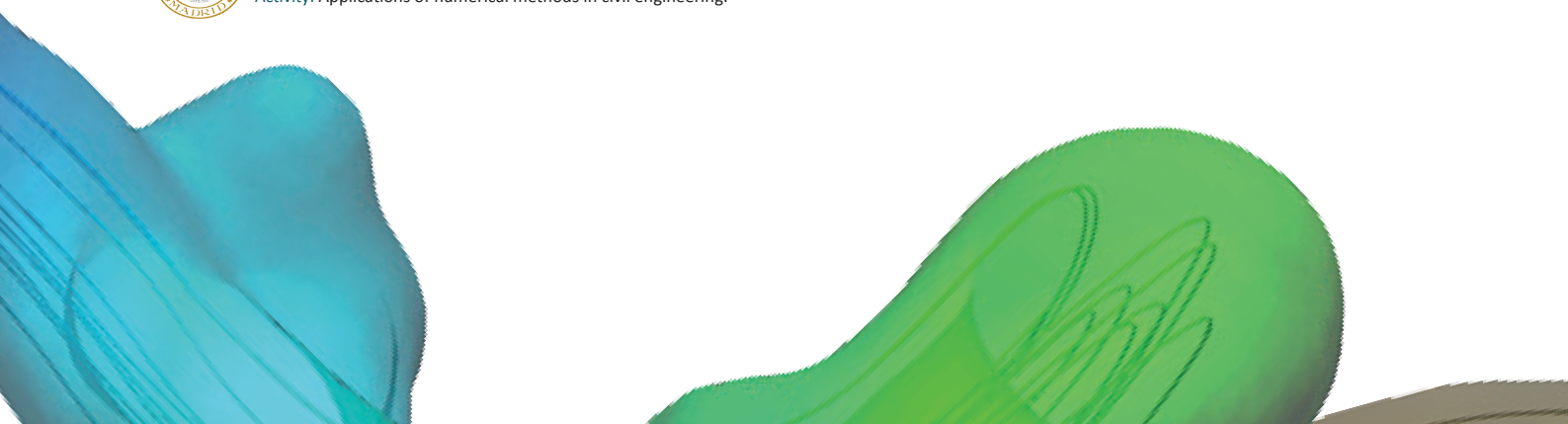
Universidad Nacional de Entre Ríos
Director: José Di Paolo
Created on: under creation
Activity: Applications of numerical methods to problems related to Bioengineering.

FEMEC CLASSROOM – CIMNE (BRASIL)

Universidad Federal de Uberlândia
Director: Sonia Goulart
Created on: 25/April/2004
Activity: Applications related to the metal stamping process and mold design.

IFSP CLASSROOM – CIMNE (BRASIL)

Instituto Federal de Educaçao, Ciéncia e Tecologia de Sao Paulo
Director: Écio Naves
Created on: 1/July/2009
Activity: Applications of numerical methods for solving engineering problems.



UTFSM CLASSROOM – CIMNE (CHILE)

Universidad Técnica Federico Santa María
Director: Franco Perazzo
Created on: 05/March/2004
Activity: Numerical methods in mechanical engineering. Development of numerical methods.

UNIANDES CLASSROOM – CIMNE (COLOMBIA)

Universidad de los Andes
Director: René Meziat
Created on: 24/January/2003
Activity: Teaching and research in numerical methods, optimization, variational principles and computational mechanics.

UNC CLASSROOM – CIMNE (COLOMBIA)

Universidad Nacional de Colombia
Director: Jorge Hurtado
Created on: June/2005
Activity: Numerical methods applied to civil engineering.

UCLV CLASSROOM – CIMNE (CUBA)

Centro de Investigación de métodos computacionales y numéricos en la ingeniería
Universidad Central de las Villas
Director: Carlos Recarey
Created on: 16/July/2003
Activity: Modeling and analysis of structures and grounds to the application of numerical methods.

UCA CLASSROOM – CIMNE (EL SALVADOR)

Universidad Centroamericana "José Simeón Cañas" UCA
Director: Mauricio Pohl
Created on: 12/February/2010
Activity: Civil engineering applications and multi objective optimization and applications.

UMG CLASSROOM – CIMNE (GUATEMALA)

Universidad Mariano Gálvez
Director: Rolando Torres Salazar
Created on: 01/February/2011
Activity: Development of computer models for application in civil engineering.

UGTO CLASSROOM – CIMNE (MEXICO)

Universidad de Guanajuato
Director: Jesus Gerardo Valdes
Created on: 16/January/2002
Activity: Civil engineering applications and multi objective optimization and applications.

ITESM CLASSROOM – CIMNE (MEXICO)

Instituto Tecnológico de Estudios Superiores de Monterrey
Director: Sergio Gallegos
Created on: 18/May/2009
Activity: Applications of numerical methods in civil engineering.

CIMAT CLASSROOM – CIMNE (MEXICO)

Centro de Investigaciones en Matematicas
Director: Miguel Angel Moreles
Created on: 26/June/2006
Activity: Applied mathematics, numerical methods, engineering and statistical analysis.

PUCP CLASSROOM – CIMNE (PERU)

Universidad Católica de Perú
Directors: Quino Valverde y Salvador Botello
Created on: 16/April/2009
Activity: Modeling and analysis of structures and grounds to the application of numerical methods.

INABIOX CLASSROOM – CIMNE (VENEZUELA)

Universidad Central de Venezuela
Director: Miguel Cerrolaza
Created on: 15/February/2004
Activity: Applications of numerical methods to problems related to Bioengineering.

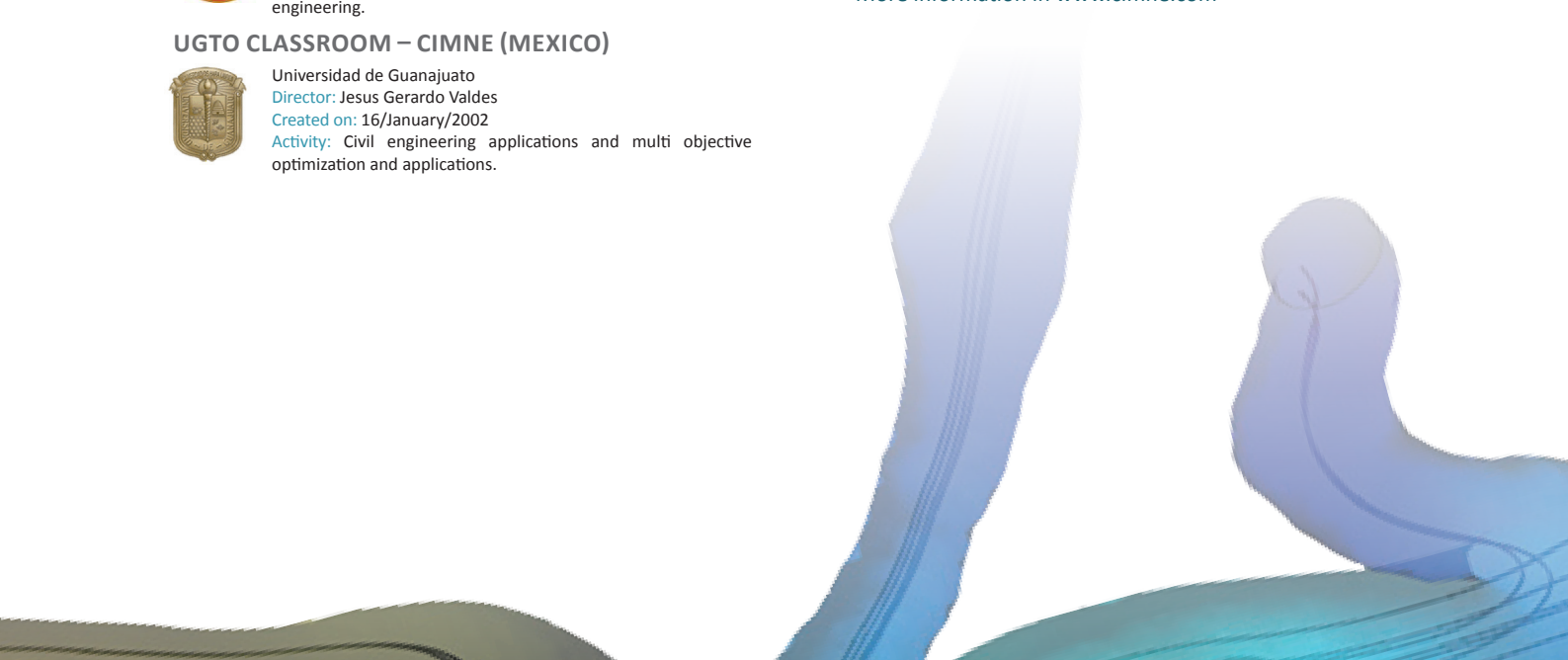
UCLA CLASSROOM – CIMNE (VENEZUELA)

Universidad Centrooccidental "Lisandro Alvaro" (UCLA)
Director: Juan Carlos Vielma Pérez
Created on: 20/October/2008
Activity: Applications of numerical methods to civil engineering problems.

UC CLASSROOM – CIMNE (VENEZUELA)

Universidad de Carabobo
Director: David Ojeda
Created on: 29/April/2009
Activity: Applications of numerical methods in optimization and inverse problems in engineering failure analysis.

More information in www.cimne.com



Meetings

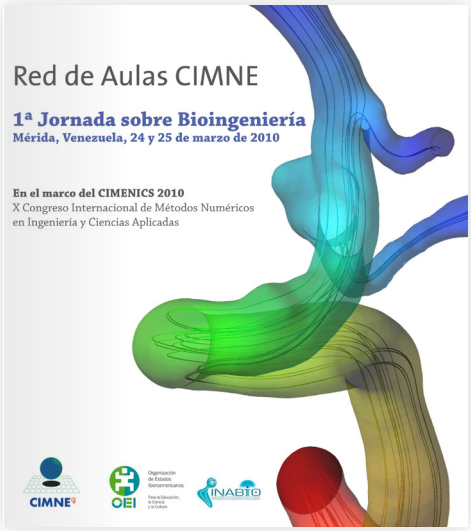
THE IV[TH] GENERAL MEETING OF THE CIMNE CLASSROOM NETWORK, UPC

Chaired by H.R.M. Infanta Doña Cristina

Barcelona, July 1st, 2009

Thematic conferences

1ST SEMINAR ON BIOENGINEERING OF THE CIMNE CLASSROOMS



2ND SEMINAR OF THE CIMNE CLASSROOMS

FLUMEN Institute

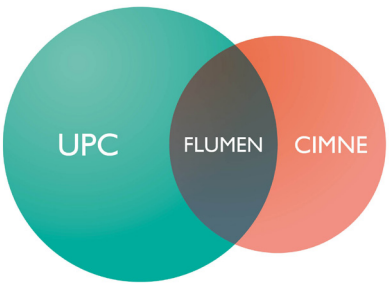
In 2011, CIMNE participated as a partner together with UPC in the creation of the new FLUMEN Institute for River Dynamics and Hydrologic Engineering.

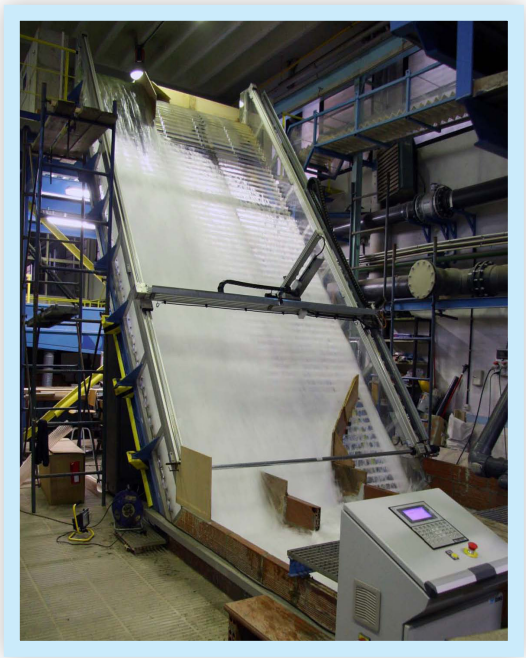
FLUMEN Institute is the outcome of the merging of the prestigious Flumen RTD group existing since 2005 at the School of Civil Engineering of UPC and CIMNE. This partnership brings together the numerical and experimental expertise of the Flumen RTD group in hydraulics with the broad experience of CIMNE in numerical methods, computer simulation and integration of decision-support systems.

The FLUMEN Institute is located at the Campus North of UPC. Its objectives are the promotion of RTD and technology transfer activities in the field of river dynamic and hydrologic engineering.

The FLUMEN Institute will be equipped with modern experimental facilities for model scale testing of river dynamic and hydraulic problems, as well as with advanced computer simulation codes.

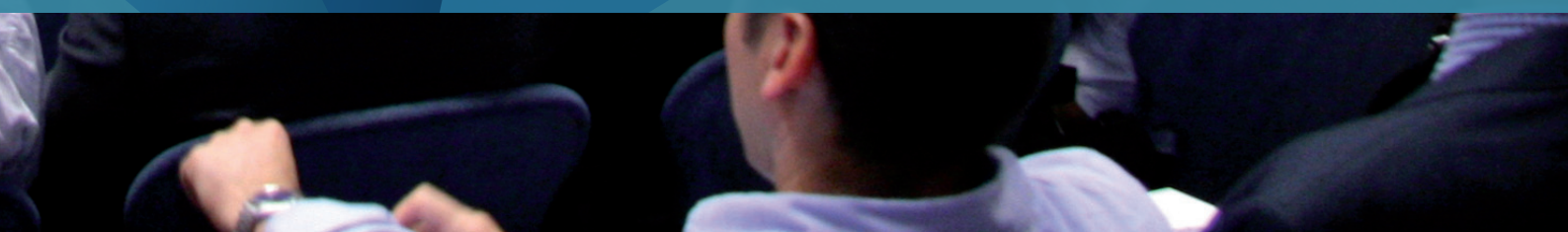
The Flumen Institute is directed by Prof. Josep Dolz from UPC.





Experimental facilities of FLUMEN Institute

TRAINING AND DISSEMINATION



Courses and Seminars

Courses

CIMNE regularly organises courses and seminars related to the theory and application of numerical methods in engineering. The courses are addressed to recent university graduates and professionals from schools of engineering and applied sciences universities.

In 2011 CIMNE has organised the following courses and seminars:

Master of Science in Computational Mechanics
October 2011

Curso de Master Oficial UPC Métodos Numéricos en Ingeniería
September 2011

Cálculo de Estructuras por el Método de Elementos Finitos
May 2011

Introducción al análisis matricial de estructuras
May 2011

Curso Master en MÉTODOS NUMÉRICOS PARA CÁLCULO Y DISEÑO EN INGENIERÍA
January 2011

COMPLAS Short Course on Computational Techniques for Plasticity
September 2011

Seminars

Computational Peridynamics
Dr. Michael L. Parks
24/10/2011

Programación sobre placas de procesamiento gráfico. Un nuevo paradigma para computación de alto desempeño
Prof. Marcelo Javier Vénere
30/06/2011

Synthesis of Mechanisms – Metamorphic Mechanisms
Prof. Alberto Cardona
17/06/2011

Computer-Aided Analysis of Rigid and Flexible Multibody Systems
Prof. Alberto Cardona
10/06/2011

Research opportunities in Singapore
Dr. Alex Lee
11/02/2011

VIRTUAL LEARNING CENTRE

CIMNE has developed a web environment for distance learning education via Internet. The Virtual Center for continuous Education of CIMNE allows the interaction between students and educators in courses via Internet.

The Virtual Center of CIMNE is useful in gathering information early on in a course to facilitate the registration process. Teachers can also follow the student progress and carry out the different tutorials and exercises.

The Virtual Center operates 24 hours a day to channel all relationships between students, educators, and administrators involved in the course.

Through the Virtual Center of CIMNE students can access the latest information on the various courses and any other academic or administrative matters related to the course.

The Virtual Center of CIMNE hosts the Master Course in Numerical Methods in Engineering and other postgraduate courses of CIMNE.

CIMNE Coffee Talks

The CIMNE Coffee Talks are seminars of one hour organized by CIMNE researches. Each talk opens with a welcome coffee and ends up with a debate on the content of the talk.

30 / 11 / 11
Estimación de la velocidad en deslizamientos de laderas
N. Pinyol

09/11/11
Computational geodynamics: numerical techniques and applications/ Geodinamica computacional: técnicas numéricas y aplicaciones
S. Zlotink

19 / 10 / 11
How to mix penalty and fractional step methods for incompressible flows / Como mezclar el método de penalty con el de paso fraccionado
P. Ryzhakov

29 / 09 / 11
Simulación del proceso de erosión en la rotura de presas de materiales cohesivos por sobrevertido
J. L. Rojas

28 / 9 / 11
Simplificación de Mallas de Triángulos
M. Pasenau

21 / 9 / 11
Developements at Ruhr University Bochum. Contributions to the development of the Kratos framework
J. Stascheit

14 / 9 / 11
Presente y futuro de las estructuras inflables. Ejemplos realizados por la empresa Buildair
J. Marcipar

20 / 7 / 11
A Computational Model for the Numerical Simulation of FSW Processes
N. Dialami

13 / 7 / 11
Avances en estimación de complejidad algorítmica para elementos de alto orden y en el uso de GPUs para códigos generales de CFD
R. Lohner

29 / 6 / 11
Líneas de investigación en el Aula CIMNE-CUBA
Heikel y Marcelino

22 / 6 / 11
Multi-objective and multidisciplinary design optimization for multilayered composite structures
C. Lee / C. Morillo

10 / 6 / 11
A Framework for an Intelligent and Adaptive Planning of Rehabilitation Therapies
V. Castaño

8 / 6 / 11
Cómo resolver en forma explícita problemas con convicción dominante con grandes pasos de tiempo
S. Idelsohn

1 / 6 / 11
Advances in linear and cohesive fracture mechanics via Boundary Element Methods
A. Salvadori

17 / 5 / 11
Las TIC como elemento para la innovación
A. Coll

11 / 5 / 11
Esto no me malla: una frase del pasado
A. Coll

27 / 4 / 11
Desarrollo de un entorno para la simulación del flujo alrededor de puentes
J. Cotela

12/4/ 11
Numerical approximation of the Magnetohydrodynamic (MHD) problema
R. Planas

6 / 4 / 11
Numerical approximation of the Magnetohydrodynamic (MHD) problema
R. Planas

30 / 3 / 11
Visualizar, explorar y analizar redes: casos de aplicación para CIMNE
D. Franquesa / F. Renda / Lucas Pardo

16 / 3 / 11
Diseño de prótesis y dispositivos biomédicos con métodos numéricos: tendencias, resultados y proyectos"
M. Cerrolaza

17 / 03 / 11
The collection and analysis of geo-physical data from earth observation combined with meteorological information.
F. Cristiano

9 / 3 / 11
In GiD we trust - Part 2
GiD

2 / 3 / 11
In GiD we trust
GiD

23 / 02 / 11
Aplicaciones de los métodos numéricos en seguridad en presas
F. Salazar

9 / 2 / 11
Progress in CFD Research & Industry Applications in Singapore
A. Lee

19 / 01 / 11
Contact search algorithm based on objects
N. Lafontaine

Conferences and workshops

Since 1987 CIMNE has organised 140 conferences on different topics of computational numerical methods and applied sciences.

Conferences in 2011:

SAICA 2011

IV Seminar for Advanced Industrial Control Applications
7 - 8 November, 2011, Barcelona, Spain

PARTICLES 2011

II International Conference on Particle-Based Methods
26 - 28 October 2011, Barcelona, Spain

STRUCTURAL MEMBRANES 2011

V International Conference on Textile Composites and Inflatable Structures
5 - 7 October 2011, Barcelona, Spain

II Jornadas sobre Ingeniería del Agua

5 - 6 October 2011, Barcelona, Spain

MARINE 2011

IV International Conference on Computational Methods in Marine Engineering
28 - 30 September 2011, Lisbon, Portugal

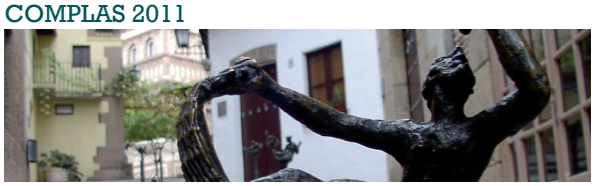
Applied isotope geochemistry

9th International Symposium on applied isotope geochemistry
19 - 23 September 2011, Tarragona, Spain

SEM 2011

XXXI SEM Scientific Meeting
7 - 10 September 2011, Barcelona, Spain

COMPLAS 2011



11th. International Conference on Computational Plasticity - Fundamentals and Applications
7 - 9 September 2011, Barcelona, Spain

COMPLAS COURSE

11th. Short Course on Computational Techniques for Plasticity
5 - 6 September 2011, Barcelona, Spain

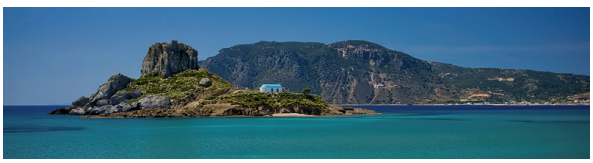
EUSIPCO 2011

2011 European Signal Processing Conference
29 August - 2 September 2011, Barcelona, Spain

BIFD 2011

IV International Symposium Bifurcations and Instabilities in Fluid Dynamics
18 - 21 July 2011, Barcelona, Spain

COUPLED PROBLEMS 2011

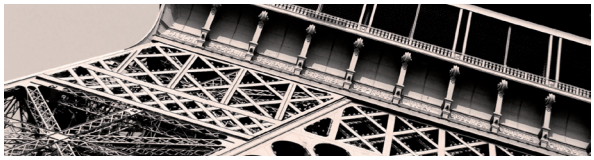


Computational Methods for Coupled Problems in Science and Engineering
20 - 22 June 2011, Kos Island, Greece

CFRAC 2011

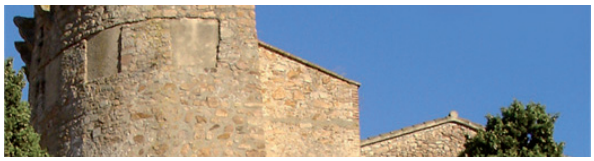
International Conference on Computational Modeling of Fracture and Failure of Materials and Structures
6 - 8 June 2011, Barcelona, Spain

ADMOS 2011



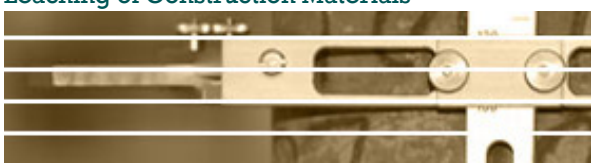
International Conference on Adaptive Modeling and Simulation
6 - 8 June 2011, Paris, France

CoDaWork 2011



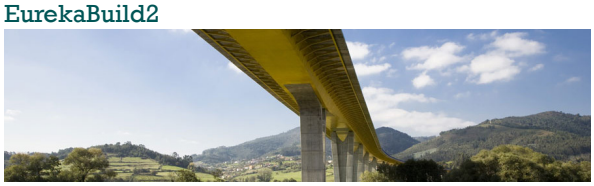
4th. Workshop on Compositional Data Analysis
9 - 13 May 2011, Girona, Spain

Leaching of Construction Materials



Workshop on Leaching of Construction Materials
May 2nd. 2011, Barcelona, Spain

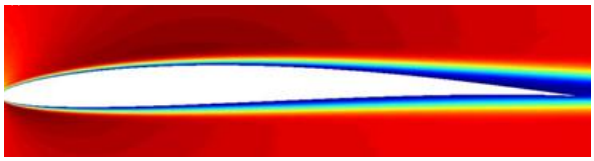
EurekaBuild2



International Event
March 24, 2011, Barcelona, Spain

Conferences planned for 2012-2014

DGSchool 2012



Summer School on Discontinuous Galerkin Methods
11-15 June 2012, Barcelona, Spain

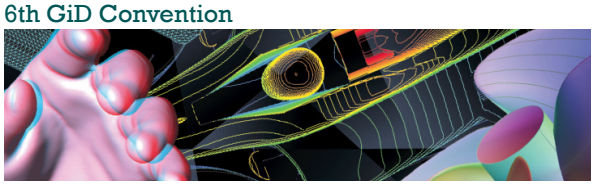
Seminario Leonardo

June 14 2012, Barcelona, Spain

Audio & Music Processing

1st. International Course and Workshop on Audio & Music Processing
6 - 8 June 2012, Ibiza, Spain

6th GiD Convention



6th Convention on Advances and Applications of GiD
10-11 May 2012, Barcelona, Spain

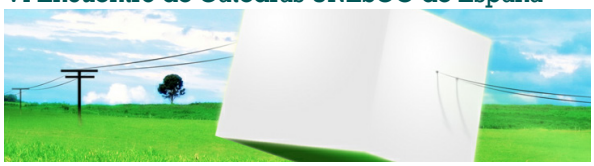
Competitivitat i sostenibilitat territorial

Competitivitat i sostenibilitat territorial. Les infraestructures, el territori i les empreses
10-11 May 2012, Barcelona, Spain

FEM Class of 42 Anniversary

May 8, 2012, Barcelona, Spain

VI Encuentro de Cátedras UNESCO de España

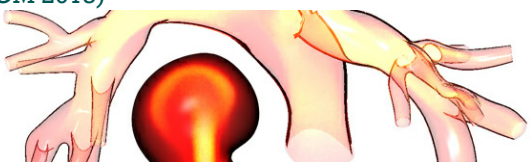


9 - 10 February 2012, Barcelona, Spain

Oportunitat i Reptes Globals de Catalunya

January 26, 2012, Barcelona, Spain

Advances in Computational Mechanics (ACM 2013)



A Conference Celebrating the 70th Birthday of Thomas J.R. Hughes
24-27 February, 2013, San Diego, California, USA

FRAMCOS-8

8th. International Conference on Fracture Mechanics of Concrete and Concrete Structures
10 - 14 March, 2013, Toledo, Spain

Conferences planned for 2012-2014

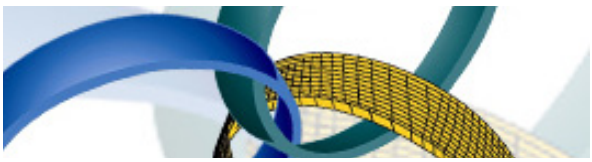
MARINE 2013

V International Conference on Computational Methods in Marine Engineering
29 - 30 May 2013, Hamburg, Germany

ADMOS 2013

International Conference on Adaptive Modeling and Simulation
June 3 - 5, 2013, Lisbon, Portugal

COUPLED PROBLEMS 2013



V International Conference on Coupled Problems in Science and Engineering
June 17 - 19, 2013, Ibiza, Spain

COMPLAS XII

XII International Conference on Computational Plasticity
September 3 - 5, 2013, Barcelona, Spain

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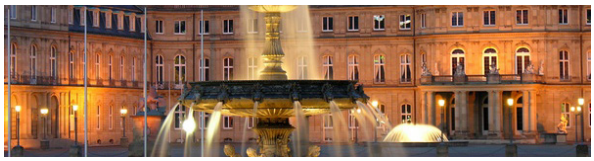
PARTICLES 2013

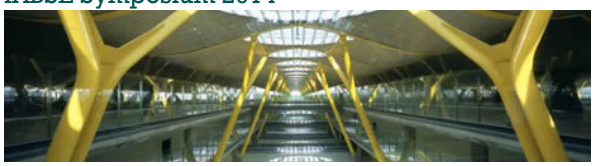


III International Conference on Particle-based Methods
18 - 20 September 2013, Stuttgart, Germany

STRUCTURAL MEMBRANES 2013

VI International Conference on Textile Composites and Inflatable Structures
9 - 11 October 2013, Munich, Germany

IABSE Symposium 2014



International Association for Bridge and Structural Engineering
September 2014, Madrid, Spain

WCCM XI — ECCM V — ECFD VI

Joint Organization of
11th. World Congress on Computational Mechanics
5th. European Conference on Computational Mechanics
6th. European Conference on Computational Fluid Dynamics
20-25 July 2014, Barcelona, Spain

Publications

CIMNE publishes books, journals, monographs, scientific reports and educational software on the theory and applications of numerical methods in engineering.

The publications of CIMNE can be visited and ordered via Internet in www.cimne.com

We list below the publications of CIMNE in 2011:

Books

L129 Computational Modeling of Fracture and Failure of Materials and Structures (CFRAC 2011), J. Oliver, M. Jirásek, O. Allix, N. Moës, ISBN: 978-84-87867-66-8, 2011

L128 MARINE 2011. Computational Methods in Marine Engineering IV , L. Eça, E. Oñate, J. García, T. Kvamsdal, P.Bergan, ISBN: 978-84-89925-31-1, 2011

L126 Structural Membranes 2011 V International Conference on Textile Composites and Inflatable Structures, E. Oñate, B. Kröplin, K.-U. Bletzinger, ISBN: 978-84-89925-57-1, 2011

L127 Computational Plasticity XI. Fundamental and Applications, E. oñate, D.R.J. Owen, D.Peric, B. Suárez, ISBN: 978-84-89925-23-6, 2011

L125 Particle-Based Methods II. Fundamentals and Applications, E. Oñate, D.R.J. Owen, ISBN: 978-84-89925-69-4, 2011

L124 Computational Methods for Coupled Problems in Science and Engineering IV, M. Papadrakkais, E. Oñate, B. Schrefler, ISBN: 978-84-87867-59-0, 2011

L130 Evolutionary and Deterministic methods for design, optimization and control. Applications to industrial and societal problems (Eurogen 2009), T. Burczynski and J. Périaux, ISBN: 978-84-95999-93-1, April 2011

Journals

Revista internacional de Métodos Numéricos para Cálculo y Diseño en Ingeniería. Editores: E. Oñate y J.C. Heinrich, Vol. 27 nº1, 2, 3, 4, CIMNE, 2011

Archives of Computational Methods in Engineering. Editors: M. Kleiber and E. Onate, Vol. 18 nº1,2,3,4 CIMNE, 2011

Monographs

M122 Estudio de la seguridad de presas e identificación de escenarios de riesgo mediante sistemas inteligentes (SERPRISIS), 2011

M123 Regularized maxwell equations and nodal finite elements for electromagnetic field computations in frequency domain, R. Otin 2011, ISBN: 978-84-89925-03-8

M124 Contribution to the definition on non deterministic robust optimization in aeronautics accounting with variable uncertainties, J. Pons, G. Bugeda, F. Zárate, 2011, ISBN: 978-84-89925-08-3

M125 Anatomía computacional: una metodologia eficiente basada en imágenes médicas para la generación de modelos 3D, G. Gavidia, M. Martin-Landrove, M. Cerrolaza, E. Soudah, Sept. 2011

Research reports

PI350, New explicit time integration schemes for the transport equations with increased stability and accuracy, E. Oñate, F. Zárate, S. R. Idelsohn

PI351, Explicit dynamic analysis of thin membranes structures, R. Flores, E. Ortega, E. Oñate

PI352, A stable and accurate finite element formulation for convection-diffusion-absortion problems using finite calculus, E. Oñate, J. M. Canet, P. Nadukandi

PI353, On the use of exponential basis functions in the analysis of shear deformable laminated plates, M. Shahbazi, B. Boroomand, S. Soghrati

PI354, El ciclo de las ideas en la I+D+I, E. Oñate

PI355, Modeling of landslides into reservoir with the particle finite element method, E. Oñate, F. Salazar, R. Morán

PI356, Development of a 6-DoF simulator for analysis and evaluation of autonomous parafoil systems, E. González, C. sacco, E. Ortega, R. Flores

PI357, Possibilities of the particle finite element method for fluid –soil-structure interaction problems, E. Oñate, M. A. Celigueta, S. R. Idelsohn, F. Salazar, B. Suárez

PI358, The cycle of ideas in research, development and technology transfer, E. Oñate

PI359, Reflexiones sobre el tránsito de la idea al producto en el entorno de la Escuela de Caminos de Barcelona, E. Oñate

PI360, Advances on finite element methods and particle-based methods for metal forming processes, E. Oñate

PI361, Simplificación de mallas de triángulos, M. Pasenau, A. Andujar

PI362, Paralelización del código Stampack v7.10, W. Castelló, F. Flores

PI363, Exponential basis functions in solution of incompressible fluid problems with moving free surfaces, S. M. Zandi, B. Boroomand, S. Soghrati

PI364, Analysis of time dependent problems using exponential basis functions, B. Movahedian, B. Boroomand

PI365, Análisis de flujos en lámina libre y su interacción con sólidos y estructuras por el método de partículas y elementos (PFEM), E. Oñate, B. Suárez, F. Salazar, R. Morán, M. Celigueta, S. Latorre

PI366, Modelització del deflectometre d'impacte amb el metode dels elements finits i les partícules, M. Moretó, E. Oñate, J. M. Carbonell

PI367, Modeling of delamination in composite laminated beams using a two-noden beam element based in refined zigzag theory, E. Oñate, A. Eijo, S. Oller

PI368, An adaptive finite point method for aeroelastic analysis, E. Ortega, E. Oñate, S. Idelsohn

PI369, Analysis of the discharge capacity of radial gated spillways using numerical modeling application to Oliana Dam, F. Salazar, R. Morán, R.Rossi, E. Oñate, Nov.

PI370, Benchmarking on bifurcation and localization in J2 platicity for plane stress and plane strain conditions, M.Cervera, M. Chiumenti, D. Di Capua, Dic.

Technical reports

IT608 Simulación del comportamiento al fuego de paneles de lana de roca. Convenio Cimne-Legai, D. Di Capua, 2011

IT609 Reduced order modeling of finite element discretization using proper orthogonal decomposition, K. Ibrahim, 2011

IT610 Estudio de la seguridad de presas e identificación de escenarios de riesgo mediante sistemas inteligentes (SEPRISIS), J. M. Canet, J.M. González, 2011

IT612 Desarrollo de algoritmos para la solución de problemas de mecánica de fluidos computacional (CFD) en unidades de procesamiento gráfico de propósito general (GPGPU). Proyecto FCL-UNC-M. Storti, J. Piazzese, 2011

IT613 Lognoter-Implementación de la instrucción de hormigón estructural (EHE-08), J. Piazzese, 2011

IT614 Desarrollo de algoritmos rápidos para la solución de problemas de mecánica de fluidos computacional (CFD) utilizando una formulación lagrangiana .Proyecto FCL-UNL-N. nigro., J. Piazzese, 2011

IT615 3D cutting, thickness evaluation and smoothing of geometries. Proyecto FCL-NC-Quatech. Definición de objetivos, plan de trabajo y documentación del proyecto, J. Piazzese, 2011

IT616 Librería de mallado basada en Delaunay constrained. Proyecto FCL-NC-GiD. Definición de objetivos,plan de trabajo y documentación del proyecto, J. Piazzese, 2011

IT617 Ermes user guide, R. Otín, 2011

IT618 Electromagnetic metal forming, R. Otin, R. Méndez, O. Fruitos, 2011

IT619 Procesos de deformación incremental de chapa, J. Márquez, O. Fruitos, A. Ferriz, 2011

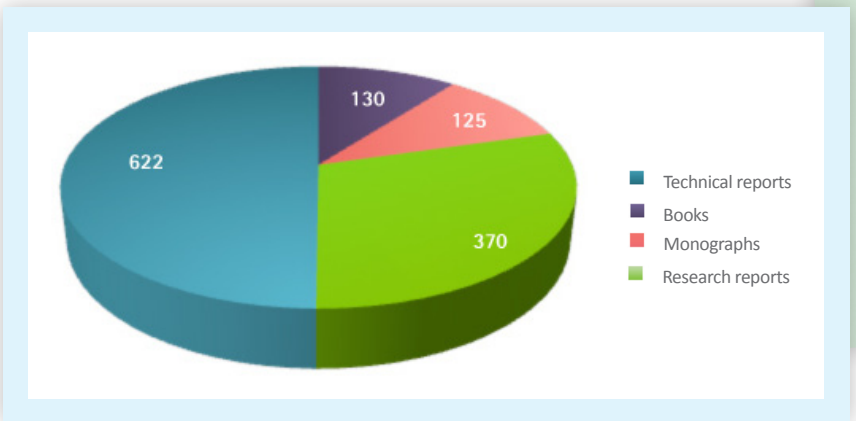
IT620 Design of on all-composite wing for a small UAV platform, G. Ghirinchelli, O. Fruitos, 2011

IT621 Aerodynamic simulation of a joint geometry of parachute plus airplane, 2011

IT622 Simulación del comportamiento al fuego de paneles de lana de roca de 12'6km de longitude. Convenio Cimne-Pretersa-Prenavisa, Oct. 2011

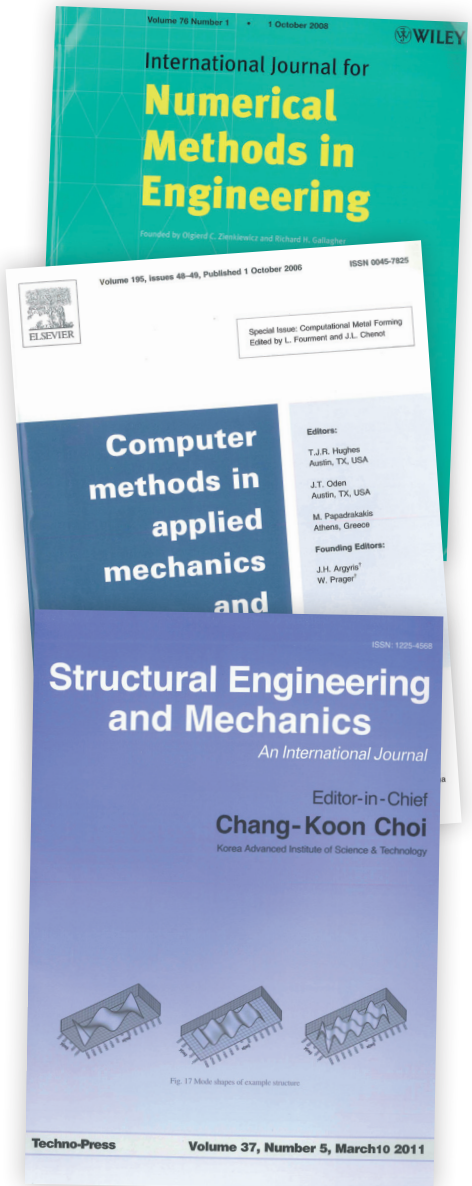
IT611 Proposal to develop and implement and innovative decisión suport for flood risk assessment and mitigation (Ramflood), 2011

Since 1987 CIMNE has edited 1247 scientific publications.



Publications in scientific journals

This is the list of papers in scientific journals published by CIMNE researchers in 2011.



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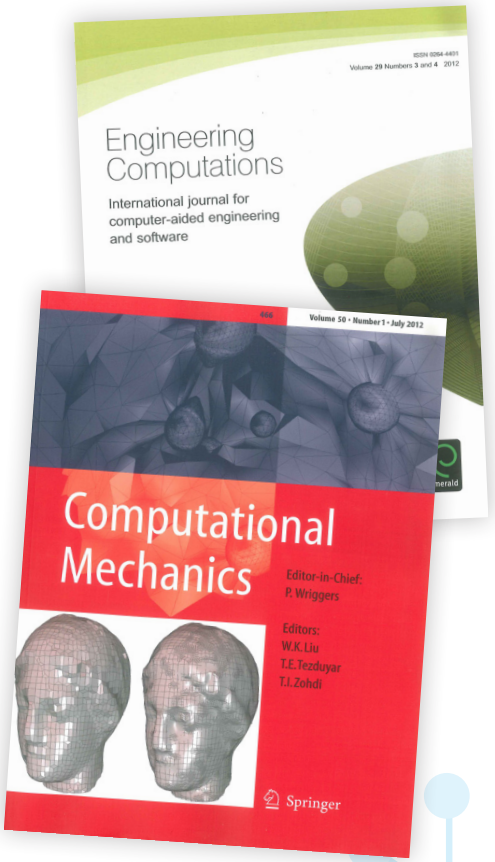

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Sociedad Española de Métodos Numéricos en Ingeniería (SEMNI)

www.semni.org

In 1988, CIMNE contributed to the creation of the Spanish Society for Numerical Methods in Engineering (SEMNI). The basic aims of SEMNI are the organization and coordination of all activities related to numerical methods in engineering in Spain and being the Spanish representative in the International Association for Computational Mechanics (IACM).

SEMNI is linked to similar associations in other countries, for example the European Community on Computational Methods in Applied Sciences (ECCOMAS), the Groupe pour l'Avancement des Méthodes Numériques de l'Ingénieur in France, the United States Association for Computational Mechanics in the United States, and the Asociación Argentina de Mécanica Computacional in Argentina. The headquarters of SEMNI are based in CIMNE.

Currently, SEMNI has over 400 members in Spain and in other countries. Some of the main activities of SEMNI include the organization of technical workshops and the Spanish Conference on Numerical Methods in Engineering.

SEMNI congresses take place in several cities; the first one was in the Canary Islands (1990), the second in La Coruña (1993), the third in Zaragoza (1996), the fourth in Sevilla (1999), the fifth in Madrid (2002), the sixth in Lisbon (2004), the seventh in Granada (2005), the eighth in Porto (2007), the ninth in Barcelona (2009) and the tenth in Coimbra (2011). The next congress will be oganized in Bilbao on 25-28 June 2013.

SEMNI organized the 4th World Congress on Computational Mechanics in Buenos Aires in 1998 and the ECCOMAS congress in Barcelona in September, 2000.

SEMNI also organizes workshops and courses on numerical methods in engineering.

Since 1989 the SEMNI secretariat is located at CIMNE.

The Executive Council of SEMNI is as follows:

PRESIDENT

Xavier Oliver Olivella (Univ. Politècnica de Catalunya)

VICE-PRESIDENT

José Mª Goicolea Ruigómez (Univ. Politécnica de Madrid)

SECRETARY

Irene Arias Vicente (Univ. Politècnica de Catalunya)

PAST PRESIDENTS

Eugenio Oñate Ibáñez de Navarra (Univ. Politècnica de Catalunya)
Manuel Casteleiro Maldonado (Univ. de A Coruña)

COUNCIL MEMBERS

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Jesús María Blanco Ilzarbe (Univ. del Pais Vasco)
Miguel Cervera Ruiz (Univ. Politècnica de Catalunya)
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Elías Cueto Prendes (Univ. de Zaragoza)
Antonio Huerta Cerezuela (Univ. Politècnica de Catalunya)
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Riccardo Rossi (CIMNE)
Eugenio Oñate Ibáñez de Navarra (Univ. Politècnica de Catalunya)

International Association For Computational Mechanics (IACM)

www.iacm.info

The International Association of Computational Mechanics (IACM) was founded in 1981 and promotes advances in computational mechanics.

For the purposes of the IACM, Computational Mechanics is defined as the development and application of numerical methods and digital computers to solve problems in Engineering and Applied Science with the objectives of understanding and harnessing the resources of nature.

Since Computational Solid Mechanics (CSM) and Computational Fluid Dynamics (CFD) are at the core of IACM activity, subjects such as thermodynamics, electromagnetics, rigid body mechanics, control systems and some aspects of particle physics fall naturally within the scope of this definition. Indeed providing of a common forum for discussion, education and research information transfer between the diverse disciplines represented is the main "raison d'être" of IACM.

Since 1994 the IACM Secretariat has been located at CIMNE.

IACM organises the World Congress on Computational Mechanics (WCCM) every four years. Former editions of this congress were held in Austin (1988), Stuttgart (1990), Tokyo (1994), Buenos Aires (1998), Vienna (2002), Beijing (2004), California (2006), Venecia (2008) and Sidney (2010).

The next congress will be held in Sao Paulo, on 8-13 July 2012.

IACM publishes a biannual bulletin and supports the organization of special interest conferences, IACM Simposia and courses in various fields of computational mechanics.

The Executive Council of IACM is composed by

PRESIDENT:

G. Yagawa, Japan

PAST PRESIDENTS:

E. Oñate, Spain
T.J.R. Hughes, U.S.A.
T. J. Oden, U.S.A.
A. Samuelson†, Sweden
O.C. Zienkiewicz†, U.K.

VICE PRESIDENT FOR THE AMERICAS:

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VICE PRESIDENT FOR ASIA-AUSTRALIA:

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European Community on Computational Methods in Applied Sciences (ECCOMAS)

www.eccomas.org

ECCOMAS is a scientific organization founded in 1992, grouping together European associations with interests in the development and application of computational methods in applied sciences and technology. The mission of ECCOMAS is to promote joint efforts of European universities, research institutes and industries which are active in the broad field of numerical methods and computer simulation in Engineering and Applied Sciences (i.e. Computational: Solid and Structural Mechanics, Fluid Dynamics, Acoustics, Electromagnetics, Physics, Chemistry, Applied Mathematics, and Scientific Computing), to address critical societal and technological issues with particular emphasis on multidisciplinary applications and disseminate innovative research in the fields of interest of ECCOMAS.

The main event organized by ECCOMAS is a large European congress taking place on a four year cycle attracting scientists and engineers both in and outside Europe. The main objective of these congresses is to provide a forum for presentation and discussion of state-of-the-art advances in scientific computing applied to engineering sciences. Equal emphasis is given to basic methodologies, scientific development and industrial applications.

The previous ECCOMAS Congresses were held in Brussels (1992), Paris (1996), Barcelona (2000), Jyväskylä (2004), Venice-Lido (2008), Vienna (2012). The ECCOMAS Congresses include invited lectures, Invited Special Technological Sessions (STS), contributed papers from Academy and Industry as well as Minisymposia on thematic topics.

ECCOMAS also organises large conferences devoted to structures and fluids. European Conferences on Computational Mechanics: Solids, Structures and Coupled Problems (ECCM) were held in Munich (1999), Cracow (2001), Lisbon (2006), Paris (2012).

The ECCOMAS Computational Fluid Dynamics Conferences (CFD) were organized in Stuttgart (1994), Athens (1998), Swansea (2001), Egmond aan Zee (2006), Lisbon (2010).

These series of ECCOMAS global meetings are complemented with more focused thematic conferences on state-of-the-art topics in computational sciences and engineering organised with the support of ECCOMAS.

The secretariat of ECCOMAS is based in CIMNE since 1996.

PRESIDENT

M. Papadrakakis

VICE PRESIDENTS

E. Ramm — P. Neittaanmäki

SECRETARY

P. Díez

TREASURER

M. Bernadou

CO-OPTED MEMBERS TO THE MB

O. Allix — H. Mang — E. Oñate — J. Periaux — E. Stein

MANAGING BOARD MEMBERS

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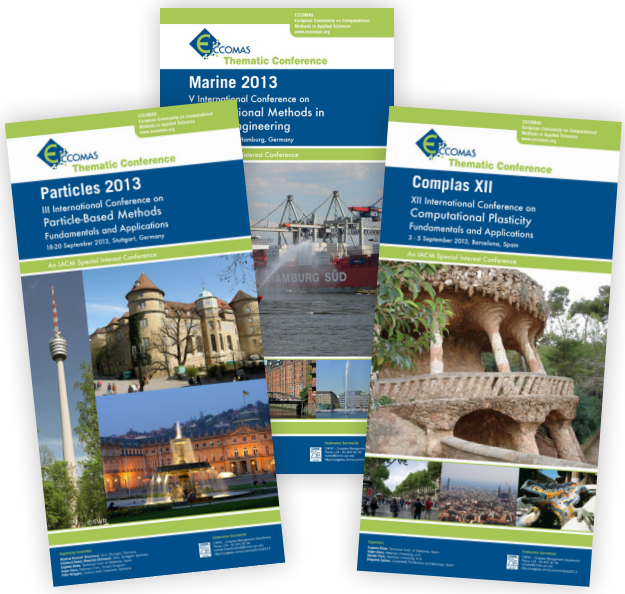
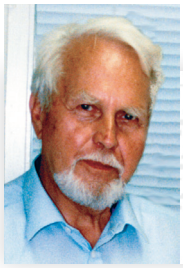


European Research Community On Flow, Turbulence And Combustion (ERCOFTAC)

www.ercoftac.org

The ERCOFTAC network was founded in 1987, composed of more than 60 research centers and companies, promoted by several European aerospace companies with the objective of gathering all European research centers working primarily in the numerical simulation of fluid mechanics problems in engineering. Since 1989, CIMNE is a pilot center in Spain.

In 2000, ERCOFTAC held the Eighth European Turbulence Workshop in Barcelona; in 2006, the Europe-Russia Workshop, also in Barcelona; in 2008, the 3rd Workshop on Research in Turbulence in Seville and in 2010, the 5th Workshop on Research in Turbulence in Tarragona.



Prof. O. C. Zienkiewicz

Prof. J. Périaux

Unesco Chair of Numerical Methods in Engineering (UNESCO)

www.cimne.com/websasp/unesco/

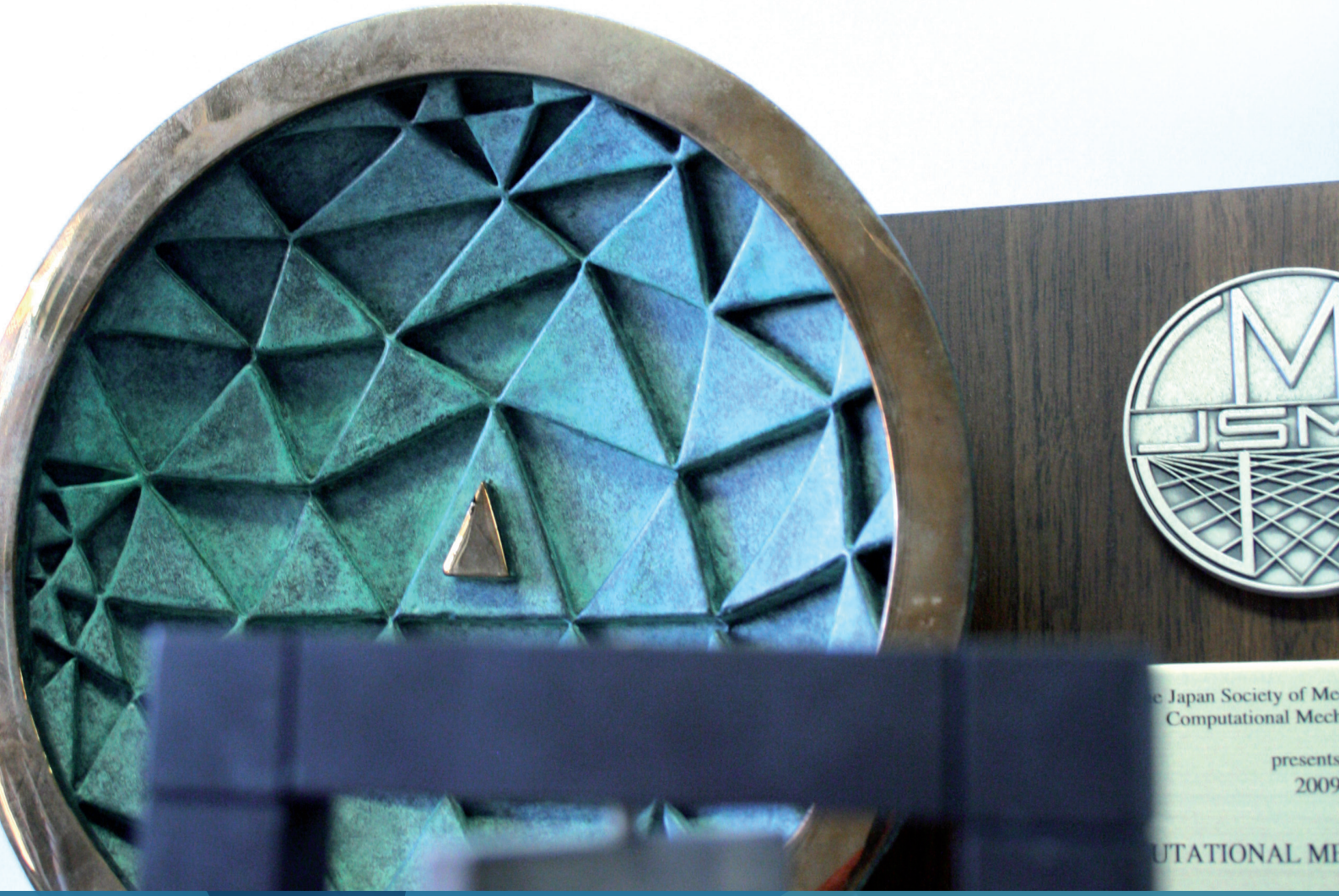
The creation of CIMNE was sponsored by UNESCO, aiming to promote international cooperation and development in the field of the application of numerical methods in science and technology.

As a result of the cooperation between UNESCO and CIMNE, in 1989 the UNESCO Chair on Numerical Methods in Engineering from the Universitat Politècnica de Catalunya (UPC) was created with the support of the Generalitat de Catalunya.

Prof. O. C. Zienkiewicz held the UNESCO Chair since its creation in 1989.

Prof. O. C. Zienkiewicz passed away on January 2nd, 2009. In 2008, Dr. Jacques Périaux, recognized expert in the field of numerical methods applied to aerospace engineering, took the position of the UNESCO chair of numerical methods in engineering. Dr Périaux contributions have resulted in a significant increase in the RTD in the aerospace sector, the promotion of numerous training courses, exchanges with leading scientists worldwide and several research and development projects at an international level.

Meeting of Unesco Chairs in Spain, Barcelona December 2011


Japan Society of Me
Computational Mech
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2009
UTATIONAL ME

AWARDS

Awards to CIMNE Scientists

Eduardo Alonso

GEOTECHNICAL RESEARCH MEDAL. Institution of Civil Engineers (United Kingdom), 2009.

GEOTECHNICAL RESEARCH MEDAL. Inst. of Civil Engineers (United Kingdom), 2010.

Santiago Badia

PREMI EXTRAORDINARI DE DOCTORAT ENGINYERIA CIVIL, Universitat Politècnica de Catalunya, 2008.

STARTING GRANT of the European Research Council (ERC), 2010.

Antonio Gens

Outstanding Contributions Award from International Association for Computer Methods and Advances in Geomechanics (IACMAG), 2011

Miembro de la Royal Academy of Engineering of UK. Recognized internationally as a world leader in unsaturated soils and coupled multi-physics analysis, 2011.

Antonio Huerta

PRANDTL MEDAL of the European Community on Computational Methods in Applied Science, 2008.

Sergio Idelsohn

EMERALD AWARD FOR EXCELLENCE PAPER "Validation of the particle finite element method (PFEM) for simulation of free surface flows" published in Engineering Computations, 2009.

SEMNI 2009 AWARD in recognition to a professional and international career in the Numerical Methods in Engineering and in particular to the personal contribution to the development and dissemination of these methods in the Hispanic speaking world, 2009.

ERC ADVANCED GRANT to develop Real Time computational mechanics in fluid mechanics problems, 2009.

PERSONALITY OF THE YEAR. Newspaper El Litoral, Santa Fe, Argentina, 2010.

Xavier Oliver

IACM COMPUTATIONAL MECHANICS AWARD, Venezia, 2008.

PREMIO AMCA INTERNACIONAL A LA TRAYECTORIA CIENTÍFICA, San Luis, Argentina, 2008.

Sergio Oller

DOCTOR HONORIS CAUSA awarded by the Universidad Nacional de Salta, Argentina, 2007.

Eugenio Oñate

O.C. ZIENKIEWICZ MEDAL of the Polish Association for Computational Mechanics (PACM), 2009.

TED BELYTSCHKO APPLIED MECHANICS AWARD (ASME), 2009.

JAPAN SOCIETY OF MECHANICAL ENGINEERS (JSME) Computational Mechanics Award, 2009.

LITERATI AWARD FOR EXCELLENCE to the best paper published in Engineering Computations, 2009.

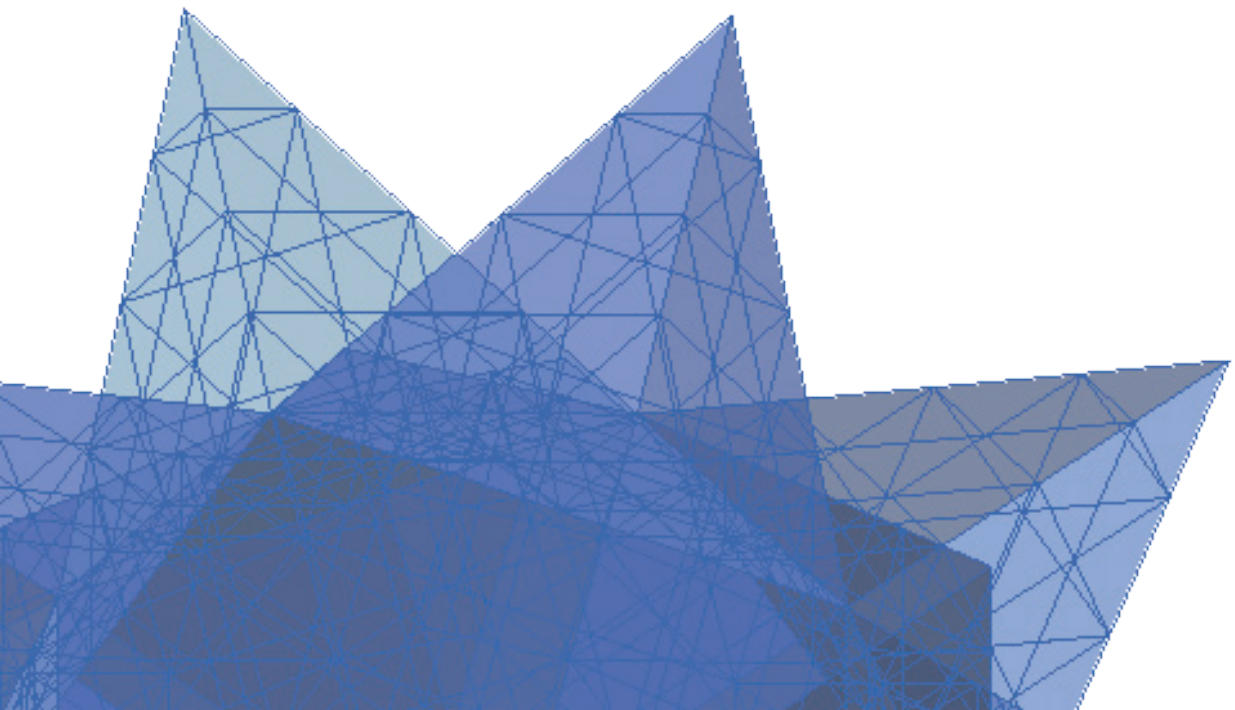
INTERNATIONAL ASSOCIATION FOR COMPUTATIONAL MECHANICS (IACM), Gauss-Newton Medal, 2010.

ADVANCED GRANT del European Research Council de la Comunidad Europea, 2010.

HONORARY DOCTORATE DEGREE from the Institut National des Sciences Appliquées (INSA) de Lyon, 2012

Benjamín Suárez

Medal to the professional merit from the Colegio de Ingenieros de Caminos, Canales y Puertos, 2010



Awards to CIMNE

AINE 2010 Award

CIMNE was distinguished with the AINE 2010 award, as the most innovative organization related to the naval sector. This award recognizes CIMNE's merit for the contribution in the field of simulation of sport crafts.

Award Duran i Farrell for Research and Technology Univesitat Politècnica de Catalunya, 2004

The Award was delivered to CIMNE scientists Dr. Oñate and Dr. García for their work entitled: "Development of a new finite element code for the hydrodynamic study of vessels. Aplications to the design of sailing ships for the America Cup race".

Ciutat de Barcelona 2002 Award, in Technological Research

On February 11, 2003, the Ciutat de Barcelona award in Technological Research was awarded to the CIMNE research team made up of Eugenio Oñate, Ramon Ribó, Enrique Escolano, Miquel Pasenau and Jorge Suit Pérez, for the development of the GID system, an innovative and user-friendly graphic interface that allows the geometric modeling and visualization of the results of numerical simulations.

Narcís de Monturiol Plate Award to the Scientific and Technological Merit 1999

On November 3, 1999 the Generalitat de Catalunya granted to CIMNE the Narcís de Monturiol Plate Award for Scientific and Technological Merit:

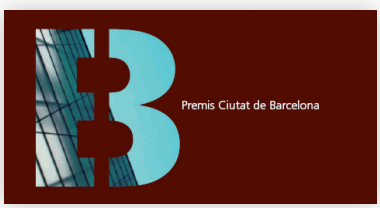
- For its contribution to the development of new methods for analysis and design for products and processes in engineering.
- For the fostering of cooperation between industry and university research groups.
- For many training activities and the promotion of science and technology at the international level.

Special mention to the Ciutat de Barcelona Award 1999

The City of Barcelona awarded CIMNE a Special Mention to the City of Barcelona Award, 1999, in the category of Technological Research for the work carried out by Drs. P. Roca, M. Cervera, and E. Oñate on the modeling and structural analysis of the Barcelona Cathedral.

IST Award to the best product of the Information Society Technologies Programme of European Commission.

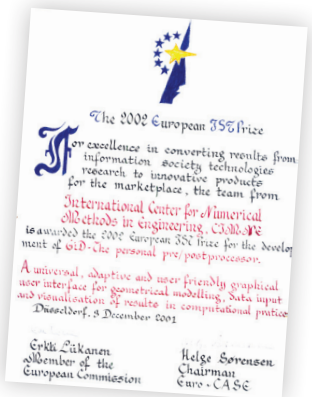
The European Commission granted in November 2001 the IST Award to the pre/post processor system GiD developed at CIMNE.



Premi Ciutat de Barcelona, 2002

AINE 2010 Award

Narcís de Monturiol Plate


The 2002 European IST Prize

For excellence in converting results from information society technologies research to innovative products for the marketplace, the team from

International Center for Numerical Methods in Engineering, CIMNE

is awarded the 2002 European IST Prize for the development of GiD-The personal pre/postprocessor.

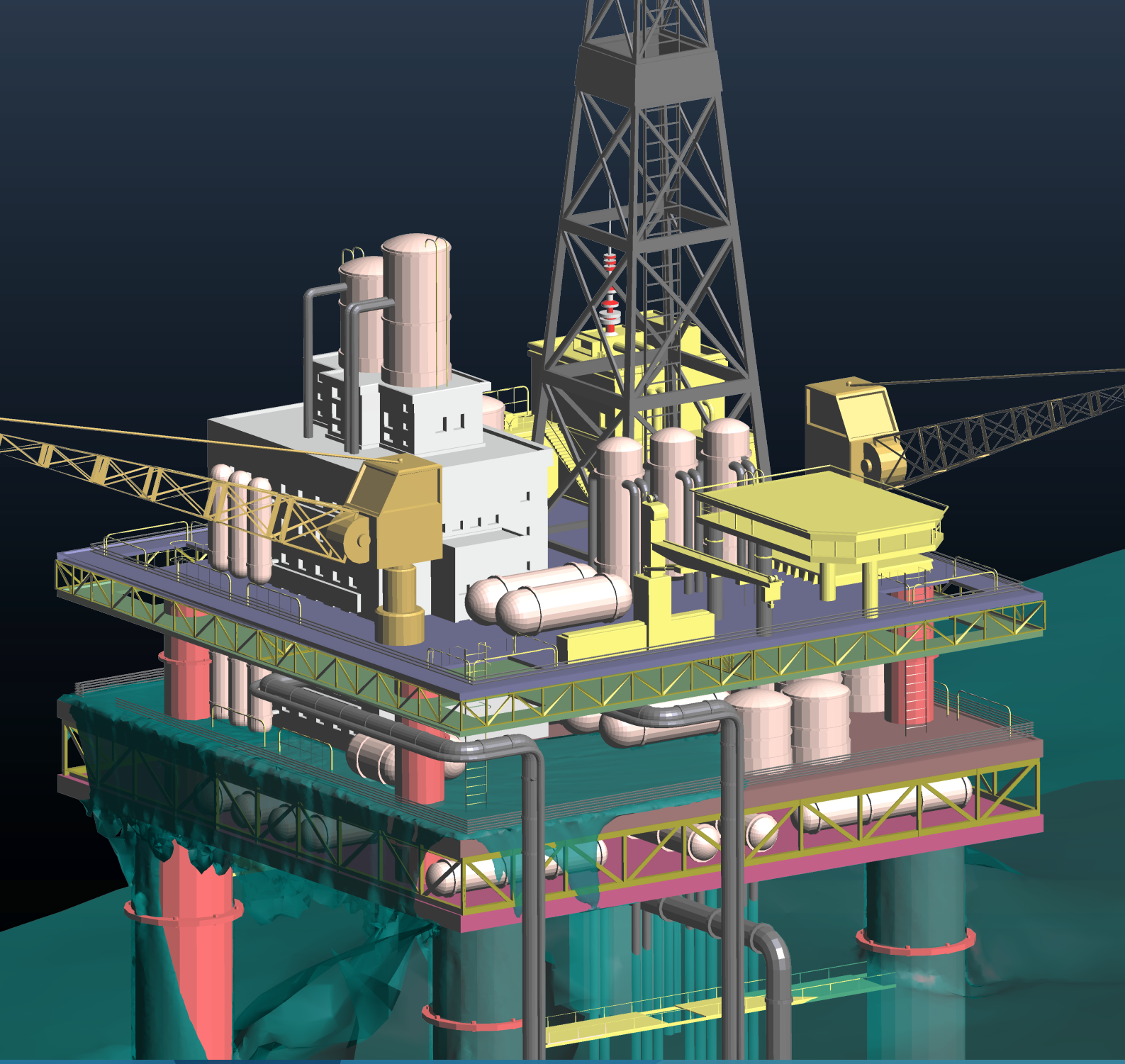
A universal, adaptive and user friendly graphical user interface for geometrical modelling, data input and visualisation of results in computational practice

Düsseldorf, 3 December 2001

Erkki Liikanen
Member of the European Commission

Helge Sorensen
Chairman Euro-CASE

IST Award



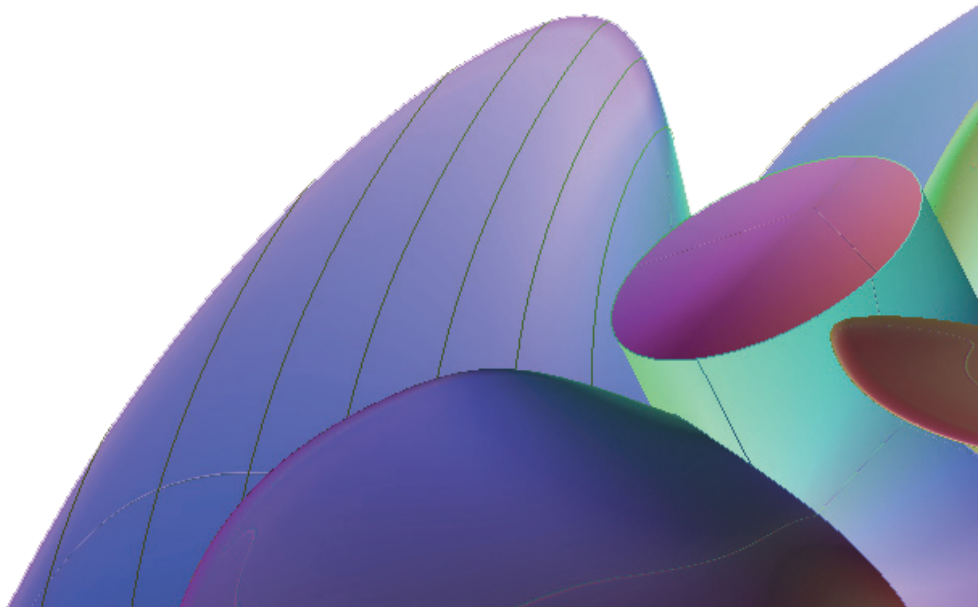
RESEARCH AND DEVELOPMENT ACTIVITIES

Research areas

CIMNE's RD activities are split into the following areas:

- Numerical Methods
- Solid and Structural Mechanics
- Computational Fluid Dynamics
- Stochastic Mechanics
- Materials
- Optimization Methods
- Electromagnetics
- Geomechanics
- Pre and post processing
- Information and Communication Technology
- Artificial Intelligence

In the following pages the main activities of each research area are described.



Numerical Methods

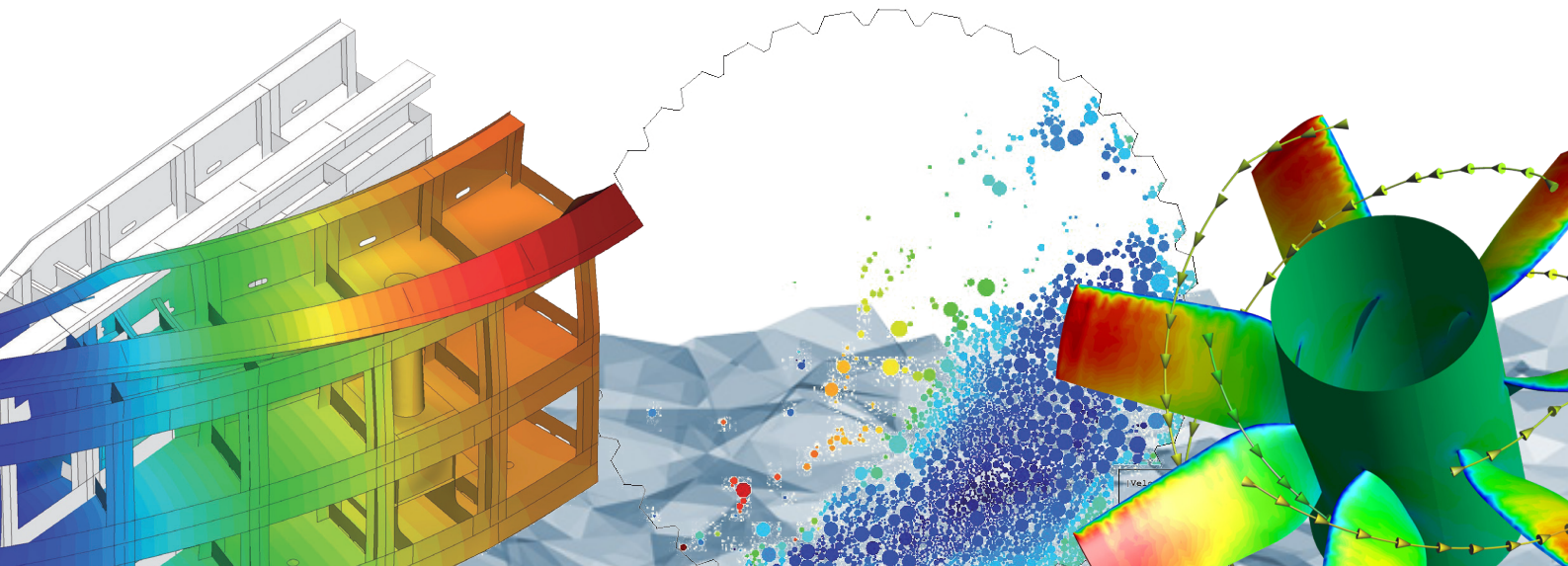
- Advanced numerical methods for solving partial differential equations.
- New meshless methods in computational mechanics
- Innovative solution algorithms for large algebraic systems
- Error estimation and mesh refinement techniques in solid and fluid mechanics
- Methods for certificating the quality of the numerical solution in computational mechanics

Solid and Structural Mechanics

- Finite element methods for linear and non linear analysis of solids and structures.
- Meshless methods in solid mechanics
- Strong discontinuity analysis in solids. Applications to fracture mechanics.
- Rotation-free plate and shell elements
- Coupled problems in solid mechanics (fluid-structure interaction, thermal-mechanical problems, electromagnetics, etc.)
- Combination of finite element and particle methods in solids mechanics.

Computational Fluid Dynamics

- Stabilized finite element and finite volume methods in compressible and incompressible fluid mechanics
- Meshless methods in fluid mechanics
- Finite element and particle methods for free surface flows.
- Numerical methods for multidisciplinary problems in fluid mechanics (fluid-structure interaction, thermal flows, electromagnetics, etc.)



Stochastic Mechanics

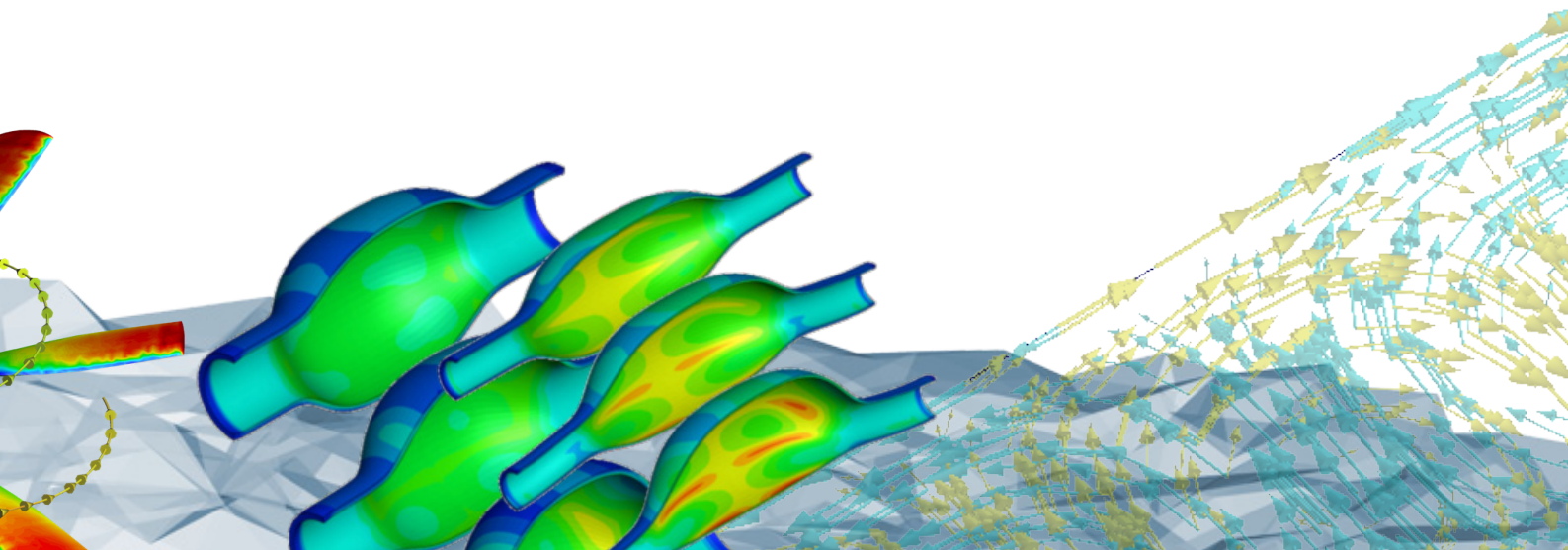
- Monte-Carlo methods for stochastic analysis in computational mechanics
- Game theory for multidisciplinary optimization problems
- Stochastic finite element methods
- Coupling of stochastic methods and finite element methods in solid and fluid mechanics
- Parameter identification via stochastic methods
- Stochastic methods for computer simulation of industrial forming processes.

Materials

- New constitutive models for frictional materials (concrete, rocks, soil) and metallic materials.
- Constitutive models for composite materials
- Nano-material models
- Constitutive models for bio-materials
- Parameter identifications in constitutive models of materials
- Material models for discrete element methods.

Optimization Methods

- Development of electromagnetic solutions using computing tools: ranging from numerical methods for the simulation of the Maxwell's equations in three-dimensional spaces, to codes for processing and analysing electromagnetic phenomena.
- Study of the behaviour of new devices and materials such as: new generations of electrical machines or superconductor-based machines.
- Electromagnetic solutions for food control and processing.
- Sheet stamping processes via electromagnetic fields.



Electromagnetics

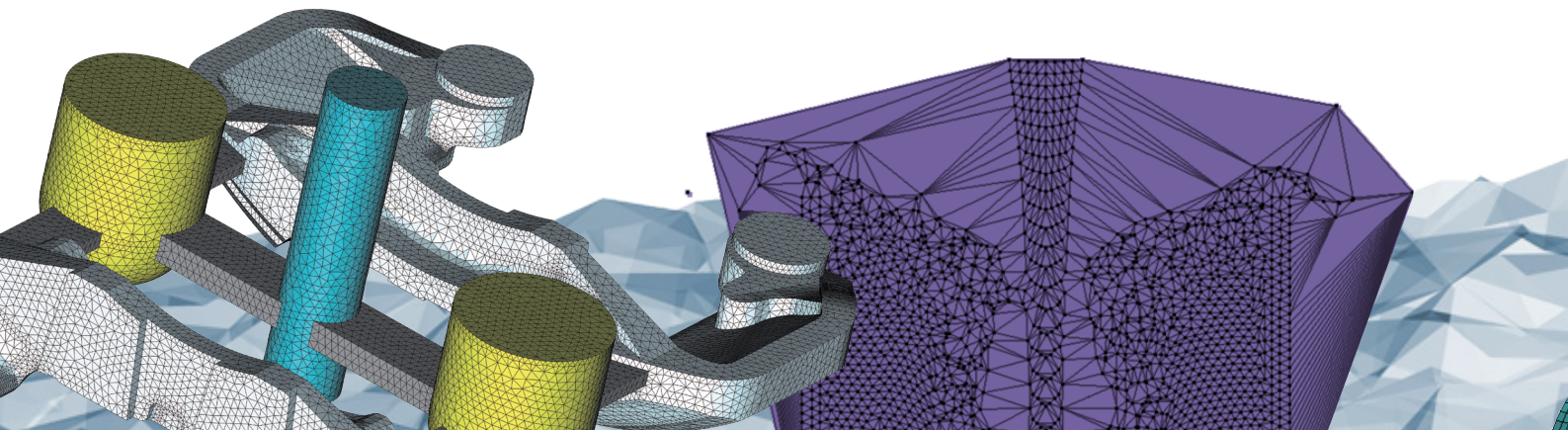
- Development of electromagnetic solutions using computing tools: ranging from numerical methods for the simulation of the Maxwell's equations in three-dimensional spaces, to codes for processing and analysing electromagnetic phenomena.
- Study of the behaviour of new devices and materials such as: new generations of electrical machines or superconductor-based machines.
- Electromagnetic solutions for food control and processing.
- Sheet stamping processes via electromagnetic fields.

Geomechanics

- Development of constitutive models to study the constitutive behaviour of soils and rocks by finite element methods.
- Development of finite element methods for coupled problems in geotechnical engineering.
- Development of finite element and particle methods for modelling and analysis of bed erosion in free surface flows.
- Development of discrete element methods for geomechanical problems.
- Development of particle finite element methods for geomechanical problems.
- Development of numerical methods for underground construction problems.
- Study of tool wear in construction machines.

Pre and post processing

- Development and maintenance of the GiD pre and post processing system (www.gidhome.com).
- Development of methods for generating structured and unstructured meshes.
- Development of input data technology for large scale computational problems.
- Graphical visualization techniques for large scale simulation problems.
- Generation of input data for finite element analysis from medical images.
- Integration of geographical information systems (GIS) with pre and post processing tools and finite element analysis codes.
- Meshless methods for the parametrization of geometries for shape optimization problems.

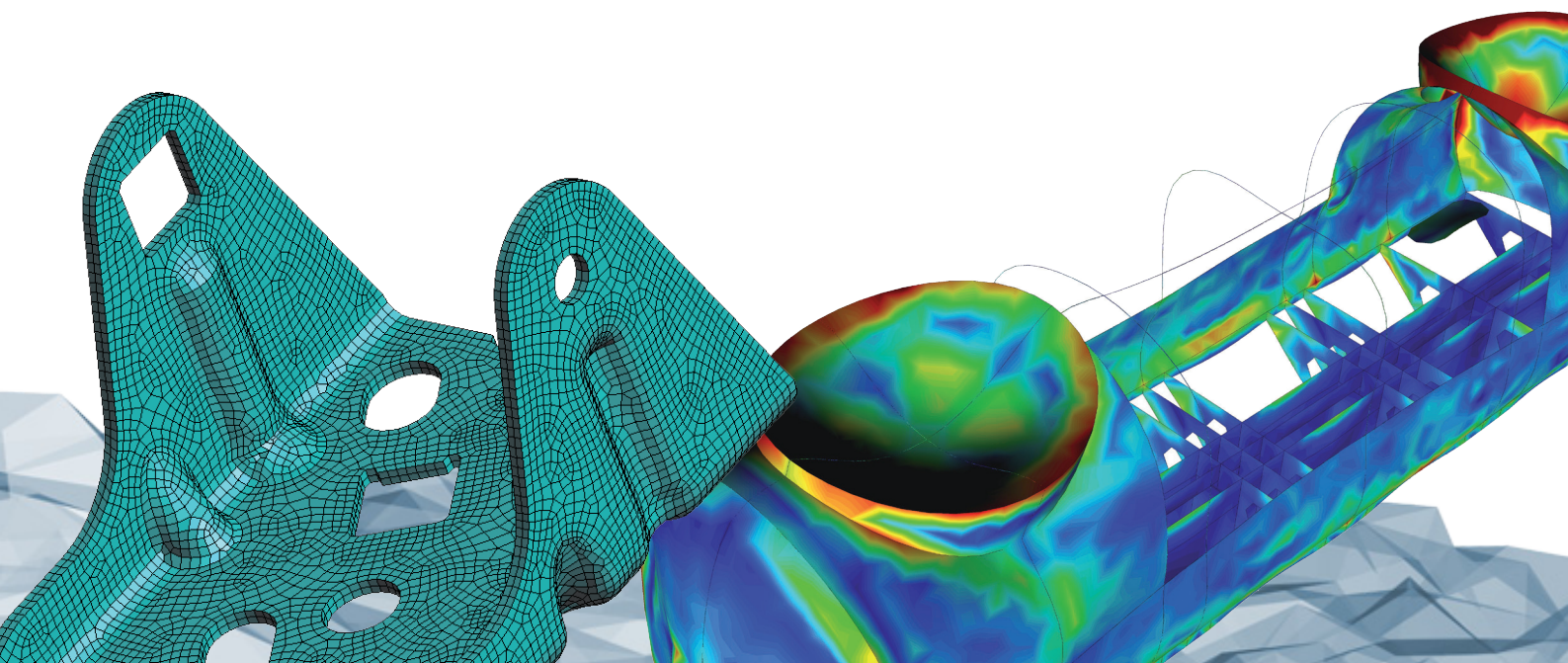


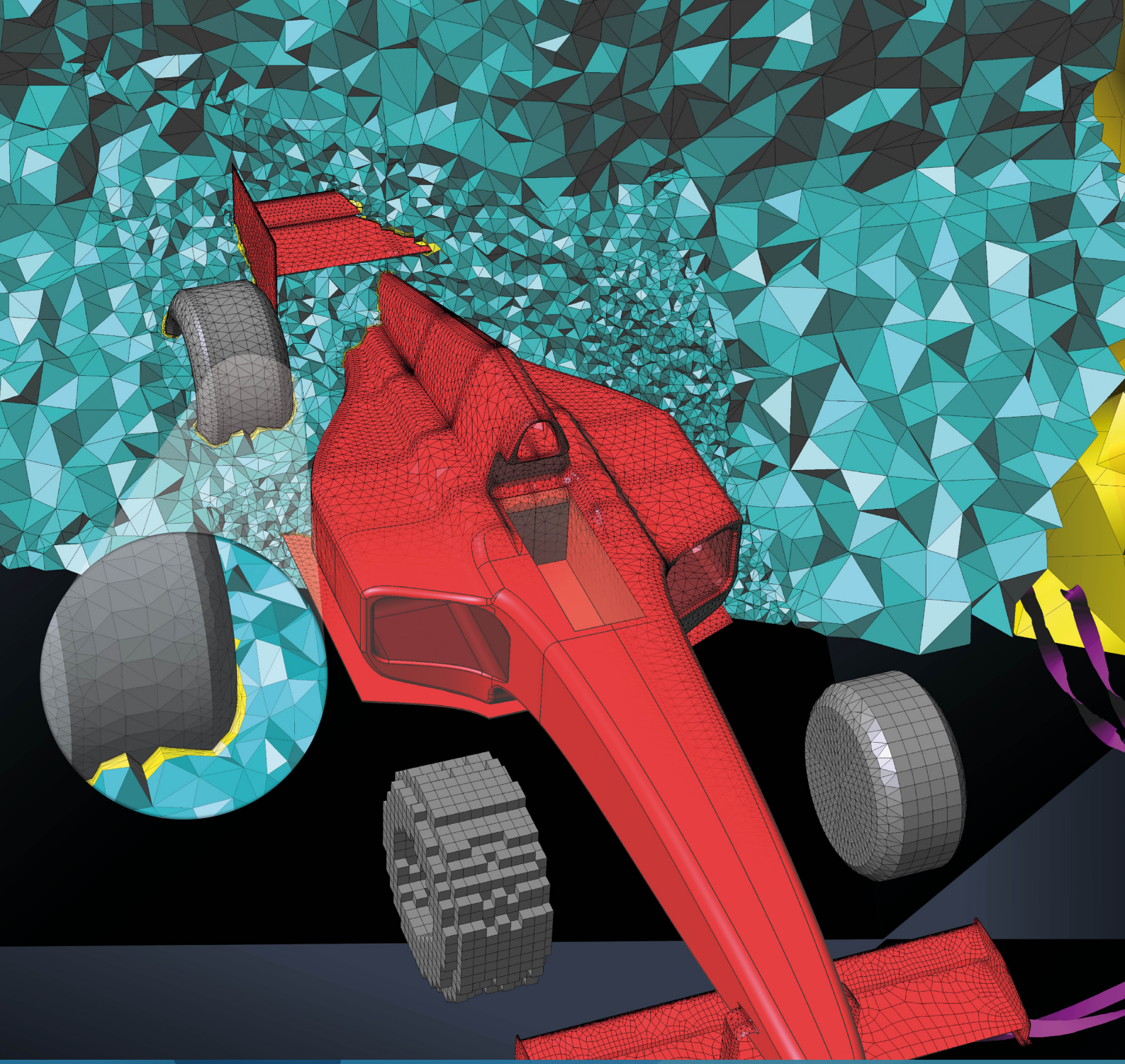
Information and Communication Technology

- Development of Internet tools for supporting management and training activities of individuals and organizations
- Methods for integrating and managing wireless sensors in Internet platforms.
- Development of health monitoring methods for constructions and buildings using wireless sensors and ICT.
- Development and integration of geographic information tools into decision support systems.
- Development of decision support systems integrating wireless sensors, networks, data bases, info-mechanics systems, computer simulation methods and AI technology.
- Application of ICT to manufacturing processes to industry.

Artificial Intelligence

- Development of artificial neural networks (ANN) for optimization, inverse analysis and fast decision making.
- Integration of artificial neural networks (ANN) in decision support systems combining wireless sensors, computer simulations methods and artificial intelligence technology.
- Development of artificial intelligence techniques based in agent simulations.
- Applications of artificial neural networks (ANN) technology for parameter identification in constitutive laws
- Development of intelligent finite element methods via AI technology.





RESEARCH, DEVELOPMENT AND INNOVATION DEPARTMENTS

RDI Departments

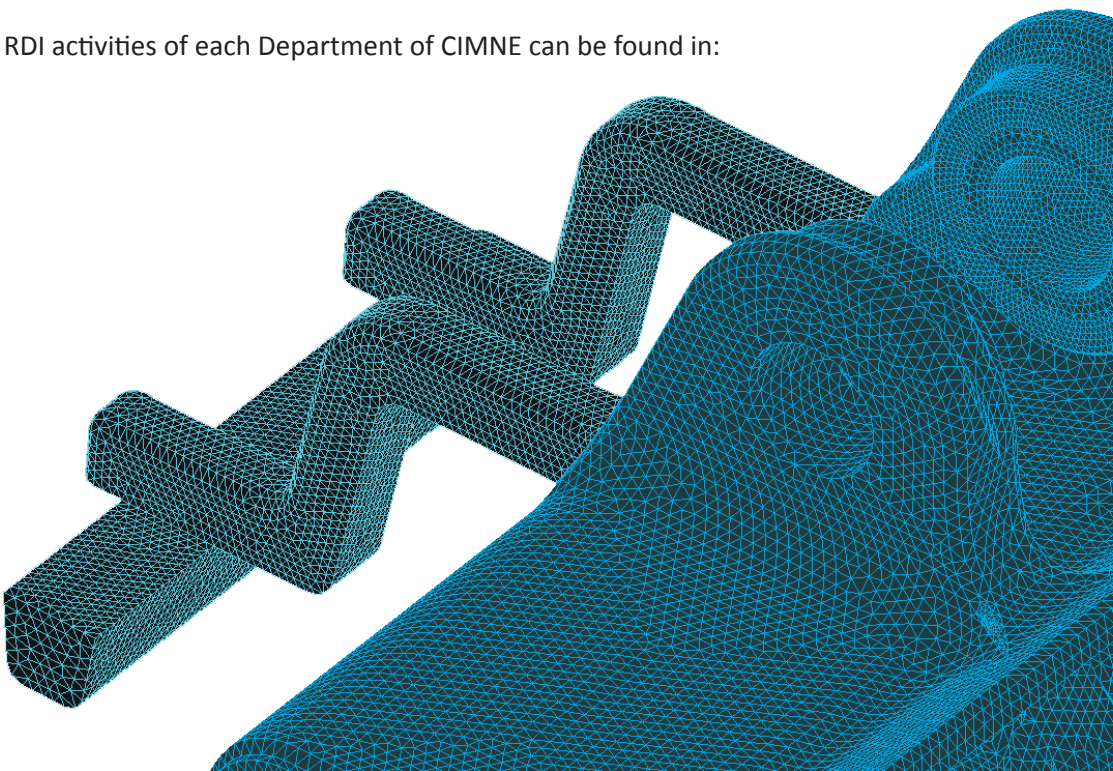
The research, development and innovation (RDI) activities at CIMNE are carried out by the following RDI Departments:

- Aerospace Engineering
- Civil Engineering
- Building, Energy and Environment (BEE GROUP)
- Marine and Naval Engineering
- Technology Tranfer Services (TTS)
- Bio-Medical Engineering
- Socio-Economic Research
- Natura
- Pre and Post processing
- Information and Communication Technologies
- Computational physics and large scale computing

In the following pages we list the key objectives of each RDI Department, its staff and the more relevant on-going projects.

More information on the RDI activities of each Department of CIMNE can be found in:

www.cimne.com



Aerospace Engineering

CIMNE Aeronautics group are in charge of developing new and amazing projects in the aeronautical field, including:

- Development of unstructured grid stabilized finite element and meshless methods for analysis of fluid flows.
- Development of 3D adaptive mesh refinement techniques for compressible/ incompressible flows.
- Optimum shape design in aerodynamics combined with adaptive mesh refinement.
- Structural analysis of composite aerospace structures under static and dynamic load.
- Aeroelastic analysis of parachutes.
- Development of pre/ post processing tools (GiD) for aerospace engineering problems
- 3D unstructured mesh generation
- Analysis data definition
- Visualisation of results
- New algorithms for multidisciplinary problems in aerospace engineering: aeroelasticity, thermal flows, electromagnetics, aeroacoustics, etc

STAFF

Team Manager

Jordi Pons

Team

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Roberto Flores
Alexandre Jarauta
Chris Lee
Roberto López
Enrique Ortega
José Pérez
Marco Scamuzzi

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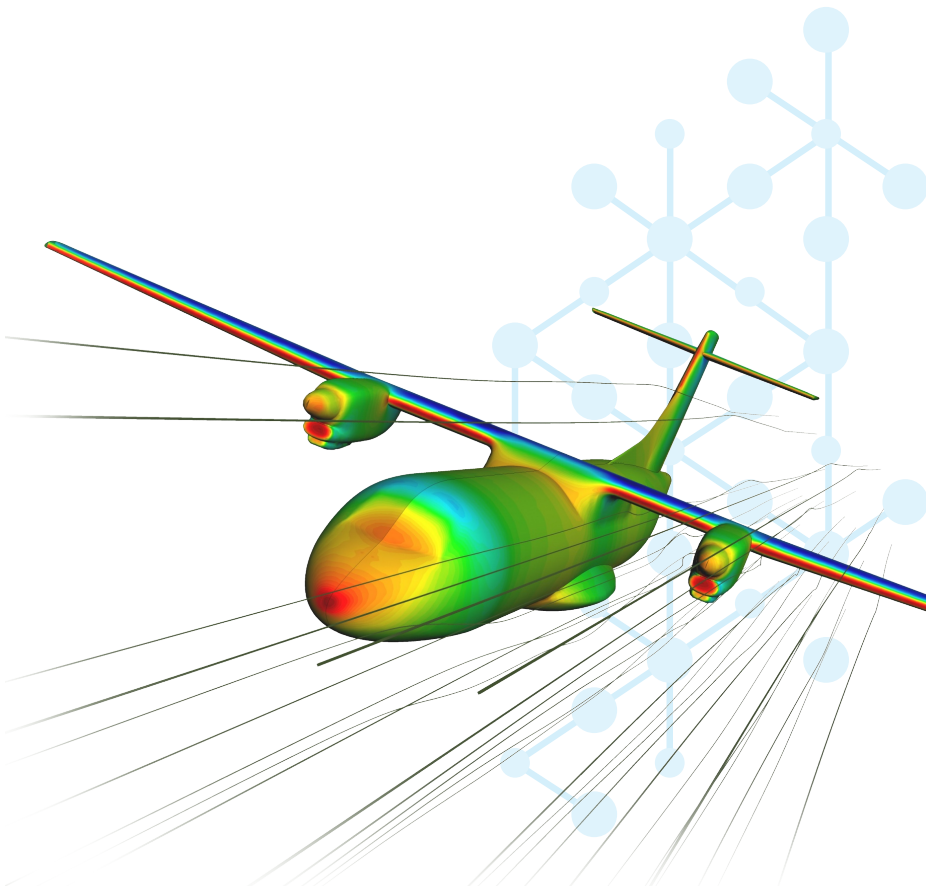

ON-GOING RTD PROJECTS

ALEF: Aerodynamic loads estimation at extremes of the flight envelope

FP7. EC-EUROPEAN COMMISSION
Coordinator: AIRBUS-D
1/05/2009- 30/04/2012

E-CAero: European Collaborative dissemination of AEROnautical research and applications

FP7, EC-EUROPEAN COMMISSION
Coordinator: CIMNE/ECCOMAS
1/09/2009- 31/08/2012

VALIANT: VALidation and Improvement of Airframe Noise prediction Tools

FP7, EC-EUROPEAN COMMISSION
Coordinator: VKI
1/09/2009- 31/08/2012

MARS: Manipulation of Reynolds Stress for Separation Control and Drag Reduction

FP7, EC-EUROPEAN COMMISSION
Coordinator: CIMNE
1/10/2010- 30/09/2013

M-RECT: Multiscale Reinforcement Of Semi-Crystalline Thermoplastic Sheets And Honeycombs

FP7, EC-EUROPEAN COMMISSION
Coordinator: Victrex Manufacturing Limited
15/04/2010- 14/04/2014

DOTNAC: Development and Optimization of THz NDT on Aeronautics Composite Multi-layered Structure

FP7, EC-EUROPEAN COMMISSION
Coordinator: RMA - Royal Military Academy
1/09/2010- 31/08/2013

CRESCENDO: Collaborative and Robust Engineering using Simulation Capability Enabling Next Design Optimisation

FP7, EC-EUROPEAN COMMISSION
Coordinator: AIRBUS SAS
1/05/2009- 30/04/2012

NEURAL: Neural network computation for fast trajectory prediction

FP7-CLEAN SKY, EC
Coordinator: GTD
4/1/2011 - 5/31/2012

HIRF SE: High Intensity Radiated Field Synthetic Environment

FP7 - COOPERATION
EUROPEAN COMMISSION
Coordinator: ALENIA
01/12/2008-30/11/2012

ROBOCOP: Desarrollo de herramientas para el diseño ROBustO de COmPonentes aeronáuticos

PLAN NAC. I+D (2008-2011), MICINN-MINISTERIO DE CIENCIA E INNOVACIÓN
Coordinator: UPC (G. Bugeda)
1/01/2009 - 31/12/2011

GRAIN: GReener Aeronautics International Networking

FP7 - COOPERATION
EUROPEAN COMMISSION
Coordinator: CIMNE
1/10/2010- 30/09/2012

AEROROBUST: Diseño robusto de componentes aeronáuticos basado en análisis estocástico aplicado a la resolución de problemas aerodinámicos, de aeroelasticidad, materiales compuestos y planificación de trayectorias.

PLAN NAC. I+D (2008-2011), LIA2. Proy.I+D: Investigación Fundamental, MICINN
Coordinator: CIMNE
1/1/2012 - 12/31/2012

PARAPLANE: Development of a New Steerable Parachute System for Rescue of Small and Medium Size Airplanes

FP7, EC
Coordinator: CIMSA

Civil Engineering

These are the main research lines that are being developed at the Civil Engineering Dept.

- Structural analysis of civil constructions under static and dynamic loads: bridges, dams, buildings, harbour structures, hydraulic structures, etc.
- Numerical methods for studying the safety and durability of structures in building and civil constructions.
- Development of decision support systems integrating wireless sensor networks, data bases, calculation methods and AI technology.
- Optimization methods in structural engineering.
- Finite element methods for analysis of textile membranes and inflatable structures.
- Computational methods for analysis of structures with new materials.
- Numerical methods for multidisciplinary problems in civil engineering.
- Integration of wireless sensors with analysis methods for structures and constructions.

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María Dolores Zavala
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OTHERS

Ulric Celada
Francesc De Paula Jordana
Álvaro Meseguer
Francisco Nuñez
Hans Paul Sánchez

RTD PROJECTS

FORGE: Fate of Repository Gases

FP7, EC-EUROPEAN COMMISSION
Coordinator: BGS
1/02/2009-31/03/2013

PEBS: Long-Term Performance of Engineered barrier Systems (EBS)

FP7, EC-EUROPEAN COMMISSION
Coordinator: BGR
1/03/2010- 28/02/2014

REALTIME: Real Time Computational Mechanics Techniques for Multi-Fluid Problems

FP7, EC-EUROPEAN COMMISSION
Coordinator: CIMNE
Participants: -
1/12/2009- 30/12/2014

FITUN: Desarrollo de un paquete informático de simulación numérica de incendios en túneles incluyendo efectos fluido-dinámicos, térmicos y estructurales

PLAN NAC. I+D (2008-2011), MICINN-MINISTERIO DE CIENCIA E INNOVACIÓN
Coordinator: CIMNE
1/01/2009 - 31/12/2011

NET-EMC: NEtwork Tool for ElectroMagnetic Compatibility

EUREKA, EC-EUROPEAN COMMISSION
Coordinator: NEXIO
4/05/2009- 31/10/2011

DELCOM: Comportamiento no-lineal de materiales compuestos multilaminados, considerando la delaminación

PLAN NAC. I+D (2008-2011), MICINN-MINISTERIO DE CIENCIA E INNOVACIÓN
Coordinator: CIMNE
1/01/2009 - 31/12/2011

URBAN-TECH: Sistema Inteligente de Cálculo y Diseño al Anteproyecto Urbano

PLAN NAC. I+D (2008-2011), MITYC-MINISTERIO DE INDUSTRIA, TURISMO Y COMERCIO
Coordinator: QUANTECH
Participants: CIMNE
1/05/2009 - 31/12/2011

VADIVAP: Estudio de las principales variables de diseño de válvulas de asiento plano y paso circular

PLAN NAC. I+D (2008-2011), MICINN-MINISTERIO DE CIENCIA E INNOVACIÓN
Coordinator: CIMNE
Participants: CIAGAR
4/05/2009 - 31/12/2011

ALCON: Desarrollo de criterios de diseño para el incremento de la capacidad de desagüe en presas de fábrica mediante aliviaderos con cajeros

PLAN NAC. I+D (2008-2011), MICINN-MINISTERIO DE CIENCIA E INNOVACION
Coordinator: ALATEC
Participants: CIMNE, UPM
1/10/2010 - 30/09/2012

DYNASPHALT: MODELADO Y TRATAMIENTO DINÁMICO DE ENSAYOS AUSCULTACIÓN DE FIRMES DE CARRETERAS

PLAN NAC. I+D (2008-2011), MICINN-MINISTERIO DE CIENCIA E INNOVACIÓN
Coordinator: GEOTECNIA
Participants: CIMNE
1/10/2010 - 30/09/2012

SEDUREC: Seguridad y durabilidad de estructuras de construcción

CONSOLIDER-INGENIO 2010
MINISTERIO DE EDUCACIÓN Y CIENCIA
Coordinator: CIMNE
Participants: Instituto Eduardo Torroja de Ciencias de la Construcción, Univ. Politécnica de Madrid (Organismo: CSIC)
15/09/2006-14/09/2011

MOVE: Methods for the Improvement of Vulnerability Assessment in Europe

FP7 EUROPEAN COMMISSION
Coordinator: UNIFI
Participants: BRGM, Z_GIS, EURAC, ATLAS, Kings College UK, NGI, Rupprecht Consult, CIMNE, UNU-EHS, UNIDO, FLUP, UNIVIE
01/10/2008 - 30/09/2011

AACC PROMETHEUS: PROMETHEUS: NUEVOS ENFOQUES PARA EL MODELADO DE LA EVACUACION Y EL INCENDIO

PLAN NAC. I+D (2008-2011), LIA2. Proy.I+D: Investigación Fundamental, MICINN
Coordinator: UNIV. DE CANTABRIA
10/1/2011 - 9/30/2012

SNYFM: Desarrollo de herramientas para la simulación numérica de procesos de fractura, fragmentación e inestabilidad de materiales sólidos o granulares mediante métodos de elementos finitos de partículas

PLAN NAC. I+D (2008-2011), MICINN-MINISTERIO DE CIENCIA E INNOVACIÓN
Coordinator: CIMNE
1/01/2009 - 31/12/2011

ACUÑA: Desarrollo de un prototipo de bloque en forma de cuña y de la metodología para su uso como protección frente a la erosión en presas o balsas de materiales sueltos

PLAN NAC. I+D (2008-2011), LIA6. Articulación e Internacionalización: Coop.Público-Privada, MICINN
Coordinator: PREHORQUI
9/1/2011 - 12/31/2013

AIR-BRIDGE: Development, validation and transfer to market of a prototype of AIR-BRIDGE for surface transport vehicles

PROVAT, CERCA
Coordinator: CIMNE
1/1/2012 - 12/31/2013

HFLUIDS: Nuevos métodos de partículas y elementos finitos para problemas de interacción fluido-estructura en fluidos heterogéneos con superficie libre. Real Time Computational Mechanics Techniques for Multi-Fluid Problems.

PLAN NAC. I+D (2008-2011), LIA2. Proy.I+D: Investigación Fundamental, MICINN
Coordinator: CIMNE
1/1/2011 - 12/31/2013

e-DAMS: Métodos numéricos y experimentales para la evaluación de la seguridad y protección de las presas de materiales sueltos en situación de sobrevertido. Numerical and experimental techniques for safety assessment and protection of embankment dams in overtoppi

PLAN NAC. I+D (2008-2011), LIA2. Proy.I+D: Investigación Fundamental, MICINN
Coordinator: CIMNE
1/1/2011 - 12/31/2013

CHAR-BIAX: Methods and techniques to characterize material strength, via Bi-axial Testing Devices coupled to Artificial Vision Measuring Systems.

CTP, AGAUR
Coordinator: CIMNE
1/1/2012 - 12/31/2013

COPASRE: Enfoque integral y probabilista para la evaluación del riesgo sísmico en España

PLAN NAC. I+D (2008-2011), LIA2. Proy.I+D: Investigación Fundamental, MICINN
Coordinator: CIMNE
1/1/2012 - 12/31/2014

DESURBS: Planning, (re)design and re(engineering) of urban areas to make them less vulnerable and more resilient to security threats

FP7, EC
Coordinator: Resman
1/1/2011 - 12/31/2014

DYNACAR: Técnicas para el diseño dinámico de infraestructuras de carreteras

PLAN NAC. I+D (2008-2011), LIA6. Articulación e Internacionalización: Coop.Público-Privada, MICINN
Coordinator: COPASA
10/1/2011 - 12/31/2013

FUSIM: Herramientas computacionales para interacción solidometal líquido. Aplicación al diseño de módulos de ensayo de envoltura líquida

PLAN NAC. I+D (2008-2011), LIA2. Proy.I+D: Investigación Fundamental, MICINN
Coordinator: CIMNE
1/1/2012 - 12/31/2014

HYPERMEMBRANE: Development of an adaptable structure for architecture application

FP7, EC
Coordinator: CIMNE
9/1/2011 - 8/31/2013

MUMOLADE: Multiscale Modelling of Landslides and Debris Flows

FP7, EC
Coordinator: BOKU
1/1/2012 - 12/31/2015

ROMSCALE: Modelado multiescala del comportamiento mecánico y de fallo estructural en materiales, utilizando técnicas de reducción de modelos

PLAN NAC. I+D (2008-2011), LIA2. Proy.I+D: Investigación Fundamental, MICINN
Coordinator: CIMNE
1/1/2012 - 12/31/2014

SAFECON: New Computational Methods for Predicting the security of constructions to Water Hazards accounting for fluid-soil-structure interactions

FP7, EC
Coordinator: CIMNE
1/1/2011 - 12/31/2015

CHANGES: Changing Hydro-Meteorological Risks- As Analyzed by A New Generation of European Scientists

FP7, EC
Coordinator: UTWENTE
1/1/2011 - 12/31/2014

SAFER: Optimización de los Sistemas de Aislamiento Ferroviario

PLAN NAC. I+D (2008-2011), LIA6. Articulación e Internacionalización: Coop.Público-Privada, MICINN
Coordinator: COMSA
7/1/2011 - 12/31/2013

TENSABRIDGE: Nuevos Puentes de despliegue rápido ultraligeros

PLAN NAC. I+D (2008-2011), LIA6. Articulación e Internacionalización: Coop.Público-Privada, MICINN
Coordinator: BUILDAIR
9/1/2011 - 12/31/2013

VIS: Estudios de Vulnerabilidad por Inundaciones en la región hidrográfica Mandinga-Comapala (El Salvador) para la planificación territorial estratégica

Ayudas PCI: Programa de Cooperación Interuniversitaria e Investigación Científica, AECID
Coordinator: UPC
1/26/2011 - 2/29/2012

XLIDE: Desarrollo de Herramientas para el Análisis de Estabilidad en Laderas con Riesgo Potencial sobre Infraestructuras

PLAN NAC. I+D (2008-2011), LIA6. Articulación e Internacionalización: Coop.Público-Privada, MICINN
Coordinator: OFITECO S.A.
7/1/2011 - 6/30/2014

DEPOSITOS: Desarrollo de un depósito de batunes inestables con los elementos betunes inestables con los elemento necesarios para evitar la separación de las fases del material.

Plan Nacional 2008-2011LIA6. Articulación e Internacionalización: Coop.Público-Privada, CDTI
4/27/2011 - 11/25/2011

HORMIFORMA: Desarrollo de herramientas de simulación numérica de hormigones reforzados con fibras

Plan Nacional 2008-2012LIA6. Articulación e Internacionalización: Coop.Público-Privada, CDTI
2/28/2011 - 8/28/2011

COMFUS: Computational Methdos for Fusion Technology

FP7, EC
Coordinator: CIMNE
1/1/2011 - 12/31/2015

Building, Energy and Environment (BEE GROUP)

The Building, Energy and Environment Group (BEE) is an autonomous research unit of CIMNE. It was founded in 2001 and its R&D activities are focused on the field of renewable energies and energy efficeincy. Their main research lines are:

- Numerical methods for analysis and design of energy sustainable buildings and constructions.
- Numerical methods for acoustic analysis and design of structures with enhanced materials.
- Methods for analysis of recycling processes of natural and artificial wastes for energy saving and environmental applications.
- Development of decision support systems in the energetic and environment sectors integrating wireless sensors, networks, databases, info-mechanical systems, computer simulation methods and AI technology.
- Development of computational methods for analysis and design of wave power plants.

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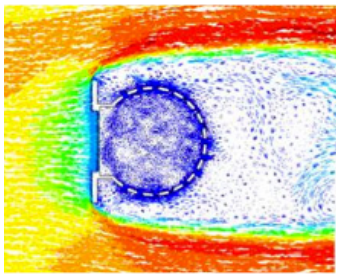

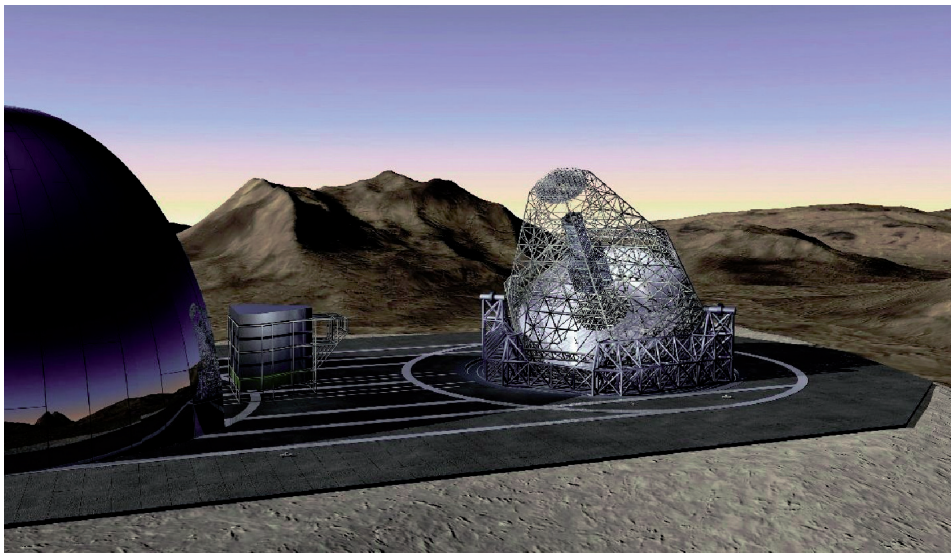

RTD PROJECTS

ROEM: Red de Observación de parámetros medioambientales para el estudio de la Eutrofización en eMbalses

PLAN NAC. I+D (2008-2011), MITYC-MINISTERIO DE INDUSTRIA, TURISMO Y COMERCIO
Coordinator: ECOHYDROS, S.L.
Participants: CIMNE, ITG
1/06/2009 - 31/12/2011

GREENSOLAR: Aumento de eficiencia energética en Sistemas de generación de Energía Solar

PLAN NAC. I+D (2008-2011), MITYC-MINISTERIO DE INDUSTRIA,TURISMO Y COMERCIO
Coordinator: QUANTECH
Participants: CIMNE, APPLUS, PIRELLI
10/06/2010 - 31/12/2011

PVFAVENT: Diseño y optimización de fachadas fotovoltaicas ventiladas con aprovechamiento de calor

PLAN NAC. I+D (2008-2011), MICINN-MINISTERIO DE CIENCIA E INNOVACIÓN
Coordinator: CIMNE
Participants: ISOFOTÓN, S.A
1/03/2009 - 28/02/2011

TECNO_FUS: Fusion Technology PROGRAMME-TECNO_FUS (TECNO_FUS)

PLAN NAC. I+D (2008-2011), MICINN-MINISTERIO DE CIENCIA E INNOVACIÓN
Coordinator: CIEMAT
1/02/2009 - 31/01/2012

EST: The Large Aperture European Solar Telescope

FP7 - CAPACITIES
EUROPEAN COMMISSION
Coordinator: IAC
Participants: KIS, UU, THEMIS, UToV, INAF, MPG, RSAS, UPS, QUB, UCL-MSSL, AIASCR, AISAS, HTT, ROTHE, FLENDER, PH, HANKOM, PMD, POLYNED, MTM, NTE, IDOM, CIMNE, etc.
01/02/2008-31/01/2011

PARANAT: Análisis paramétrico de sistemas de ventilación natural en edificios.

PLAN NAC. I+D (2008-2011), LIA2. Proy.I+D: Investigación Fundamental, MICINN
Coordinator: CIMNE
1/1/2012 - 12/31/2014

SEMANCO: Semantic Tools for Carbon Reduction in Urban Planning

FP7, EC
Coordinator: FUNITEC
9/1/2011 - 8/31/2014

SMART SPACES: Saving Energy in Europe's Public Buildings using ICT

CIP-Competitiveness and Innovation Framework Programme, EC
Coordinator: EMPIRICA
1/1/2012 - 12/31/2014

e - SESH: Saving Energy in Social Housing with ICT

CIP
EUROPEAN COMMISSION
Coordinator: EMP (Empirica Gesellschaft für Kommunikations- und Technologieforschung mbH)
Participants: Union sociale pour l'Habitat, Institut Wohnen Und Umwelt GMBH, Habitat & Territoires Conseil, Le Toit Angevin, EFFINEO SA, VOLTALIS,…
1/03/2010- 28/02/2013

SIGE: Acuerdo de colaboración entre la empresa Gassó Auditores y el organismo de investigación Centre Internacional de Mètodes Numèrics en l'Enginyeria en el marco del proyecto "Sistema Integral de Gestión energética y Seguridad eléctrica (SIGE)"

Participants: CIMNE, GASSÓ SERVEIS PER A L'ADMINISTRACIÓ,S.L.
01/05/2009-30/04/2011

AEE - TERRASSA: Agent Energètic d'Edificis

Projectes Innovadors, SOC
Coordinator: AJT
5/22/2010 - 12/31/2011

AIDA: Affirmative Integrated Energy Design Action

CIP-Competitiveness and Innovation Framework Programme, EC
Coordinador: TU WIEN
4/1/2012 - 3/31/2015

BECA: Balanced European Conservation Approach – ICT services for resource saving in social housing

CIP-Competitiveness and Innovation Framework Programme, EC
Coordinator: EMPIRICA
1/1/2011 - 12/31/2013

Marine and Naval Engineering

The main RTD lines of the group are:

- Numerical methods for hydrodynamic analysis of vessels.
- Finite element methods for analysis of composite materials and structures in ships accounting for fluid-structure interaction effects.
- Numerical methods for analysis of off-shore constructions accounting for fluid-structure interaction effects.
- Numerical methods for environmental problems in naval and marine engineering.
- Optimum shape design methods for ships
- Numerical methods for multidisciplinary problems in naval and marine engineering.
- Development of decision support system in naval and marine engineering, integrating wireless sensor networks, data bases, computer simulation methods and AI technology (neuronal networks).

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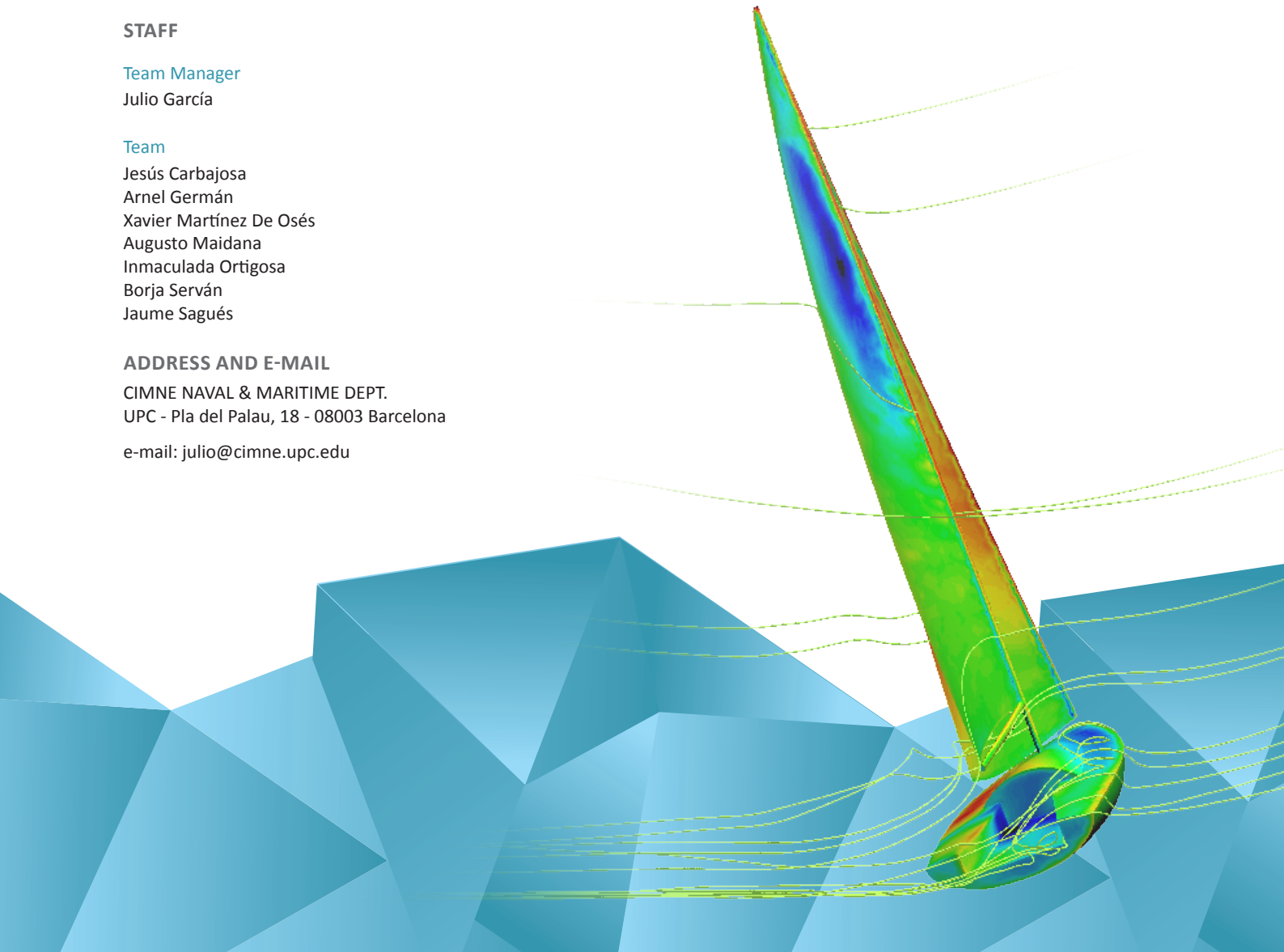


RTD PROJECTS

BESST: Breakthrough in European Ship and Shipbuilding Technologies

FP7, EC-EUROPEAN COMMISSION
Coordinator: Fincantieri - Cantieri Navali Italiani S.p.A.
1/09/2009- 28/02/2013

AIDMAR: Sistema de Apoyo a la Investigación del Origen de Vertidos Ilegales en el Mar Support System for the Investigation of Illegal Spills into the Marine

PLAN NAC. I+D (2008-2011), MICINN-MINISTERIO DE CIENCIA E INNOVACIÓN
Coordinator: FNB Julio Garcia
Participants: LIM, CIMNE
1/01/2009 - 31/12/2011

MULTI.MATHERIA: INVESTIGACION EN MATERIALES COMPUESTOS HIBRIDOS CON PROPIEDADES ADAPTATIVAS PARA LA APLICACIÓN EN LOS INTERIORES DE LOS MEDIOS DE TRANSPORTE

PLAN NAC. I+D (2008-2011), MICINN-MINISTERIO DE CIENCIA E INNOVACIÓN
Coordinator: RUCKER-LYPSA
Participants: LEITAT, AIRBORNE COMPOSITES, ARIES COMPLEX, CIMNE, etc.
1/10/2009 - 31/03/2011

T-CRAFT: EVALUATING PERFORMANCE OF THE AIR CUSHION, AND SEALS OF A SES T-CRAFT IN THE PRESENCE OF WAVES AND MANEUVERING IN SHALLOW WATERS

ONR BAA - ONR - Office of naval Research
Coordinator: CIMNE
1/04/2010 - 31/03/2012

NICOP: Computational research to support the development of swimming and hovering underwater unmanned vehicles (UUV) by NRL

Office for Naval Research Global (ONRG)
Coordinator: CIMNE
25/04/2008-24/04/2012

MIELE: Mediterranean Interoperability E-services for Logistics and Environment sustainability

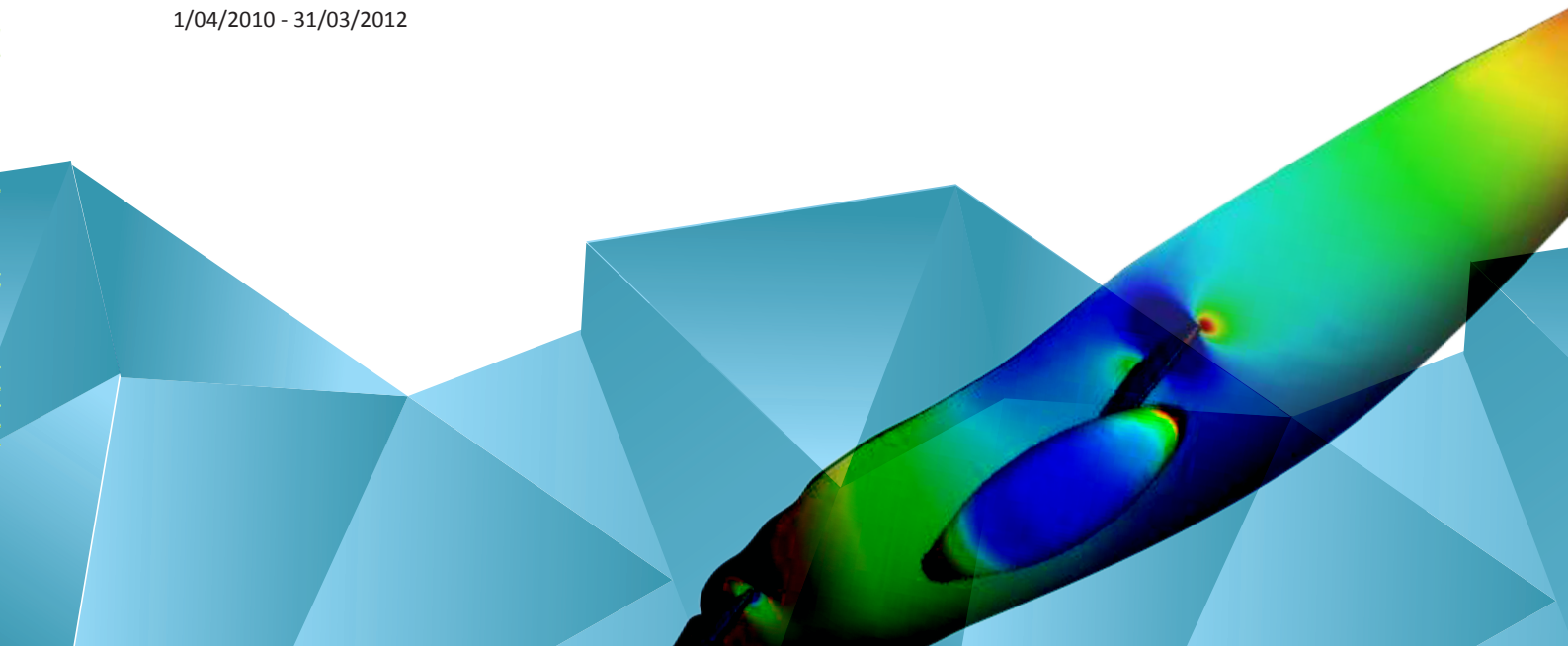
TEN-T (Trans-European Transport Network), EC
Coordinator: RINA
9/1/2010 - 12/31/2013

MOS4MOS: Monitoring and Operation Services for Motorways of the Sea.

TEN-T (Trans-European Transport Network), EC
Coordinator: VALENCIAPORT
3/21/2011 - 5/31/2012

TrainMoS: Training Motorways of the Sea

TEN-T (Trans-European Transport Network), EC
Coordinator: UNIV. POLITECNICA DE MADRID
1/1/2012 - 12/31/2013



Technology Tranfer Services (TTS)

CIMNE TTS Group works on:

- Finite element method for analysis of sheet stamping processes.
- Finite element methods for analysis of mould filling, solidification and cooling in casting processes.
- Numerical methods for life predictions of manufactured parts.
- Optimum design methods for manufacturing processes in metal and plastic industry.
- Finite element methods for simulation of welding and riveting processes.
- Decision support systems in forming and manufacturing industries integrating wireless sensor networks, databases, computer simulation methods and AI technology (neuronal networks).
- Numerical methods for multidisciplinary problems in the manufacturing industry.
- Development of numerical techniques for the simulation and dynamic optimisation of food preservation processes.
- Analysis, dynamic optimisation and control of processes such as: Thermal sterilisation / Pasteurisation / Aseptic processing / Freezing / Emerging technologies

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RTD PROJECTS

T-SIMULAS: Desarrollo de nuevas TEcnologías de SIMULación de procesos de fabricación para inyección de Aluminio SemiSólido

PLAN NAC. I+D (2008-2011), MITYC-MINISTERIO DE INDUSTRIA, TURISMO Y COMERCIO
Coordinator: QUANTECH
Participants: ASCAMM, CIMNE, FEAMM
1/09/2009 - 31/12/2011

VIMETAL: Estudio de Viabilidad de una herramienta de simulación de procesos de fabricación por deposición Metálica

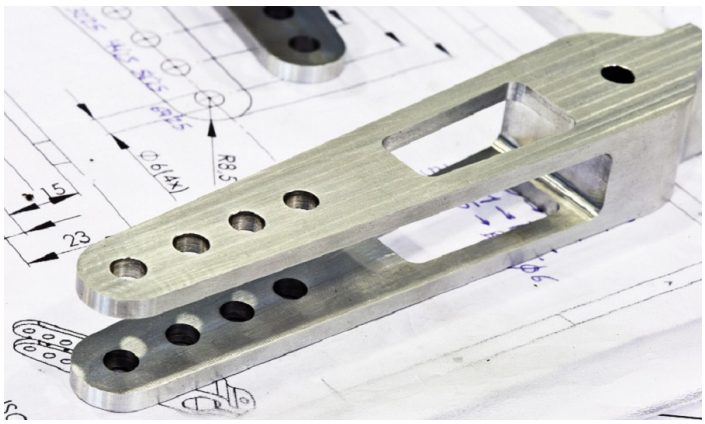
PLAN NAC. I+D (2008-2011), MITYC-MINISTERIO DE INDUSTRIA,TURISMO Y COMERCIO
Coordinator: QUANTECH
Participants: CIMNE, LEITAT
1/10/2010 - 30/09/2011

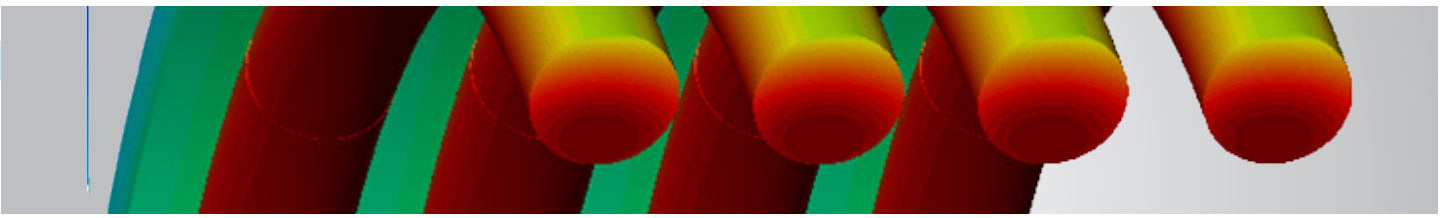
MAGNO: MAGnesium New technological oportunities

PLAN NAC. I+D (2008-2011)
MINISTERIO DE INDUSTRIA, TURISMO Y COMERCIO
Coordinator: GRUPO ANTOLIN
Participants: INASMET, CIMNE
01/01/2008-31/12/2011

FLEXICAST: Robust, and FLEXible CAST iron manufacturing

FP7, EC
Coordinator: UPC





Bio-Medical Engineering

The mission of the BioMedical Department of CIMNE is to create a fusion of engineering and the medicine that promotes scientific discovery and the development of new technologies and therapies through research and education. BioMedical Departament of CIMNE works in the areas listed below:

- Development of numerical methods for modelling and simulation of biomechanical and bio-medical engineering problems.
- Simulation of the mechanics of the cardiovascular system.
- Study of the mechanics of the urology system.
- Fluid-dynamic analysis of the blood flow in vessels.
- Decision support system in bio-medical engineering.
- Study of the heart mechanics.
- Biomedical signal
- Image processing

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Giovana Gavidia
Jorge S. Pérez

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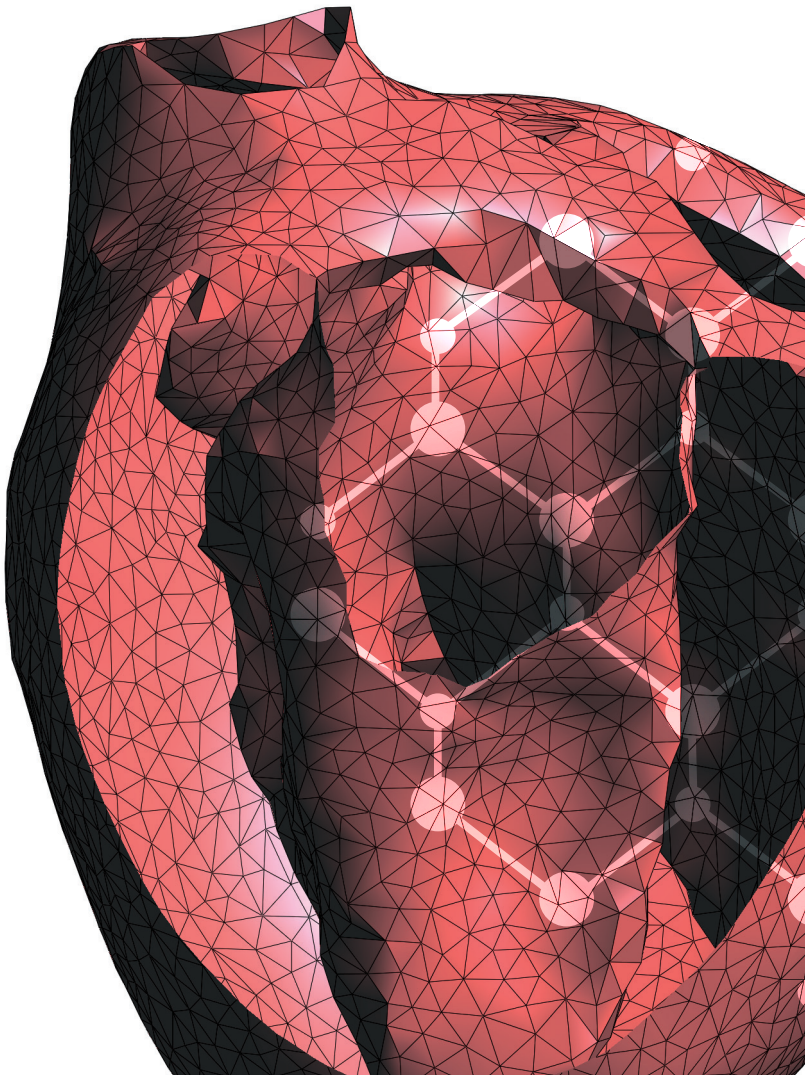


RTD PROJECTS

CHIRON: Cyclic and person-centric Health management: Integrated appRoach for hOme, mobile and clinical eNvironments

FP7 - ARTEMIS-JU
EC-EUROPEAN COMMISSION
Coordinator: FIMI S.R.L. (Barco)
1/03/2010- 28/02/2013

care4ME: Cooperative Advanced REsearch for Medical Efficiency

EUREKA, EC-EUROPEAN COMMISSION
Coordinator: Philips Healthcare
1/06/2009- 30/09/2012

care4ME: Tecnologías informáticas avanzadas para el sector de la salud

PLAN NAC. I+D (2008-2011), MITYC-MINISTERIO DE INDUSTRIA, TURISMO Y COMERCIO
Coordinator: ALMA IT
Participants: CVSS Radiología Clínica S.A., ROBOTIKER, HOSP. ST. PAU, CIMNE, COMPASS
1/05/2009 - 28/02/2011

E-SCAFFOLD: e-Scaffold: Simulador para el diseño y desarrollo de andamios para la ingeniería de tejidos.

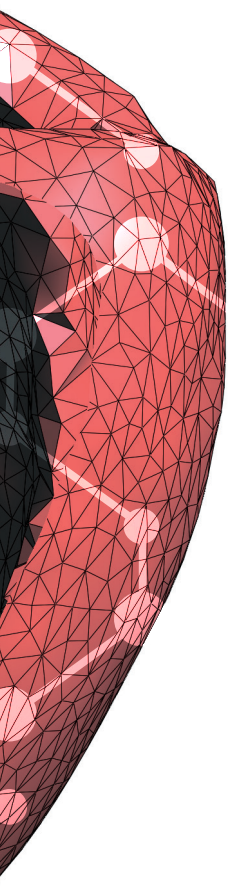
PLAN NAC. I+D (2008-2011), LIA2. Proy.I+D: Investigación Fundamental, MICINN
Coordinator: IBEC
1/1/2012 - 12/31/2012

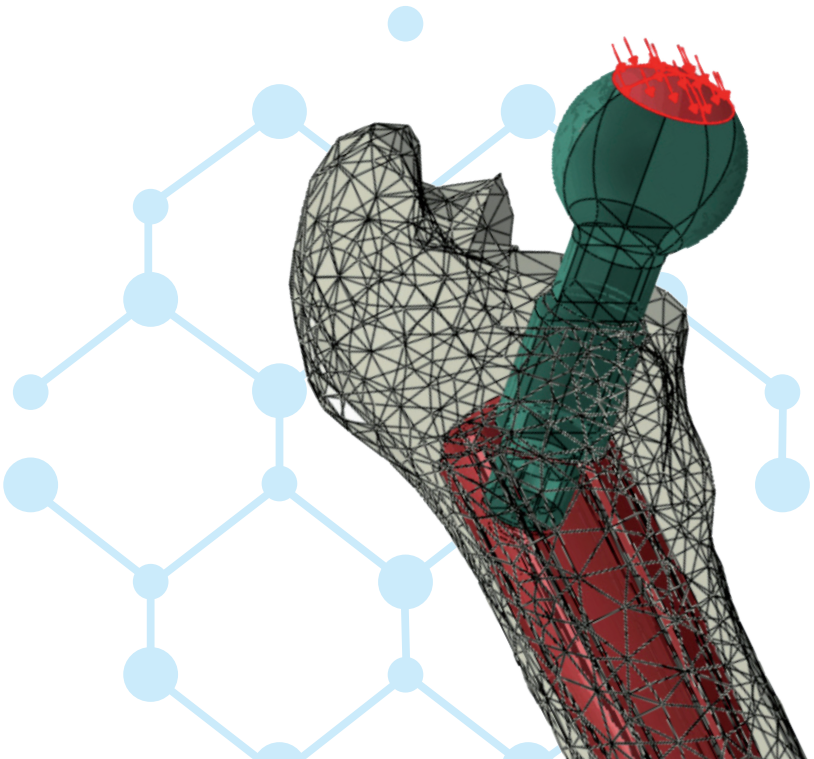
NEUROLINGUA: Plataforma de estimulación y rehabilitación de las alteraciones del lenguaje basada en fundamentos de neurociencia cognitiva.

PLAN NAC. I+D (2008-2011), LIA6. Articulación e Internacionalización: Coop.Público-Privada, MICINN
Coordinator: ICA
6/1/2011 - 12/31/2013

TOTAL.KNEE: Development of a new generation of knee prostheses with enhanced lifespan features using advanced computational biomechanics

FP7, EC
Coordinator: CIMNE
4/1/2012 - 3/31/2016





Socio-Economic Research

The Socio Economic Research group works in a range of scientific disciplines from information technology and finance to human behaviour, the social sciences, and humanities. The interest and focus is on financial capability, learning technologies, agent-based modelling, and systemic financial risk.

- *Financial capability:* We collaborate with our partners on conceptual work, lab and survey studies, and game development around financial education and financial behaviour. And we work on reaching key public decision makers with the results of our research and development activities.
- *Agent-based modelling of financial systems:* We conceptualise and develop network and agent-based models of financial systems. Our work focuses on methodology primarily, and we use model building and simulation of financial crisis episodes as a vehicle for that work.
- *Games, psychology, and finance:* We develop games for measuring psychological traits, and for learning cognitive and emotion skills. We collaborate with our partners to evaluate these games in lab experiments and in survey studies. Our exploratory work in this area aims to strengthen the link between psychology, pedagogy, and game design.
- *Systemic risk:* A practical aspect of our work in this area is to explore how systemic risk indicators affect market dynamics through mixed network and agent-based simulations, and hence links into our methodological work on agent-based models.

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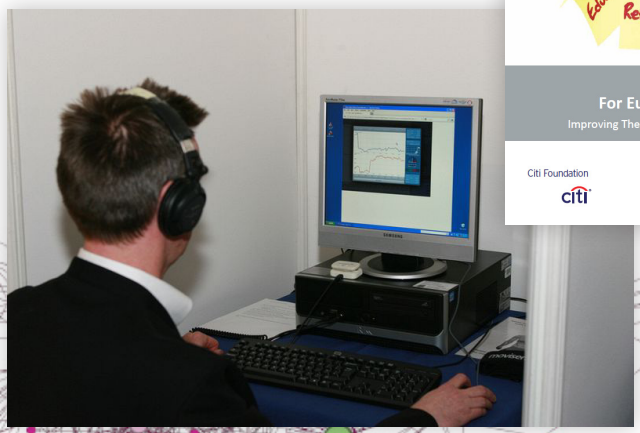
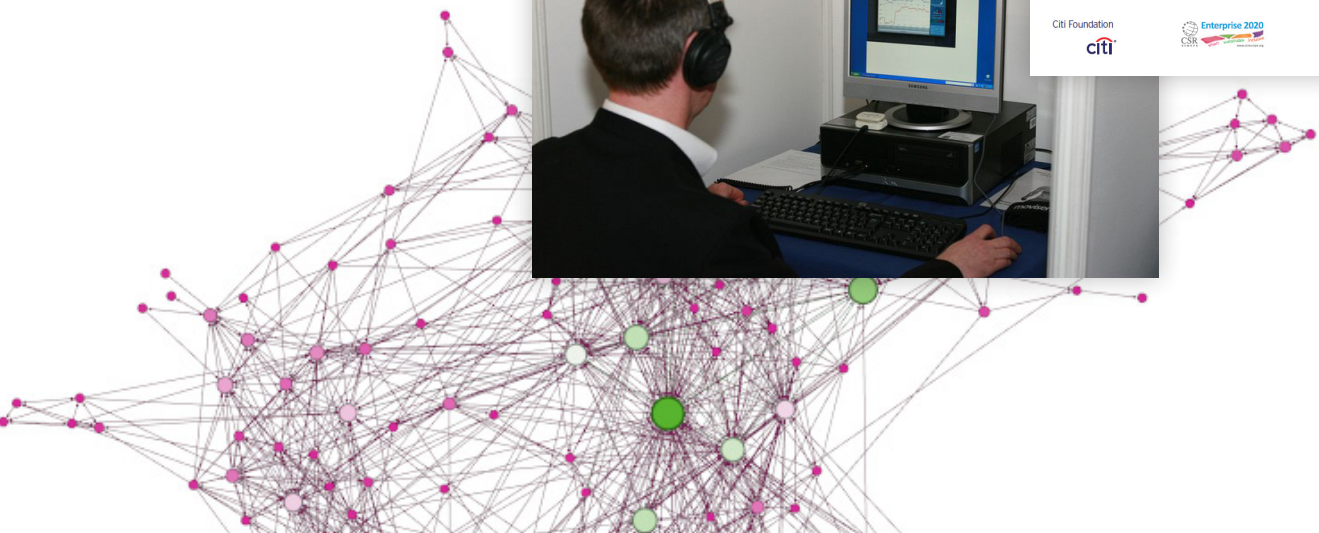




RTD PROJECTS

LAYERS: Learning Layers - Scaling up Technologies for Informal Learning in SME Clusters

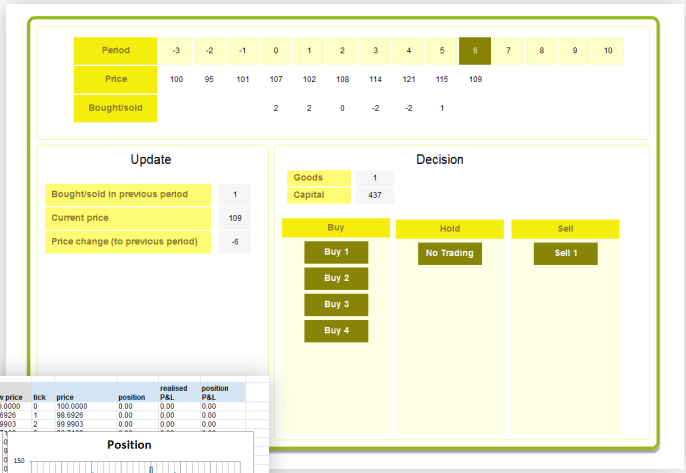
FP7, EC-EUROPEAN COMMISSION
Scientific coordinator: Tallinn University
Administrative coordinator: CIMNE
Participants: Tallinn University, CIMNE, Technische Universität Graz, Hochschule Karlsruhe Technik und Wirtschaft, Universität Innsbruck, University of the West of England, Rheinisch-Westfälische Technische Hochschule Aachen, Pontydysgu Ltd, University of Leeds, Universität Bremen, Nortal AS, Aalto-Korkeakoulusaatio, Tribal Education Limited, Innovation Performance, Agentur für Nachhaltiges Bauen GmbH, Verein zur Berufsförderung der Bauwirtschaft Nord e.V., Bradford and Airedale Teaching Primary Care Trust
1/11/2012- 31/10/2016

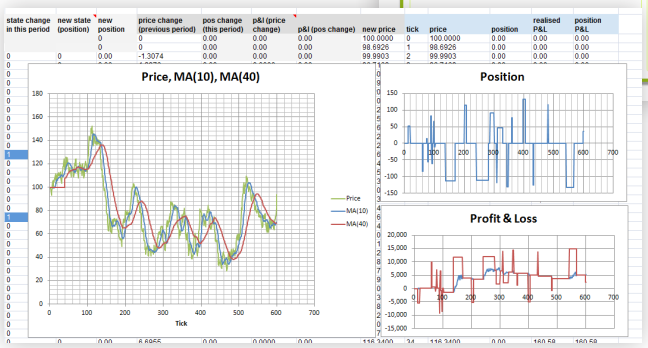
xDELIA: Excellence in Public and Professional Decision Making: Boosting Deliberate Practice and Handling biases through inmersive cognitive and emotional reinforcement strategies & tools

FP7, EC-EUROPEAN COMMISSION
Coordinator: CIMNE
Participants: CIMNE, Forschungszentrum Informatik, The Open University, Blekinge Tekniska Högskola, Erasmus Universiteit Rotterdam, University of Bristol, Saxo Bank AS
1/03/2009- 31/05/2012

MATURE: Continuous social learning in knowledge networks

FP7, EC-EUROPEAN COMMISSION
Scientific coordinator: Forschungszentrum Informatik
Administrative coordinator: CIMNE
Participants: CIMNE, Forschungszentrum Informatik, Technische Universität Graz, SAP AG, Fachhochschule Nordwestschweiz, Universität Paderborn, Universität Innsbruck, Pontydysgu Ltd, Learning Technology Research Institute, BOC Asset Management GmbH, University of Warwick, Structuralia
01/04/2008 - 31/05/2012

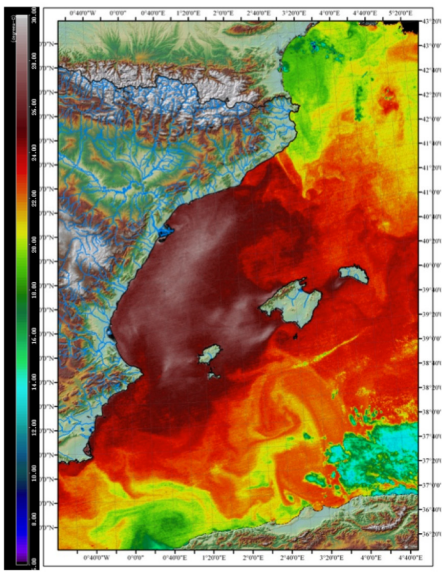




Natura

The main activity of CIMNE-Natura is to advance knowledge and technology in global environmental research by bringing together and managing skilled scientists and engineers to develop strategic and applied environmental solutions. The main RTD lines of the group are:

- Water desalination and purification
- Chemical methods for energy storage
- Climate adaptation
- Risk events studies



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Naeria Navarro
Alex Hanganu

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RTD PROJECTS

"System and method for desalinating seawater" (15/06/2011).

Development and application of decision support systems for environment monitoring. Pedro Arnau, Eugenio Oñate, Jordi Jiménez y Javier Piazzese. MAMERN11: Proceedings of the 4th International Conference on Approximation Methods and Numerical Modelling in Environment and Natural Resources, Saidia (Morocco), May 23-26, 2011. ISBN: 978-84-338-5230-4. DL. Gr./1.925-2011,2011. Eds. B. Amaziane, D. Barrera, H. Mraoui, M.L. Rodríguez. Universidad de Granada.

Study of mesocale convective clouds formation from satellite's data analysis. Francesco Cristiano, Stefano Fava, Pedro Arnau, Eugenio Oñate. Data Flow from Space to Earth: Apllications and interoperability. International Conference, Venice, Italy, 21-23, 03,2011.

AIDMAR: Sistema de Apoyo a la Investigación del Origen de Vertidos Ilegales en el Mar Support System for the Investigation of Illegal Spills into the Marine

PLAN NAC. I+D (2008-2011), MICINN-MINISTERIO DE CIENCIA E INNOVACIÓN
Coordinator: FNB Julio Garcia
Participants: LIM, CIMNE
1/01/2009 - 31/12/2011

Pre and Post processing

GiD department works on the development of advanced methods for efficient generation of data for numerical simulations and visualization of computational results. These are the main research lines:

- Development and maintenance of the GiD pre and post processing system (www.gidhome.com).
- Development of methods for generating structured and unstructured meshes.
- Development of input data technology for large scale computational problems.
- Graphical visualization techniques for large scale simulation problems.
- Generation of input data for finite element analysis from medical images.
- Integrations of geographical information systems (GIS) with pre and post processing tools and finite element analysis codes.
- Meshless methods for the parametrization of geometries for shape optimization problems.

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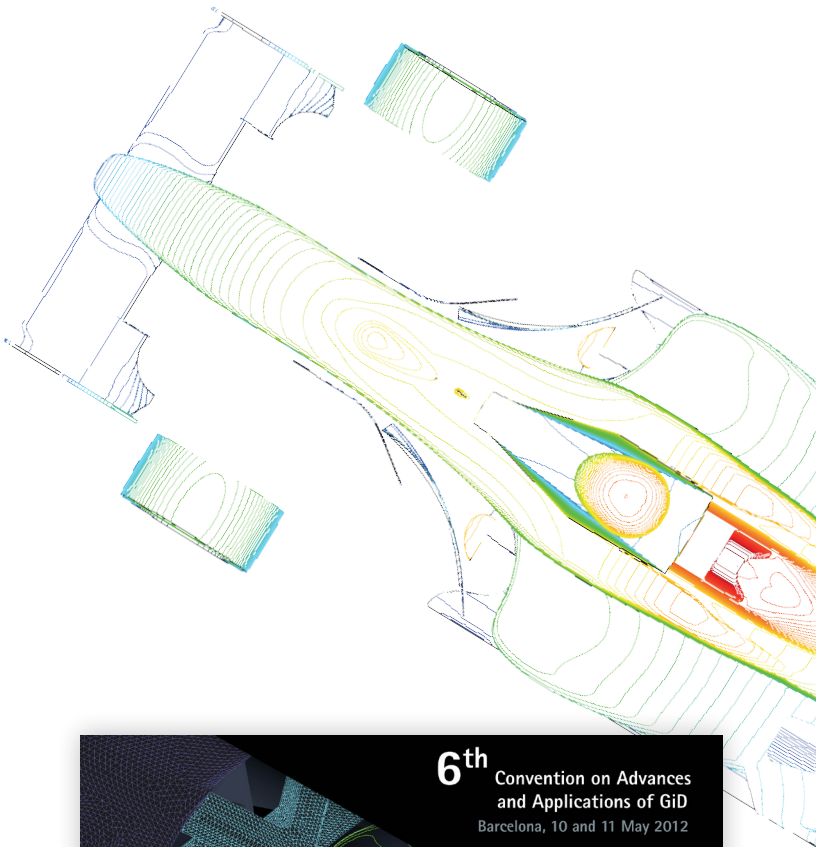
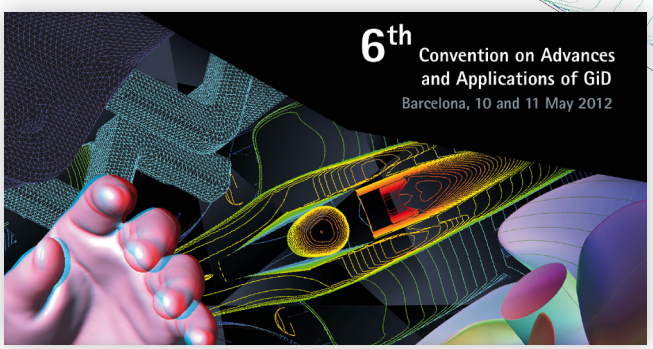
RTD PROJECTS

CLOUD: Optimización de procesos de fabricación mediante aplicaciones cloud computing
PLAN NAC. I+D (2008-2011), LIA6. Articulación e Internacionalización: Coop.Público-Privada, MICINN
Coordinator: QUANTECH
9/1/2011 - 8/31/2013





Information and Communication Technologies

This group is currently working on:

- Development of Internet tools for supporting management and training activities of individuals and organizations
- Methods for integrating and managing wireless sensors in Internet platforms.
- Development of health monitoring methods for constructions and buildings using wireless sensors and ICT.
- Development and integration of geographic informations tools into decision support systems.
- Development of decision support systems integrating wireless sensors, networks, data bases, info-mechanics systems, computer simulation methods and AI technology.
- Application of ICT to manufacturing processes in industry.

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Jordi Jiménez

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Francesc Jerez
José Luis Oñate
Ángel Diego Priegue
Fabio Renda
Alberto Tena
Sergio Valero
Claudio Zinggerling

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RTD PROJECTS

AULA-TDT: Aula virtual avanzada de cursos audiovisuales bajo demanda sobre TDT

PLAN NAC. I+D (2008-2011), Acciones Estratégicas, MITYC
Coordinator: STRUCTURALIA
6/1/2009 - 3/31/2011

JUST4ME: Just-in-time and just-for-me: hacia la autogestión del aprendizaje en un entorno personal ubicuo

PLAN NAC. I+D (2008-2011), LIA6. Articulación e Internacionalización: Coop.Público-Privada, MICINN
Coordinator: ICA
6/1/2011 - 12/31/2013

NUMEX2: Plataforma colaborativa para el almacenamiento, validación e intercambio de resultados numéricos y experimentales en ingeniería estructural

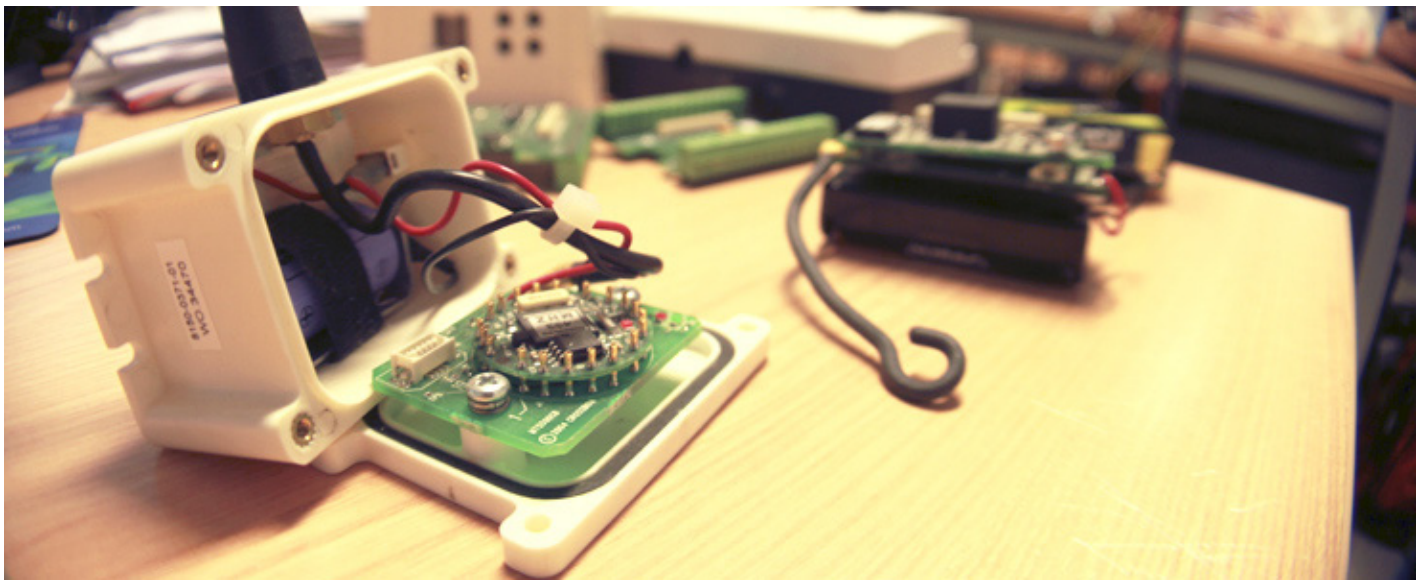
PLAN NAC. I+D (2008-2011), Acciones Estratégicas, MITYC
Coordinator: COMPASS ING. Y SISTEMAS, S.A.
1/1/2009 - 3/31/2011TTS

ULCF: Ultra low cycle fatigue of steel structures under high strain transient loading conditions

RFCS-Research Fund for Coal and Steel, EC
Coordinator: FLUP
7/1/2011 - 6/30/2014

MIVRI: Sistema para la Monitorización distribuida de vIñedos y caVas integrando Redes de sensores Inteligentes, sistemas de información geográfica e internet

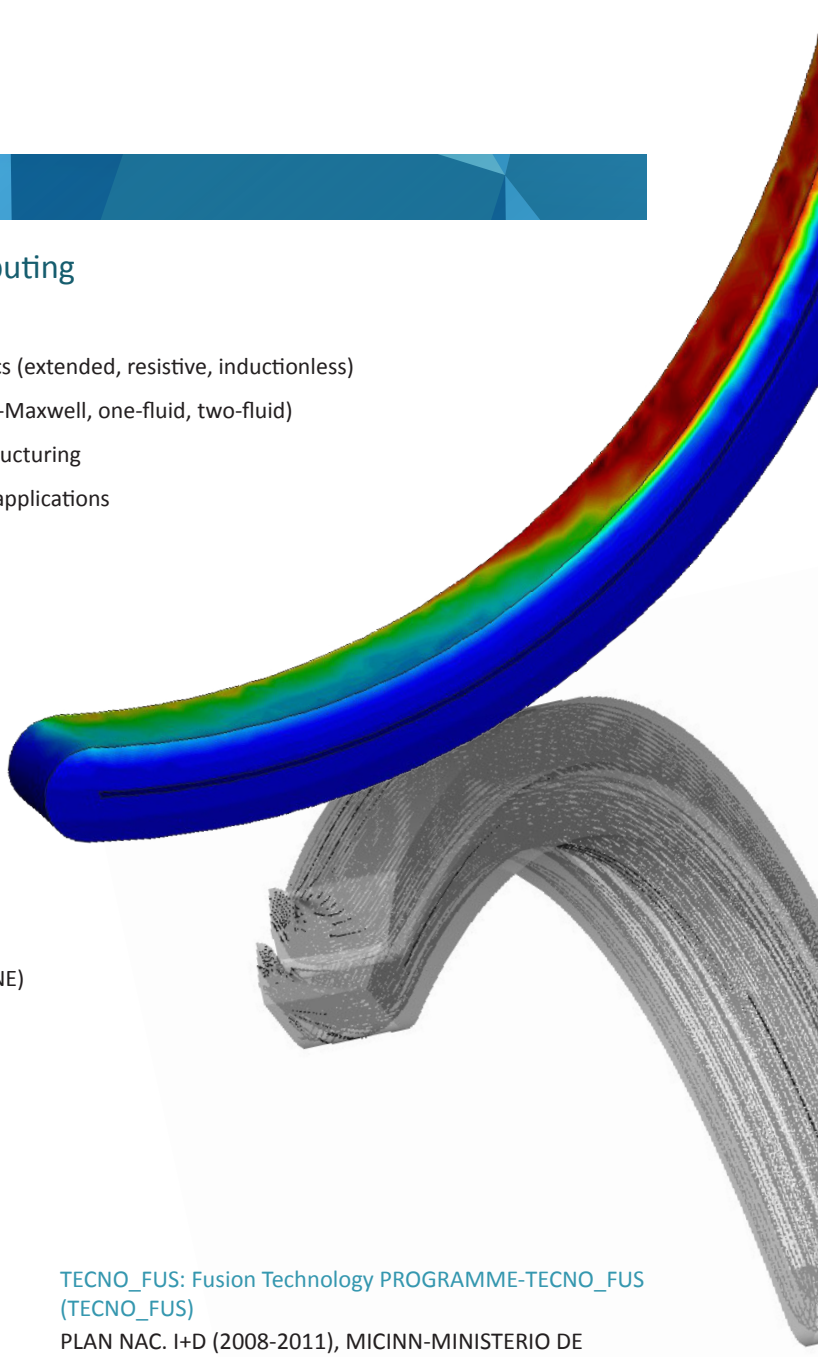
PLAN NAC. I+D (2008-2011), MITYC-MINISTERIO DE INDUSTRIA, TURISMO Y COMERCIO
Coordinator: Vins el Cep
Participants: CIMNE
1/07/2009 - 31/12/2011



Computational physics and large scale computing

These are the main research lines:

- New finite element formulations for magnetohydrodynamics (extended, resistive, inductionless)
- New finite element formulations for plasma physics (Vlasov-Maxwell, one-fluid, two-fluid)
- Scalable domain decomposition algorithms based on substructuring
- Physics-based preconditioning techniques for multiphysics applications
- High performance scientific computing



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Santiago Badía

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Alba Hierro
Alberto Francisco Martín
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RTD PROJECTS

COMFUS: Computational Methdos for Fusion Technology

FP7, EC
Coordinator: CIMNE
1/1/2011 - 12/31/2015

FUSIM: Herramientas computacionales para interacción solidometal líquido. Aplicación al diseño de módulos de ensayo de envoltura líquida

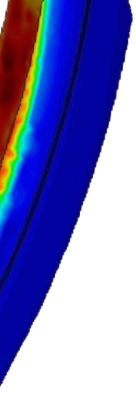
PLAN NAC. I+D (2008-2011), LIA2. Proy.I+D: Investigación Fundamental, MICINN
Coordinator: CIMNE
1/1/2012 - 12/31/2014

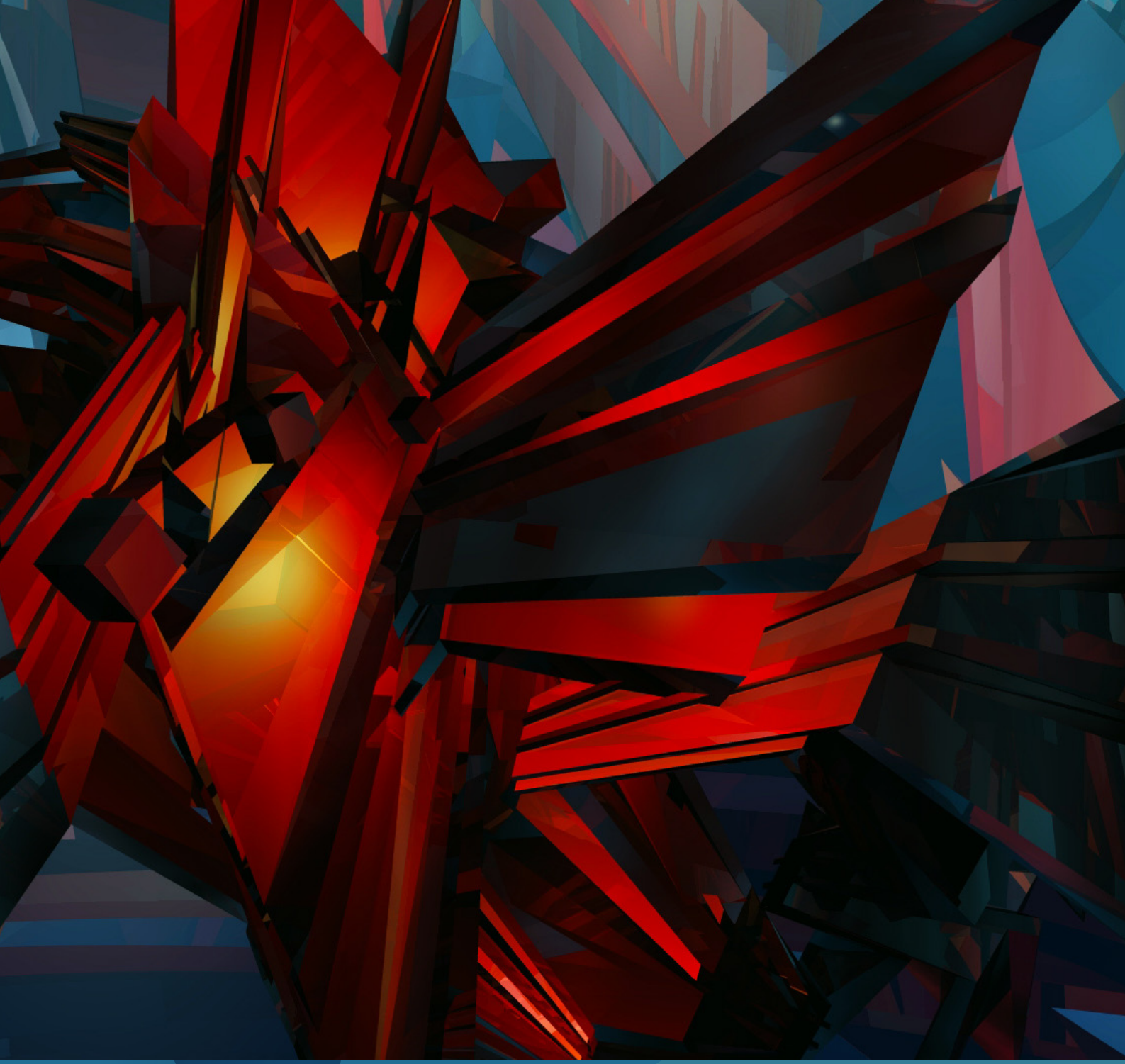
TECNO_FUS: Fusion Technology PROGRAMME-TECNO_FUS (TECNO_FUS)

PLAN NAC. I+D (2008-2011), MICINN-MINISTERIO DE CIENCIA E INNOVACIÓN
Coordinator: CIEMAT
1/02/2009 - 31/01/2012

VALIANT: VALidation and Improvement of Airframe Noise prediction Tools

FP7, EC-EUROPEAN COMMISSION
Coordinator: VKI
1/09/2009- 31/08/2012





INNOVATION AND TECHNOLOGY TRANSFER

CIMNE products

We describe below the products developed and marketed entirely by CIMNE or in collaboration with companies.

DECISION SUPPORT SYSTEMS

BEACHING

Information system for management of tourism activities in beach areas.

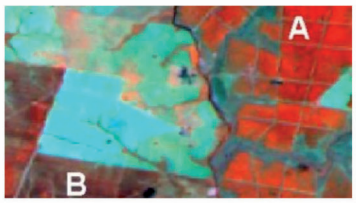
Developed by CIMNE and marketed by TAOC SA since 2011

ROBOCOPT

Interpolated platform for robust optimization in engineering.

Developed by CIMNE

GIS+



Web-based interactive Geographic Information System.

Developed by CIMNE

SIE

Information system for management of energy consumption in public buildings and municipalities.

Developed by CIMNE

Marketed by Gassó Auditors SL and CIMNE since 2005

ROEM

Information system for assessment of the environmental quality in reservoirs and lakes.

Developed by CIMNE

ETESTING

Web-based platform for e-management of experimental tests.

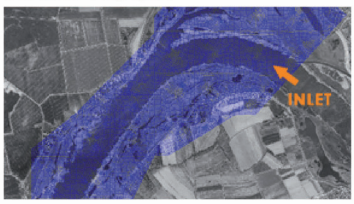
Developed by CIMNE and Applus

FLOOD

Artificial neuronal network package.

Developed by CIMNE

RAMFLOOD



Decision support system (DSS) for risk assessment and managing of floods.

Developed by CIMNE

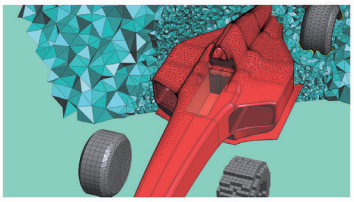
WSNP

An integrated platform for e-monitoring using wireless sensor network technology.

Developed by CIMNE

PRE AND POST PROCESSING SOFTWARE

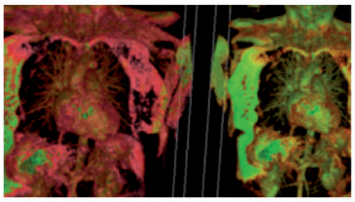
GID



A universal and adaptive pre and postprocessor for computer simulation in engineering and applied science.

Developed and marketed by CIMNE since 1998

DIPPO

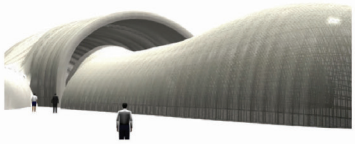


Digital image processing platform.

Developed and marketed by CIMNE since 2011

ENGINEERING SYSTEMS AND HARDWARE

Inflatable structures



Inflatable pavilions, shelters and bridges for applications in engineering and architecture.

Developed in cooperation with Building Ingenieria y Arquitectura SL and Tensairity Structures SL.

Marketed by BuildAir since 2002 (www.builair.com)

COLLABORATIVE WORK PLATFORMS

INTERSPACE

Fully customizable Web application that creates virtual communities where users can communicate, share information and work collaboratively.

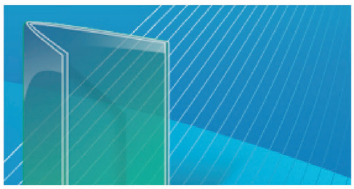
Developed and marketed by CIMNE since 2009

Mi colegio en red (MCR)

Integrated communications and services management system for schools via the Internet.

Since 2000

SIGPRO



Integrated software platform for the management of the research and finantial activities and reports in RTD projects.

Developed by CIMNE

LHINGS

lhings

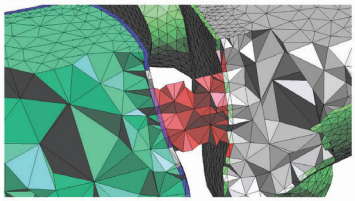
Is a cloud platform designed to provide access and links to all kind of things and let users management, share and interact with those things anywhere and when they like.

Developed and Marketed by Lyncos SL in cooperation with CIMNE

www.lhings.com

EDUCATIONAL SOFTWARE

SoftEducatiu



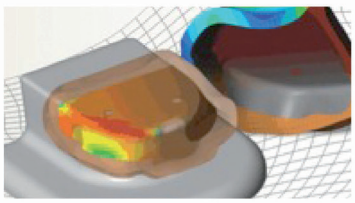
Educational software for interactive learning about structural design and finite element method

Developed and marketed by CIMNE

SIMULATION SOFTWARE

MANUFACTURING PROCESSES

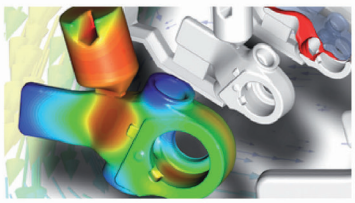
STAMPACK



Sheet metal forming processes.
Developed by Quantech ATZ, SA. in cooperation with CIMNE.

Marketed by Quantech ATZ, SA since 1999

VULCAN



Casting and foundry processes.

Developed by Quantech ATZ, SA. in cooperation with CIMNE.

Marketed by Quantech ATZ, SA since 2001

WELDPACK

Welding processes.

Developed by CIMNE

FLUID DYNAMICS

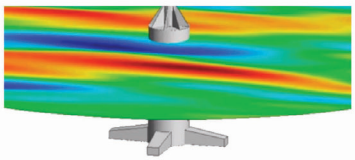
TDYN

Finite element code for analysis of a wide range of multi-physics problems in engineering and applied science (fluid dynamics, heat transfer, fluid-structure interaction, etc.)

Developed by Compass Ingeniería y Sistemas, SA. in cooperation with CIMNE.

Marketed by Compass since 2003

SEAFEM



Hydrodynamics and seakeeping analysis of ships and marine structures.

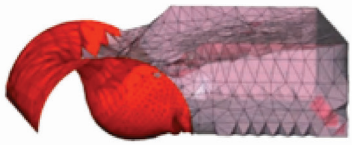
Application for wind tower generators in the sea.

Developed by Compass Ingeniería y Sistemas, SA. in cooperation with CIMNE.

Marketed by Compass since 2011

MULTI-PHYSICS

KRATOS

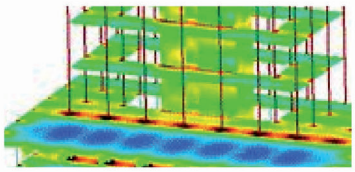


Kratos is an open object-oriented software platform for the development and application of finite element codes for multidisciplinary applications in engineering and applied science.

Developed by CIMNE

STRUCTURAL ENGINEERING

RAMSERIES

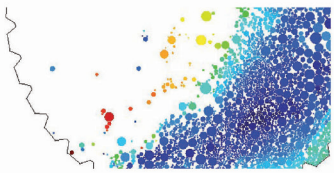


Finite element code for analysis of structures in engineering and architecture.

Developed by Compass Ingeniería y Sistemas, SA. in cooperation with CIMNE.

Marketed by Compass Ingeniería y Sistemas, SA. since 2003

DEMPACK



Analysis of granular systems and multifracturing problems in geomechanics and industrial processes using discrete and finite element methods.

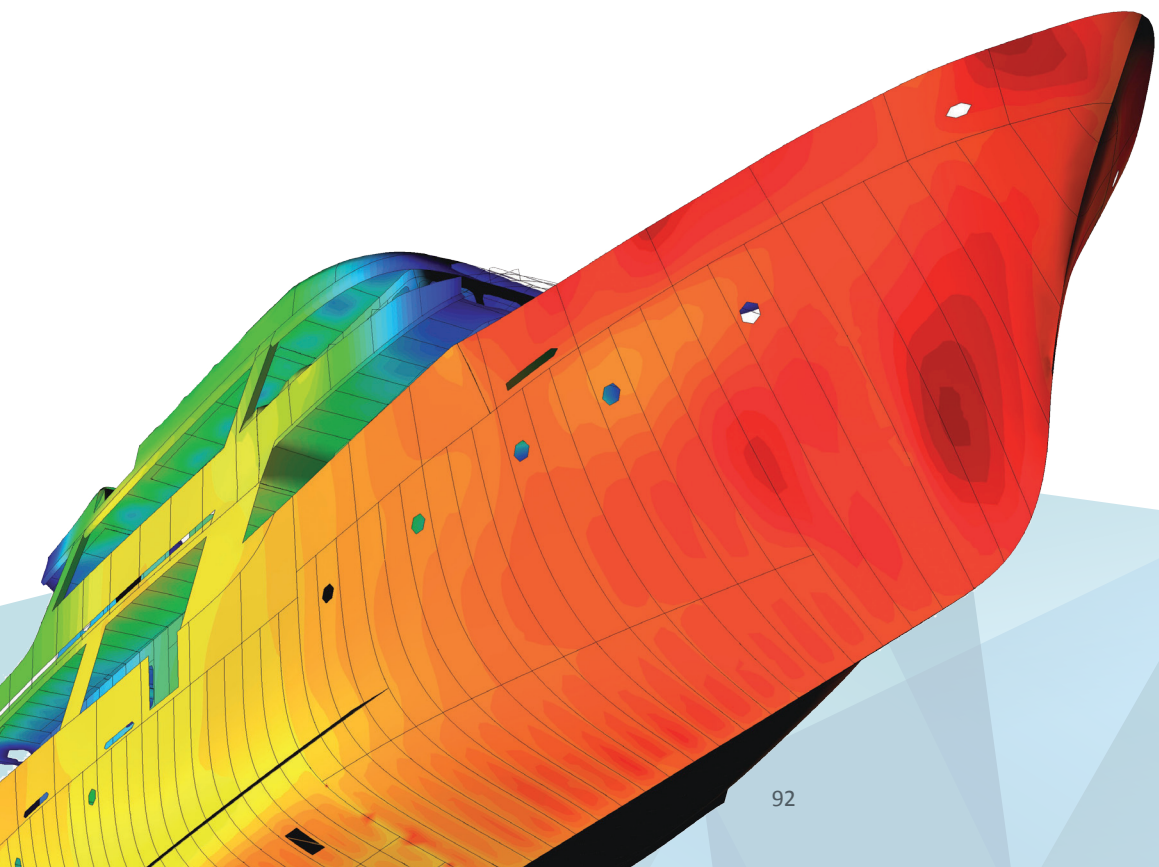
Developed by CIMNE

SPIN OFF companies

Companies promoted by CIMNE

INGENIA AIE, *is a Group of Economic Interest formed by 8 companies and CIMNE. The objective of INGENIA is to promote the participation of its members in projects of industrial size in the aeronautics and space field in cooperation with the main international manufacturers in the sector. The partners in INGENIA are: Applus, Cimsa, Compass, CT Ingenieros, Prae Trade, Quantech ATZ, Rücker Lypsa, Solid Enginyeria and CIMNE. (www.ingenia.aero)*

COMPASS INGENIERÍA Y SISTEMA S.A. *The objective of COMPASS is to develop commercial activities in the application of numerical methods in engineering, with emphasis on civil, naval and maritime engineering. COMPASS offers design and analysis services in engineering, project management, specialized software systems for engineering design, innovative developments in engineering and advanced training courses. (www.compassis.com)*



CIMNE TECNOLOGIA SA, *is a company 100% owned by CIMNE aiming to industrialize and market the products and technology developed at CIMNE. CIMNE Tecnología SA is also an incubator and promoter of new companies. http://www.cimnetecnologia.com/ Created in 2011.*

TECNOLOGÍAS AVANZADAS PARA EL OCIO SL (TAOC) *is a company 100% owned by CIMNE Tecnologia SA. It specializes in the development and market of information systems for leisure sectors such as tourism and music. Created in 2012.*

SERVICIOS ENERGÉTICOS AVANZADOS SA *is a company 100% owned by CIMNE Tecnología SA. It specializes in the development and marketing of services of software products for energy management of public and private buildings in urban areas. Created in 2012.*

BUILDAIR INGENIERIA Y ARQUITECTURA SA *is a company created in 2002 specialized in the development and marketing of inflatable structures for a wide range of applications in engineering and architecture. CIMNE Tecnología SA owns 5% of the shares of BUILDAIR and 20% of BuildAir Asia-Pacific , a subsidiary of BUILDAIR operating in the far East from Singapore. For more information visit www.buildair.com*

COMPUTATIONAL AND INFORMATION TECHNOLOGIES SA *is a company 100% owned by CIMNE Tecnología SA specialized in the development and application of computational methods and information technology systems in engineering and applied sciences. Created in 2012.*

LYNCOS SL *is a company specialized in the development, application and marketing of information and communication technologies and devices for a wide range of application in the so-called in the Internet of Things sector. CIMNE TECNOLOGÍA SA owns 15% of LYNCOS SL. Created in 2012. (www.lhings.com)*

CIMNE IN THE MEDIA

20 **SALUD** SÁBADO, 12 DE MARZO DE 2011 ABC abc.es/salud

Nuevas técnicas

Los ingenieros del Cimne que han diseñado el disposito, Eduard Soudah y Eugenio Oñate

CORAZÓN
…TV cardiovascular

…r sistema inteligente capaz de …o de sufrir enfermedades …s. Una de sus principales …o es invasivo

…ingeniería …que ver a …s enferme-…razón; sin …conjunción …iencias ha …inteligente …esgo de pa-…res sino de …cuáles son. …emas numé-…base al estu-…circulatorio …rsona tiene

números o no para sufrir estas patologías en un futuro.

El sistema capacitado para emitir tan preciso veredicto —hasta ahora con este sistema tan poco invasivo sólo existen los electrocardiogramas, que miden la actividad eléctrica del corazón—, está ultimándose y ha sido posible gracias a un acuerdo entre la compañía japonesa «Nitto Denko» y un grupo de ingenieros del Centro Internacional de Métodos Numéricos en Ingeniería (CIMNE) de Barcelona. Ambos cerraron el 15 de diciembre de 2010 un acuerdo para desarrollar el proyecto. La firma oriental se comprometió a diseñar una base de datos de pacientes voluntarios para contrastarlos con los de las personas que se sometan al dispositivo y el centro catalán a desarrollar el «software» que interprete toda esa información. «Se trata de descubrir cómo circula la sangre por el organismo, desde el preciso momento en que sale bombeada del corazón», indica Eugenio Oñate, director del CIMNE y responsable del equipo de ingenieros que ha diseñado el sistema que permitirá esta innovadora aplicación.

El procedimiento que desemboca en el diagnóstico es sencillo: un simple sensor colocado en el dedo del paciente envía los datos que recibe del sistema arterial a un «software» que los procesa. Aquí ha intervenido el equipo del CIMNE, responsable del sistema que los interpreta de manera inteligente y permite ofrecer el diagnóstico. El sistema predice las posibilidades de los pacientes de padecer dolencias cardiovasculares.

¿Cómo lo hace? Pues controlando muy de cerca el sistema arterial a través de un sistema monitorizado que mide diferentes parámetros fisiológicos. «A través de los impulsos q… aparato es cap… ciones mecáni… organismo», e… una ITV del sis…

En la base de datos que se pretende crear constarán los informes de cerca de un millar de pacientes de diferentes hospitales internacionales, que servirán para comparar entre personas con diferentes problemas coronarios y personas sanas. «Al procesar la información, el sistema será capaz de determinar si un nuevo paciente tiene riesgo real de padecer una enfermedad cardíaca», explica Eduard Soudah, responsable del departamento de Ingeniería Biomédica del CIMNE.

El sistema señalará si una persona está sana, si es hipertensa o si puede padecer patologías cardíacas determinadas. «La compañía japonesa está en estos momentos negociando con diversos centros sanitarios de referencia nacional e internacional para crear la base de datos que nos permitirá hacer un diagnóstico por contraposición; y nosotros nos centraremos en el desarrollo del "software"», avanza Soudah, quien está convencido de que en breve el sistema estará disponible en el mercado.

Redes neuronales artificiales

La tecnología de la que dispondrá el sistema utilizará «redes neuronales artificiales», es decir, «permitirá gestionar toda la información que recibe del paciente y emitir un diagnóstico en tiempo real como un médico toma una decisión en base a su experiencia acumulada». Aunque el sistema aún no está en el mercado, «varios hospitales…

EL MUNDO. LUNES 13 DE FEBRERO DE 2012 — 23

OTRAS VOCES

PALLARÉS

Las responsabilidades que hay detrás de las averías

EUGENIO OÑATE

PIONERO. El Centro Internacional de Métodos Numéricos de Ingeniería (CIMNE), un organismo vinculado a la UPC, …

EL APUNTE

Barça, gloria mental

ÁLEX SÀLMON

DESCONOZCO CUÁNTO tiempo nos durará, pero el barcelonismo ya sabe que el equipo que juega bien, por no decir a la perfección, no tiene que cobijarse en los errores arbitrales para justificar sus derrotas. Sin embargo, aunque esta lección es de las mejores que ha alcanzado el seguidor del Barça, tras la derrota ante el Osasuna me ha sorprendido escuchar alguna opinión que utiliza la injusticia de los goles anulados al Barça. Sin entrar a valorar si tienen razón estas voces, que la tienen, ahora la afición azulgrana no puede actuar de la misma forma como lo hacen aquellos que se han dedicado a criticarlo durante estos últimos tres años. El Barça ha entrado desde hace al menos tres temporadas, en un nivel de juego muy por encima de la media. Durante este tiempo poco han importado los goles anulados, errores arbitrales o postes, todas excusas varias. Su excelente juego siempre ha estado por encima y eso ocultaba la otra realidad. Ahora hay que actuar con la dosis de medicina precisa. Y si la Liga se pierde, será porque no se ha jugado con el grado de regularidad de otras Ligas. Este Barça debe conservar el estilo y brillo que ha alcanzado no sólo en lo deportivo sino también en lo mental. Y todo ello se demuestra en las derrotas. En las victorias es fácil decir que el contrario también ha jugado bien y está en un nivel excelente. No dudo que los que han asumido este paso a la gloria mental sabrán actuar en consecuencia.

«Este equipo debe conservar el estilo y brillo, en lo deportivo y en lo mental»

La normalidad era esto

BULEVAR

FERRAN SÁEZ MATEU

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19 CATALUNYA

…sumidor

…la UPC, impulsará la creación de nuevas empresas para aportar valor tecnológico a algunos de sus proyectos

MARIA TERESA COCA / Barcelona

El centro de investigación CIMNE intensificará su transferencia de resultados al sector industrial al entrar de lleno en la creación directa de empresas. Con este objetivo se ha creado CIMNE Tecnologías, que impulsará y tomará participaciones significativas en el capital de nuevas empresas para dar valor tecnológico a algunos de los prototipos que, en su dilatada trayectoria –se creó en 1987–, ha llevado a cabo este organismo autónomo de investigación vinculado a la Universitat Politècnica de Catalunya.

La nueva vía de trabajo ha de convertirse a medio plazo en una fuente de ingresos para el Centro Internacional de Métodos Numéricos de Ingeniería (CIMNE), que ya presume de una elevada autofinanciación –más del 94% de sus recursos. Con una facturación anual de 10 millones de euros, sólo un 6% de éstos, unos 600.000 euros, son subvención directa de la Generalitat. Desde su creación, CIMNE ha acompañado a tres empresas en su puesta en marcha: Compass, Ingenia AIE y Structuralia, ésta última vendida recientemente al magnate Warren Buffett.

La pretensión del centro es poner en marcha «si es posible este mismo año» seis empresas de múltiples ámbitos, explica su director, Eugenio Oñate. «Desde hace años habíamos planteado a la Generalitat que hacía falta impulsar una segunda generación de empresas», dice Oñate, y «creemos que podemos actuar como patrimonial de nuevas empresas con producto final».

Esto es posible gracias a la aprobación el pasado junio de una modificación normativa a través de una enmienda en la Ley de Acompañamiento de los Presupuestos de 2011 que posibilita a los centros de la red de investigación CERCA comercializar y crear empresas.

El primer organismo en sacar beneficio de esta modificación será CIMNE. El centro ya ha constituido la compañía Servicios Energéticos Avanzados, participada conjuntamente con la firma catalana de auditoría RSM Gassó, y destinada a gestión y servicios energéticos.

También está ultimando la adquisición de un 20% en Buildair Asia Pacífico. Esta empresa, ubicada en Singapur, es filial de la catalana Buildair Ingeniería y Arquitectura, fabricante de estructuras hinchables de grandes dimensiones. CIMNE ha conseguido recursos del programa *Prova't* de la Generalitat para el desarrollo de un proyecto de puentes hinchables que se pueden usar en situaciones de emergencia, para facilitar la evacuación o para la reconstrucción de áreas después de un desastre natural. El puente hinchable consiste en una estructura adaptable, ligera y desplegable, formada por un conjunto de bigas hinchables de alta capacidad de carga desarrolladas per el instituto y con una cobertura de material metálico.

En general, CIMNE contará con un mínimo del 5% del capital en las iniciativas que emprenda para asegurarse un puesto en el consejo de administración y tener voz y voto en la gestión de las compañías, según Oñate.

El organismo persigue usar los métodos numéricos para resolver problemas de ingeniería y ciencias aplicadas descritos por expresiones matemáticas, de manera que su aplicación puede derivar en proyectos y productos tangibles.

Las actividades de este centro de investigación y desarrollo se realizan habitualmente en cooperación con otras organizaciones, universidades y centros de investigación de todo el mundo. La financiación se consigue a través de los proyectos presentados a programas públicos o directamente por los fondos proporcionados por la industria privada.

CIMNE está a punto de inaugurar su cuarta sede internacional en Pequín (China) como «base de operaciones en una economía emergente y que se espera que se convierta en una de las principales economías mundiales en pocos años», según Oñate. CIMNE lleva seis años trabajando directamente en China, con la coordinación de cuatro proyectos de I+D financiados por la CE en el ámbito aeronáutico, especialmente. Tiene además, sedes en Santa Fe (Argentina), Washington (EEUU), y Singapur.

Otro de los valores que posee es la red de 27 centros creados en cooperación con universidades de España e Iberoamérica. Hasta 2010, CIMNE ha participado en 1.379 proyectos nacionales e internacionales por valor de 56 millones de euros, financiando la estancia de más de 500 investigadores.

Sitges enmascara con imaginación los recortes en su popular carnaval

HÉCTOR MARÍN / Sitges

A partir del jueves Sitges vivirá uno de los carnavales más económicos de los últimos años. Los recortes presupuestarios han llegado también al encuentro más multitudinario de la localidad costera. La crisis obliga, admiten desde el Ayuntamiento, que ha reducido un 20% las aportaciones a la fiesta.

De los 200.000 euros del presupuesto del año anterior se ha pasado a 130.000, es decir, 70.000 euros menos. Para compensar el *tijeretazo*, tanto el Consistorio como las entidades se disponen a convencer a empresas privadas para que esponsoricen con 30.000 euros un 23% de los gastos de la fiesta, que se celebrará entre los días 16 y 22 de este mes.

Otra de las novedades es que las rúas del domingo (La Disbauxa) y del martes (L'Extermini), las más concurridas, con unas 50 carrozas y cerca de 3.000 participantes, saldrán con antelación respecto a ediciones anteriores, para ahorrar en dispositivos de seguridad policial. Además, para que el principio y el final de las rúas no coincidan, se prevé un cambio en el último tramo del recorrido.

Los recortes, en cualquier caso, no deberán empañar la celebración de uno de los carnavales más populares de Cataluña. Eso sostienen los organizadores, decididos a que las plumas y las máscaras disfracen el tijeretazo para que no noten la diferencia los más de 300.000 visitantes que espera la ciudad del Garraf. La imaginación es la mejor arma contra los ajustes presupuestarios, pregonan estos días en la localidad desde las entidades participantes.

La edición de 2012 «pasará a la historia como la de los cambios pero, gracias al ingenio y al ejercicio de responsabilidad de las entidades, disfrutaremos de un gran carnaval», sintetiza el presidente de una renovada comisión, Isaac Bielsa.

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4 Expansión Viernes 24 febrero 2012

CATALUNYA

La empresa catalana crece un 33% gracias a las exportaciones

ESTALPACKAGING La firma especializada en productos para el embalaje de vino, bebidas y productos alimenticios Estalpackaging cerró el pasado año con un crecimiento del 33% gracias a las exportaciones a Europa y Estados Unidos. En el segundo trimestre de este año, la compañía prevé llevar a cabo una ampliación de capital para afrontar las perspectivas de crecimiento y los nuevos proyectos de diversificación sectorial, tales como el de conservas y el sector no alimentario (como farmacia, cosmética y perfumería). La empresa pretende abrir nuevos mercados principalmente en Turquía, así como en Túnez y Marruecos.

La filial de Agrolimen presenta un ERE para la mitad de la plantilla

CONSORCIO DE JABUGO La empresa de productos del cerdo ibérico Consorcio de Jabugo, controlada por Agrolimen, ha pactado con los trabajadores un expediente de regulación de empleo (ERE) que afecta a la mitad de la plantilla, un total de 31 empleados, según señaló ayer el secretario general de Fitag-UGT Huelva, Luciano Gómez. Según Gómez, desde el pasado diciembre se han mantenido contactos con la empresa, que en un primer momento planteó "el despido de unos 50 empleados". Finalmente se ha acordado presentar un ERE por "causas objetivas" debido a las "pérdidas que padece" la compañía por la actual crisis, informa *Europa Press*.

Las químicas invertirán en Tarragona 500 millones en los próximos cuatro años

AEQT Las compañías que forman parte de la Asociación Empresarial Química de Tarragona (AEQT) invertirán 500 millones en los próximos cuatro años en la mejora y mantenimiento de las plantas, según anunció ayer su nuevo presidente, Joan Pedrerol. El directivo matizó que la recesión no permitirá grandes inversiones ni crear nuevos puestos de trabajo, aunque tampoco se destruirá empleo. En este periodo se contratará a 400 personas para cubrir relevos y jubilaciones. Pedrerol se fijó como eje principal de su mandato aumentar la competitividad con la consolidación del clúster de la química y pidió una mejora de las infraestructuras, informa *Efe*.

Tech Rock compra una firma de escalada de EEUU

Expansión. Barcelona

La empresa catalana Tech Rock, fabricante y distribuidora de material de escalada y seguridad, ha invertido 200.000 euros en la compra de la norteamericana CCH y ha trasladado su producción a Sant Quirze de Besora (Osona), según informó Acció.

Con esta operación, la empresa catalana, propietaria de las marcas de material de montaña *Fixe* y *Faders*, ha recuperado la marca *Alien Cam*.

Gracias a la compra de CCH y a la incorporación de Alien Cam a su portafolio de productos, las ventas internacionales de la empresa catalana han aumentado un 20% en el último año y se han situado en 1,6 millones de euros.

Nueva filial

Para hacer frente a la demanda en Estados Unidos, Tech Rock prevé abrir una filial en California que comportará una inversión de 650.000 euros. La primera remesa de piezas Alien se ha agotado en solo dos meses, según la compañía. Por ello, el siguiente paso es controlar la distribución y comercialización en Estados Unidos. La sociedad se abrirá de la mano de un socio local. Otro de los objetivos de futuro de la compañía es introducirse en el mercado árabe.

El asesor de internacionalización de Tech Rock, Francesc Benavente, anunció que "la empresa busca reforzar la base industrial de Catalunya para mantener aquí la fabricación de piezas". La empresa ha transportado a Sant Quirze de Besora el taller de 500 metros cuadrados de CCH, situado hasta ahora en Wyoming (Estados Unidos), incluidas las patentes, la maquinaria, los utillajes y la materia prima.

Tech Rock emplea a 30 trabajadores y el 45% del volumen de negocio proviene del exterior, ya que exporta a cincuenta países de todo el mundo.

De izquierda a derecha, Karim y Fouad El Jamali, de Diffazur, y Albert Alsina, de Riva y García.

Mediterrània cierra su novena inversión

CAPITAL RIESGO/ El fondo toma el 49% de la empresa marroquí de productos y servicios informáticos Diffazur.

J. Orihuel. Barcelona

Primera operación de Mediterrània Capital en 2012. El fondo de capital riesgo promovido por el Institut Català de Finances (ICF) para invertir en el Magreb ha tomado el 49% de la empresa marroquí de distribución mayorista de productos y servicios informáticos Diffazur. La compañía es la segunda de su sector en el país, por detrás de Disway.

La inversión –la novena que lleva a cabo Mediterrània– representa un desembolso de 4,1 millones de euros por parte del fondo gestionado por el grupo financiero Riva y García. Este importe corresponde a un *equity line* o línea de recursos propios que se irán inyectando en la compañía.

Alianzas con fabricantes

Diffazur fue fundada en 1993 por el empresario local Fouad El Jamali, que ha asumido la presidencia de la compañía. Además de distribuir productos informáticos a medio millar de puntos de venta en todo el país, la empresa presta servicios de postventa para fabricantes de ordenadores como Acer, Lenovo, HP, Sony Vaio, Toshiba o Xerox.

El pasado ejercicio, Diffazur registró una cifra de negocio de 21 millones de euros y un ebitda –resultado bruto de explotación– de 1,2 millones de euros.

Los planes de la empresa marroquí pasan por alcanzar en 2014 una facturación de 50 millones de euros. Este incremento se basa en cuatro pilares: crecimiento orgánico mediante la captación de nuevos clientes y el lanzamiento de nuevos productos, adquisición de otras compañías del sector en el Magreb, ampliación de las alianzas con empresas tecnológicas y prestación de servicios de valor añadido a 15.000 clientes.

Las expectativas de crecimiento de Diffazur están muy ligadas a la pujanza del sector en Marruecos. Según datos de 2010, el grado de penetración de los ordenadores en el país es del 20%, frente al 63% en España; en la Administración, la tasa todavía es inferior. En los últimos tres años el sector ha crecido a una media anual del 12% y se prevé que lo haga a un ritmo del 16% en los próximos cinco años, gracias –en gran parte– a la extensión de la clase media.

Albert Alsina, director de Mediterrània, destaca que "Diffazur tiene un plan ambicioso de futuro, tanto de crecimiento orgánico como de crecimiento adquisitivo en la región". "El valor añadido de la empresa en su servicio postventa –añade–, hace que sea un claro diferenciador para los fabricantes internacionales que quieran entrar en la región".

El fondo –en el que participan también el ICO, el BEI, La Caixa, Repsol, Telefónica, Gas Natural y Catalunya-Caixa– tiene otras dos operaciones en fase de estudio.

Fondo del ICF para empresas del MAB

El ICF tiene listo un nuevo fondo de capital riesgo, con diez millones de euros para invertir en empresas que coticen en el Mercado Alternativo Bursátil (MAB) o que vayan a hacerlo. En los dos casos, aportará hasta un 20% de la ampliación de capital que realice la firma cotizada o la que dé el salto al MAB, con un tope de un millón de euros. Capital MAB estará gestionada por la propia gestora del ICF.

Saba pacta una inversión de 141 millones en Roma

PRIMERA GRAN OPERACIÓN DE LA COMPAÑÍA

A.Z. Barcelona

Saba invertirá en Roma 141,6 millones de euros para ampliar y construir varios estacionamientos en los próximos cuatro años. Se trata de la primera gran operación que anuncia la compañía tras su segregación del grupo de infraestructuras Abertis, el año pasado.

Josep Martínez Vila. / E.R.

En concreto, la compañía ampliará en 200 plazas el actual aparcamiento subterráneo de Villa Borghese, que tendrá una capacidad total para 2.000 vehículos; creará un estacionamiento para 81 autobuses turísticos; construirá una terminal de mantenimiento para 125 autobuses eléctricos públicos; gestionará un aparcamiento para 206 motocicletas, y levantará un aparcamiento de 360 plazas de residentes. El convenio firmado ayer con el Ayuntamiento de la capital romana también prevé una ampliación de 8.510 metros cuadrados más de una superficie comercial en Villa Borghese.

Durante 54 años

La compañía presidida por Salvador Alemany comenzará las obras en el segundo semestre de 2012 y durarán cuatro años. La concesión de todo el complejo se alargará durante 54 años, hasta 2061.

Italia, tras España, es el segundo mercado más importante de Saba Aparcamientos, filial de Saba Infraestructuras. La sociedad gestiona 29.520 plazas en el país transalpino. Italia es el país donde Saba, cuyo director general es Josep Martínez Vila, tiene más opciones de crecer en los próximos años. De las 10.000 nuevas plazas previstas por la compañía, la mitad se localizan allí.

El Cimne abre una oficina en China

CENTRO DE INVESTIGACIÓN DE INGENIERÍA

Expansión. Barcelona

El Centro Internacional de Métodos Numéricos en Ingeniería (Cimne), vinculado a la Universitat Politècnica (UPC), ha abierto una sede en Pekín con el objetivo de participar en más consorcios que opten a ayudas para I+D en China. Este centro de investigación de ingeniería tenía ya oficinas en Washington (EEUU), Santa Fe (Argentina) y Singapur (China). En China ha conseguido cuatro contratos por 2,63 millones.

La sociedad, que da empleo a unas 200 personas, compartirá su oficina con la UPC y, a cambio podrá usar las instalaciones que la universidad tiene en Shanghai (China). El Cimne tiene un presupuesto de 10,5 millones de euros y el 93% corresponde a autofinanciación.

El centro, que celebra ahora 25 años, se ha trazado como objetivo conseguir una aplicación de la tecnología que investiga, según explicó su director, Eugenio Oñate.


diariodeibiza.es — Pitiusas y Baleares

EN DIRECTO — Sigue en directo la décima etapa del Tour de Francia: Aurillac - Carmaux (161 Km)

En Sant Antoni

Vertidos ilegales bajo control

Investigadores desarrollan un proyecto para detectar vertidos en el mar y descubrir a los embarcaciones responsables - Una antena en el faro de ses Coves Blanques permite vigilar los barcos del sur del Levante

NIEVES GARCÍA GÁLVEZ | IBIZA Investigadores del Centre Internacional de Mètodes Numèrics en Enginyeria (Cimne) han instalado en el faro de ses Coves Blanques de Sant Antoni un sistema de identificación automática de barcos que en un futuro permitirá controlar posibles vertidos ilegales que se realicen en el mar y que, hasta el momento, quedan impunes por la dificultad de saber quién los causó.

Mapa de posición de barcos


18 | Economia

Jornades Debat transversal

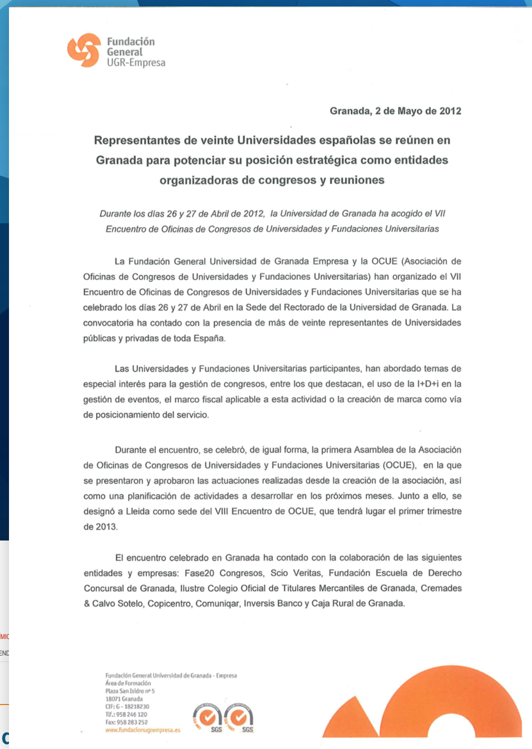
La crisi, a petita escala

CITA • Barcelona és per tercer cop la seu del Congrés Europeu d'Economia Regional TEMES • Experts de més de cinquanta països comparteixen visions sobre urbanisme, immigració o polítiques públiques

TANTXTANT — Jaume Argerich — Començar la casa pel sostre

TECNOLOGIES — Buildair es consolida a Singapur amb la F-1

MOTOR — Nissan produeix un...


Fundación General UGR-Empresa

Granada, 2 de Mayo de 2012

Representantes de veinte Universidades españolas se reúnen en Granada para potenciar su posición estratégica como entidades organizadoras de congresos y reuniones

Durante los días 26 y 27 de Abril de 2012, la Universidad de Granada ha acogido el VII Encuentro de Oficinas de Congresos de Universidades y Fundaciones Universitarias

La Fundación General Universidad de Granada Empresa y la OCUE (Asociación de Oficinas de Congresos de Universidades y Fundaciones Universitarias) han organizado el VII Encuentro de Oficinas de Congresos de Universidades y Fundaciones Universitarias que se ha celebrado los días 26 y 27 de Abril en la Sede del Rectorado de la Universidad de Granada. La convocatoria ha contado con la presencia de más de veinte representantes de Universidades públicas y privadas de toda España.

Las Universidades y Fundaciones Universitarias participantes, han abordado temas de especial interés para la gestión de congresos, entre los que destacan, el uso de la I+D+i en la gestión de eventos, el marco fiscal aplicable a esta actividad o la creación de marca como vía de posicionamiento del servicio.

Durante el encuentro, se celebró, de igual forma, la primera Asamblea de la Asociación de Oficinas de Congresos de Universidades y Fundaciones Universitarias (OCUE), en la que se presentaron y aprobaron las actuaciones realizadas desde la creación de la asociación, así como una planificación de actividades a desarrollar en los próximos meses. Junto a ello, se designó a Lleida como sede del VIII Encuentro de OCUE, que tendrá lugar el primer trimestre de 2013.

El encuentro celebrado en Granada ha contado con la colaboración de las siguientes entidades y empresas: Fase20 Congresos, Scio Veritas, Fundación Escuela de Derecho Concursal de Granada, Ilustre Colegio Oficial de Titulares Mercantiles de Granada, Cremades & Calvo Sotelo, Copicentro, Comuniqar, Inversis Banco y Caja Rural de Granada.


sinc — Servicio de Información y Noticias Científicas

Tecnologías: Otras especialidades tecnológicas

Eugenio Oñate, director del CIMNE

"Los métodos numéricos ayud... los riesgos de terremotos y explosiones"

El Centro Internacional de Métodos Numéricos en Ingeniería (CIMNE), uno de los finalistas al distintivo de excelencia Severo Ochoa, pronto celebrará su 25 aniversario. Es un centro de referencia mundial en investigación sobre sistemas de cálculo que ayudan a resolver complejos problemas de ingeniería, como la resistencia de un edificio a un terremoto o la del fuselaje de un avión tras una explosión. Así lo explica a SINC su director, Eugenio Oñate (Valencia, 1953).

SINC | 15 noviembre 2011 11:27

El director del CIMNE Eugenio Oñate. Imagen: CIMNE.

¿Cómo nace el CIMNE?

¿Nos puede comentar algún ejemplo?

¿Esas son las líneas de investigación del CIMNE?

¿Tienden más a publicar o patentar sus investigaciones?

http://www.agenciasinc.es/Entrevistas/Los-metodos-numericos-ayudan-a-predecir-los-riesgos-de-terremotos-y-explosiones


CADA TURISTA EXTRANJERO GASTÓ 97 euros diarios como promedio en Catalunya en julio, lo que supone 20 euros más por día que durante el mismo mes del año pasado

ÁREAS URBAN... Y ECONÓMIC...

INGENIERÍA NAVAL

Premio al más innovador

La AINE galardona al centro Cimne por su trayectoria


INNOVA

Víctor Castaño es el responsable de proyectos tecnológicos de la Unidad de Innovación del Hospital Clínico de Madrid.

INNOVACIÓN. SALUD EN EL MÓVIL

UN INGENIERO CREA EL PRIMER LABORATORIO DE APLICACIONES SANITARIAS PARA MÓVILES

Víctor Castaño ha creado el primer laboratorio de desarrollo de aplicaciones sanitarias para teléfonos móviles de última generación (iHealth Lab). Es el responsable de proyectos tecnológicos promovidos por la Unidad de Innovación del Hospital Clínico de Madrid. También trabaja para el centro que investiga métodos numéricos para solucionar problemas de ingeniería de ámbito internacional.


Jueves, 21 de julio de 2011 — Sociedad — LA NUEVA ESPAÑA | 69

Presente y futuro de la ciencia en el Principado

Cataluña y Madrid, dos galaxias lejanas

Asturias es una de las seis comunidades que no han logrado presentar proyectos al programa «Severo Ochoa» de excelencia investigadora

Los investigadores apuntan claves para paliar la falta de masa crítica regional a través de consorcios científicos nacionales o internacionales

El mapa del programa «Severo Ochoa»

Diez personas por grupo con una producción científica de impacto mundial

Para muchos centros lo importante no son los cuatro millones de euros, sino la «reputación social»

La nueva ley de la Ciencia facilita las uniones de centros de investigación en busca de objetivos

El 63% de las candidaturas que no superaron la primera criba también procedía de Cataluña y Madrid


diariodeibiza.es — Ocio

Sonido en 3D y 'reactables', nueva propuesta del Ibiza Music Cluster

El Conservatorio de Ibiza acogerá entre los días 6 y 8 de junio el primer curso de nuevas tendencias en investigación en el procesamiento de la música, que incluye un concierto en el Ushuaïa

28-02-2012 12:16

laura ferrer arambarri | ibiza

Componer o interpretar música con un iPad o conocer los secretos del sonido 3D, que ya se está imponiendo en las salas de cine y que pronto puede llegar al mundo de la música electrónica. Estos son dos de los contenidos de la nueva propuesta de formación del Ibiza Music Cluster (IMC) que, bajo el título, '1st

Javier Ferrer, Adan Garriga y Joan Serra, ayer en la sede del Ibiza Music Cluster (IMC). J. A. RIERA

Últimas Noticias


6 — Jueves 14 de julio de 2011 — Cinco Días

CIENCIA&SALUD — Tecnología

Cuando los números tienen corazón y mucho cerebro

El Centro Internacional de Métodos Numéricos en Ingeniería mejora la interpretación de datos sobre patologías cardiacas y demencias

Nuevo prototipo médico


CATALUNYA

Grup Vicsan entra en preconcurso y negocia con las entidades acreedoras

CONSTRUCCIÓN/ La firma de Torredembarra achaca la situación a los impagos y al "gran deterioro" de la situación en España. El grupo refinanció en 2010 con un sindicato de bancos deuda por 35 millones.

Compass IS compra el 20% de una ingeniería en Singapur

InnoBar presenta el restaurante del futuro


6 | TERRASSA — Diari de Terrassa

Actividades para tomar conciencia de la necesidad de reducir residuos

El centro cívico de La Maurina acoge hoy un taller

Reunión del proyecto que forma a agentes energéticos de edificios

Una delegación andaluza quiere aplicarlo en Málaga

La carrera popular del Consorci congrega a 130 participantes

Fue el colofón de una jornada sobre deporte y cáncer

Pros y contras de la energía nuclear


Dimarts, 2 d'agost del 2011

Condis abre un nuevo 'super' en Vallvidrera

Entender los mercados financieros

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