

New COST Action proposals

Open Call - collection date 26 March 2010

(OC-2010-1)

180th CSO Meeting

1-2 December 2010, Rome

Contents

Life Sciences Cluster

Biomedicine and Molecular Biosciences (BMBS)

BM1005 – ENOG – European Network on Gasotransmitters: from basic science to therapeutic applications	5
BM1006 – Next Generation Sequencing Data Analysis Network.....	6
BM1007 – Mast Cells and Basophils – Targets for Innovative Therapies	7
TD1006 – European Network on Robotics for NeuroRehabilitation (BMBS, ICT).....	8

Food and Agriculture (FA)

FA1004 – Conservation Physiology of Marine Fishes.....	9
FA1005 – Improving health properties of food by sharing our knowledge on the digestive process (INFOGEST)	10
FA1006 – Plant Metabolic Engineering for High Value Products	11

Forests, their Products and Services (FPS)

FP1004 – Enhance mechanical properties of timber, engineered wood products and timber structures....	12
FP1005 – Fibre suspension flow modelling – a key for innovation and competitiveness in the pulp & paper industry	13
FP1006 – Bringing new functions to wood through surface modification	14

Natural Sciences Cluster

Chemistry and Molecular Sciences and Technologies (CMST)

CM1004 – Synthetic Probes for Chemical Proteomics and Elucidation of Biosynthetic Pathways	15
CM1005 – Supramolecular Chemistry in Water	16
CM1006 – EUFEN: European F-Element Network	17
TD1004 – Theragnostics Imaging and Therapy: An Action to Develop Novel Nanosized Systems for Imaging-Guided Drug Delivery (CMST, BMBS)	18

Earth System Science and Environmental Management (ESSEM)

ES1004 – European framework for online integrated air quality and meteorology modelling	19
ES1005 – Towards a more complete assessment of the impact of solar variability on the Earth's climate	20
ES1006 – Evaluation, improvement and guidance for the use of local-scale emergency prediction and response tools for airborne hazards in built environments	21

Materials, Physical and Nanosciences (MPNS)

MP1004 – Hybrid-ES – Hybrid Energy Storage Devices and Systems for Mobile and Stationary Applications.....	22
MP1005 – NAMABIO – From nano to macro biomaterials (design, processing, characterization, modelling) and applications to stem cells regenerative orthopaedic and dental medicine	23
MP1006 – FPQP – Fundamental Problems in Quantum Physics	24
TD1007 – Bimodal PET-MRI molecular imaging technologies and applications for in vivo monitoring of disease and biological processes (MPNS, CMST, BMBS).....	25

Science in Society Cluster

Individuals, Societies, Cultures and Health (ISCH)

IS1004 – WEBDATANET: web-based data-collection – methodological challenges, solutions and implementations.....	26
IS1005 – Medieval Europe – Medieval Cultures and Technological Resources	27
IS1006 – Unraveling the grammars of European sign languages: pathways to full citizenship of deaf signers and to the protection of their linguistic heritage	28
IS1007 – Investigating Cultural Sustainability	29
TD1005 – Pain Assessment in Patients with Impaired Cognition, especially Dementia (ISCH , BMBS).....	30

Information and Communication Technologies (ICT)

IC1004 – Cooperative Radio Communications for Green Smart Environments.....	31
IC1005 – HDRi: The digital capture, storage, transmission and display of real-world lightning.....	32

Transport and Urban Development (TUD)

TU1003 – MEGAPROJECT: The Effective Design and Delivery of Megaprojects in the European Union .	33
TU1004 – Modelling Public Transport Passenger Flows in the Era of Intelligent Transport Systems	34

Participation of Non-COST countries	35
--	----

Action BM1005

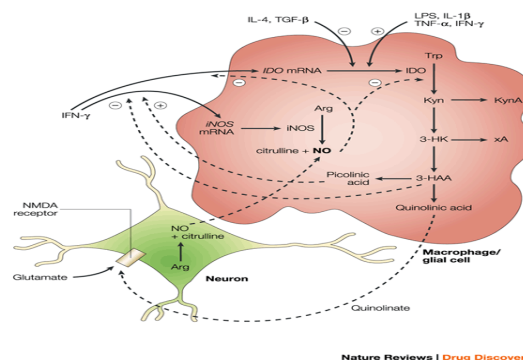
ENOG – European Network on Gasotransmitters: from basic science to therapeutic applications

Objectives

The overall objective of the ENOG network is to boost the quality, competitiveness and impact of European biomedical research in the field of gasotransmitter molecules and to translate the progress made into potential therapies. This will be achieved by establishing and fostering a broad network of researchers currently working on gasotransmitters in an isolated fashion. The network will pool, categorize and share specific knowledge and skills as well as increase the targeted interactions between a multi-disciplinary group of researchers with expertise that ranges from computational and synthetic chemistry to pharmacology, drug design and development.

Abstract

The expected benefits will cover the following areas: innovative scientific advances in the field of gasotransmitters, increased awareness about the role of nitric oxide (NO), carbon monoxide (CO) and hydrogen sulfide (H₂S) in health and disease. The formation of a solid European network that collates scattered knowledge, resources and expertise on gaseous mediators will encourage the dissemination of innovation, boost collaborations and increase the European competitiveness in this field. In the longer term this Action will result in accelerated translational research in inflammation, cardiovascular disease and CNS disorders, areas in which the biology of these three gaseous molecules has been implicated. Therefore, the benefits from the support of such a network are expected in multiple levels: scientific, innovation/technological and societal.



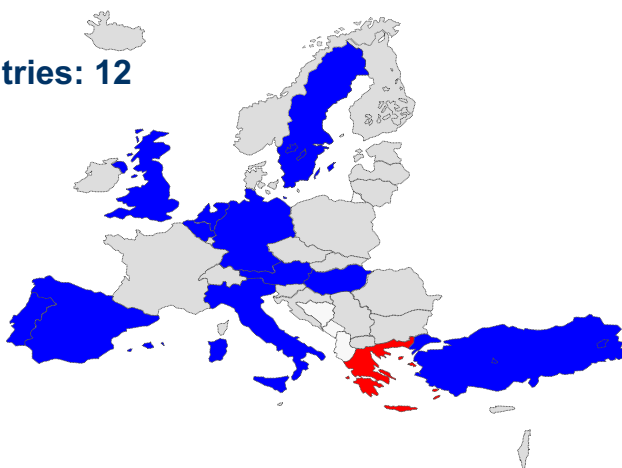
Keywords: nitric oxide, carbon monoxide, hydrogen sulfide, pharmacology, physiology, cardiovascular, inflammation, drug discovery

Working Groups

- WG1 Molecular control of gasotransmitter production and signaling
- WG2 Gasotransmitters in disease
- WG3 Chemistry and in vitro pharmacology of gasotransmitter-modifying molecules
- WG4 Evaluation of gasotransmitter-modifying agents in animal models of disease

Interested Countries: 12

Proposer: EL
AT, BE, DE, ES,
HU, IT, NL, PT,
SE, TR, UK



Action BM1006

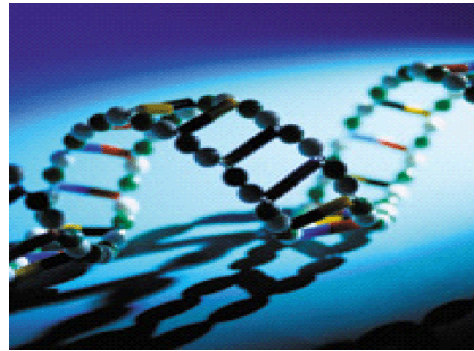
Next Generation Sequencing Data Analysis Network

Objectives

The primary objective is to develop a coordinated action plan for scientific community, to help deal with the flood of Next Generation Sequencing (NSG) data in an efficient and coherent manner using state-of-the-art bioinformatics. Establishment of a strong European network of NGS centres, data-analysis and informatics will facilitate and stimulate the exchange of data, protocols, software, experiences and ideas. The Action will implement a 'technology watch' to monitor developments in bioinformatics software, in NGS technology, in data-storage and processing hardware, in data visualisation and graphical interfaces. Moreover, this Action will develop a strategic communication, dissemination, and education plan for NGS bioinformatics, to distribute knowledge and expertise via concerted education and publication programs.

Abstract

Next generation sequencing (NGS) is a highly parallelised approach for quickly and economically sequencing new genomes, re-sequencing large numbers of known genomes, or for rapidly investigating transcriptomes under different conditions. Producing data on an unprecedented scale, these techniques are now driving the generation of knowledge (especially in biomedicine and molecular life sciences) to new dimensions. The massive data volumes being generated by these new technologies require new data handling and storage methods. Hence, the life science community urgently needs new and improved approaches to facilitate NGS data management and analysis. This COST Action unites bioinformaticians, computer scientists and biomedical scientists, harnessing their expertise to bring NGS data management and analysis to new levels of efficiency and integration. Rigorous surveillance of NGS technology and NGS-related software developments will allow this Action to generate software solutions for future NGS opportunities in a timely manner.



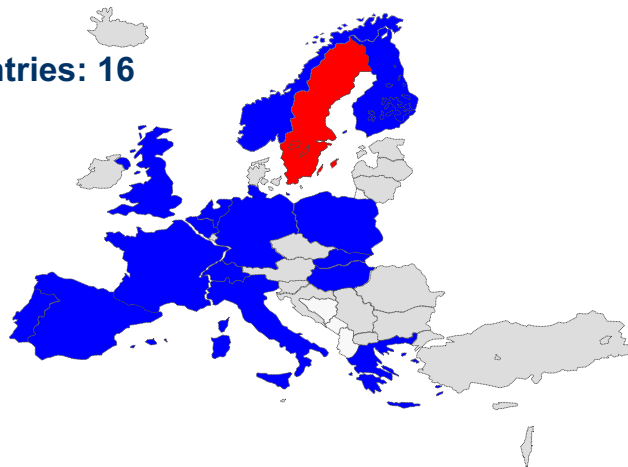
Keywords: Next Generation Sequencing, sequence data analysis, peta data storage, technology transfer, technology watch and dissemination

Working Groups

- WG1 Technology watch for new developments
- WG2 Development of an Action Plan for NGS bioinformatics to cope with challenges for ERA
- WG3 Design, implementation, and incorporation of software solutions
- WG4 Generic informatics topics
- WG5 Development of a strategic dissemination and education program for NGS bioinformatics
- WG6 Management

Interested Countries: 16

Proposer: **SE**
BE, CH, DE, ES,
FI, FR, EL, HU,
IT, NL, NO, PL,
PT, SK, UK



Action BM1007

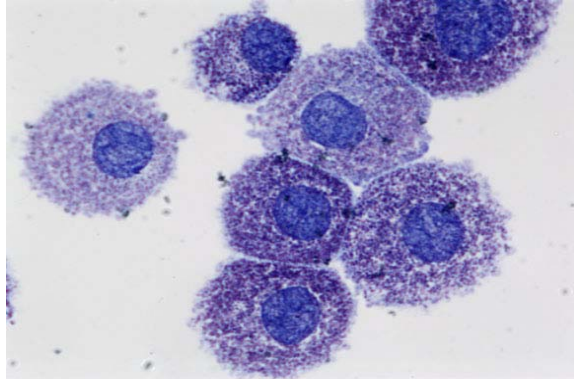
Mast Cells and Basophils – Targets for Innovative Therapies

Objectives

The main objective of the Action is the identification and characterisation of novel disease-related cell specific targets that will result in the development of innovative therapeutic strategies for the treatment of chronic inflammatory and autoimmune diseases by focusing on basic, clinical and translational science in mast cell and basophil research across Europe.

Abstract

The Action fosters a multidisciplinary approach to mast cell and basophil research in order to increase understanding and to translate this knowledge into the development of potentially beneficial end points. Mast cells and basophils have long been recognized for their detrimental role in the elicitation of allergic diseases. In recent years, scientific results revealed both cell types as versatile effector cells that exhibit far more complex functions beyond their role in allergy. Mast cells and basophils have been shown to be critically involved in various innate and adaptive immune responses and, thereby, providing beneficial host protecting immunity. They also contribute to the development and maintenance of several chronic inflammatory diseases which, even at the present time, lack sufficient treatment options. The diversity of important mast cell and basophil functions places these cell types into promising therapeutic targets. The Action will create a network of European experts to foster a multidisciplinary approach for the identification, characterisation, and development of such targets and their translation into novel therapeutic strategies.



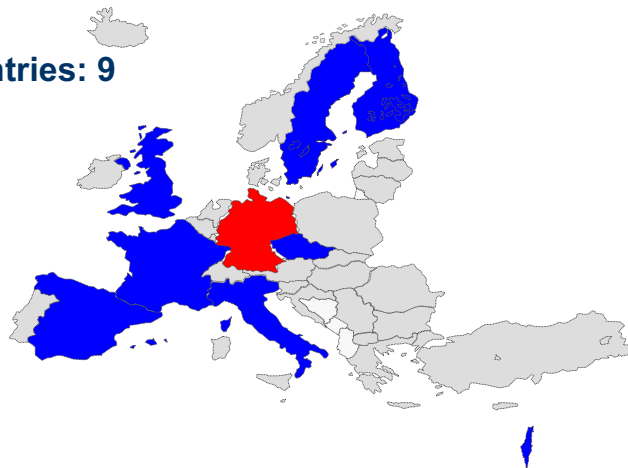
Keywords: mast cell, basophil, inflammatory disease, target, therapy, network

Working Groups

- WG1 Physiological and pathophysiological importance of mast cells and basophils in health and disease
- WG2 Methodological approaches for the investigation of mast cell and basophil biology
- WG3 Identification of biological and pharmaceutical mast cell and basophil related targets
- WG4 Therapeutic potential of mast cell and basophil targeting strategies

Interested Countries: 9

Proposer: **DE**
CZ, ES, FI, FR,
IL, IT, SE, UK



Action TD1006 (BMBS, ICT)

European Network on Robotics for NeuroRehabilitation

Objectives

The main objective of the Action is to enable the development of innovative, efficient, and patient-tailored robot-assisted therapies for neuromotor recovery, incorporating the latest findings from clinical neurorehabilitation, rehabilitation robotics, computational neuroscience, and motor neuroscience.

Abstract

The aging of the European population will inevitably accelerate the demand for effective rehabilitative therapies to ameliorate the motor deficits caused by major age-associated neurological syndromes such as stroke. Robots for neurorehabilitation offer a significant advantage in addressing this need. They can extend substantially the capacities of therapists who work with patients suffering from motor impairments. Typical robotic devices can convey instructions to patients on how to perform specific movements, can assist and guide the execution of motor actions, and can objectively assess movement capabilities. The growing variety of robotic devices used in primary research and clinical practice offers a rich framework for expanding their use in an expanding number of different patient groups. The main objectives of this Action are firstly to develop new, efficient and patient-tailored robot-assisted therapies by coordinating basic and applied research perspectives. Secondly, the Action will provide a clear structured overview about existing and emerging robot-assisted therapies to clinicians and therapists, so they can increase the availability of effective, standardised clinical practice across Europe. The Action will be carried out by an interdisciplinary team of leading researchers from robot engineering, clinical motor neurorehabilitation, computational neuroscience and motor neuroimaging.



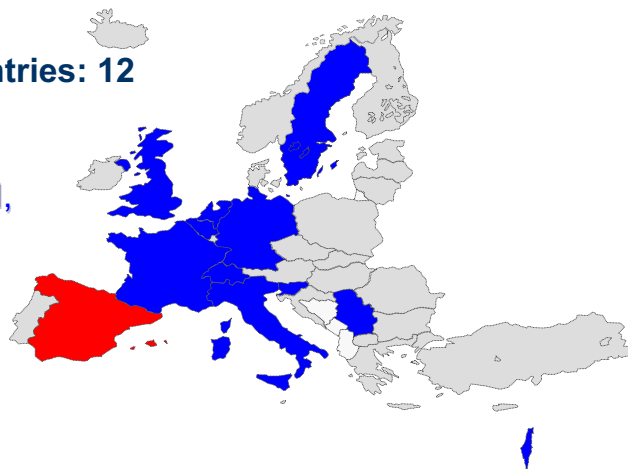
Keywords: Robotics for NeuroRehabilitation, Neuroplasticity, Neuromotor Recovery, Stroke, Aging Populations

Working Groups

- WG1 Clinical Application of Rehabilitation Robots
- WG2 Technology Development for New Rehabilitation Robots
- WG3 Theoretical Models of Motor Recovery
- WG4 Neurophysiological Mechanisms of Motor Recovery

Interested Countries: 12

Proposer: **ES**
BE, CH, DE, FR,
IL, IT, NL, RS, SI,
SE, UK



Action FA1004

Conservation Physiology Of Marine Fishes

Objectives

The multidisciplinary network will contribute to the understanding of the physiological mechanisms that determine distribution and abundance of marine fish species, and thereby to sustainable management of biodiversity and fishery resources. Physiologists, community ecologists and forecast modellers aim to integrate physiology into models, improve their predictive power, and identify conservation priorities.

Abstract

The main benefit of establishing this network will be both at the scientific and policy levels. The Action will establish a mechanism-based cause-and-effect understanding of current and future effects of environmental and anthropogenic pressures on fish biodiversity and common marine fish resources. This will improve the predictive power of ecological forecasting models.

In addition, through integration of the physiological approaches into general conservation research, will advance multi-disciplinary conservation biology expertise, including an appreciation for policy and management needs.

The Action will lead to improved scientific advice in support of policy commitments such as the Marine Strategy Framework Directive, the Convention on Biological Diversity, the OSPAR and HELCOM conventions, and provide evidence in support of operational policies such as the Common Fisheries Policy.



Keywords: ecophysiology, ecology, fish biodiversity, climate change, policy decision-making

Working Groups

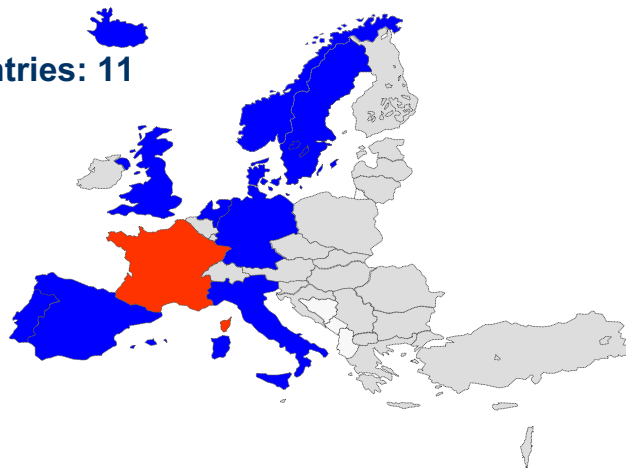
- WG1 Basic Physiological Knowledge
- WG2 Integrating physiology into forecasting
- WG3 Conservation physiology and decision-making

Non-COST participation: Australia, Canada, Japan

Interested Countries: 11

Proposer: **FR**

**DE, DK, ES, IS,
IT, NL, NO, PT,
SE, UK**



Action FA1005

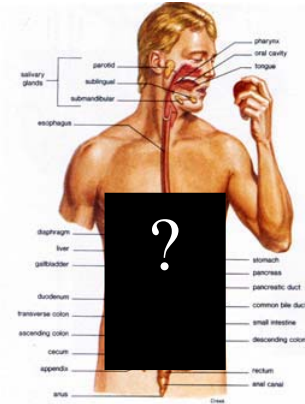
Improving health properties of food by sharing our knowledge on the digestive process (INFOGEST)

Objectives

The main objective of the Action is to spread and improve current basic knowledge on food digestion, on the release during digestion of protein beneficial food components known to have a potential effect on human health and to promote harmonization of currently used digestion models.

Abstract

EU legislation, as advised by EFSA, demands proper scientific data in nutrition and health claims. There is a lot of data being generated on the link between the food digestion and human health and a significant effort continues to be expended separately in each EU country on optimizing food for preventing the development of food-related diseases. This COST Action will gradually build a European network that will spread and improve current basic knowledge on food digestion and promote harmonization of currently used digestion models used including validation with human data from different populations such as infants, elderly, sport professionals etc. A multidisciplinary scientific community will be built on this topic gathering scientists from different disciplines (food science, nutrition, physiology, immunology, cell biology...). The Action will facilitate the transfer of new scientific advances to European food companies (large groups as well as SMEs) for developing new functional foods and reinforcing their competitiveness in a growing world market



Keywords: Food, structure, protein, digestion, bioactive peptide, allergen, human health, proteolysis, gut physiology, models, standardized protocols, improved nutrition, food processing, functional food

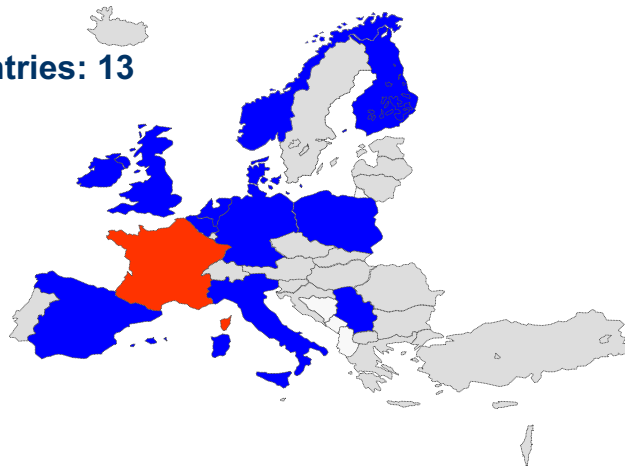
Working Groups

- WG1 Characterization of raw materials and processed food matrices for optimized nutrient bioaccessibility
- WG2 In vitro, in vivo and in silico models of mammalian gastrointestinal digestion
- WG3 Evaluation of the health effects

Non-COST participation: Canada, New Zealand

Interested Countries: 13

Proposer: **FR**
BE, DE, DK, ES,
FI, IE, IT, NL,
NO, PL, RS, UK



Action FA1006

Plant Metabolic Engineering For High Value Products

Objectives

The main objective of the Action is cross-linking within a multi-disciplinary network European scientists with diverse expertise on plant natural products (PNP) chemistry, plant metabolic engineering, plant enzymology, systems biology and computational biology, and chemistry to define and develop rational design strategies to produce known and novel PNP of pharmaceutical and industrial interest in a sustainable, economical, and ecological way.

Abstract

A tremendous amount of knowledge has been gained during the last decades about the biosynthetic capacity of plants and the pathways leading to the formation of plant natural products (PNPs), many of which are of high relevance as pharmaceuticals or fine chemicals for industries. To fully exploit the capacity of engineering plants for the production of high value PNPs this COST Action will support and enhance a pan-European network which will amalgamate resources, define target pathways and prioritize compounds, disseminate novel technologies and applications, set standards for computational support, and develop synthetic approaches in plant metabolic engineering. Outcomes will help guiding researchers in the design of plants as production host and provide building blocks for pathway engineering.



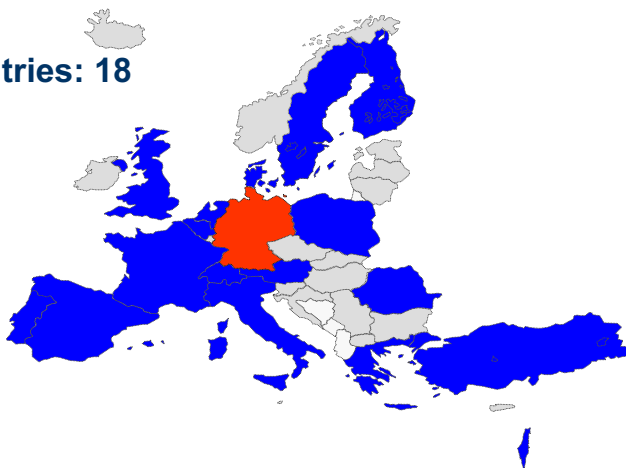
Keywords: Plant secondary metabolism, plant natural products, plant metabolic engineering, synthetic plant biology, medicinal plants

Working Groups

WG1 Status quo and road map
WG2 Molecular tools
WG3 System engineering approach

Interested Countries: 18

Proposer: **DE**
AT, BE, CH, DK,
ES, FI, FR, EL,
IL, IT, NL, PL,
PT, RO, SE, TR,
UK



Action FP1004

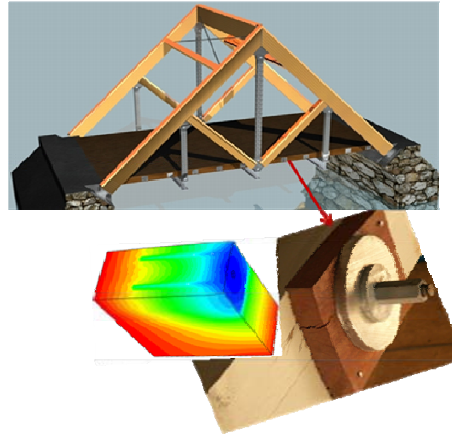
Enhance mechanical properties of timber, engineered wood products and timber structures

Objectives

The main objective of this Action is to enhance the performance of structural timber products and structures and thereby improve the competitiveness of timber structures.

Abstract

Timber and wood-based engineered products are becoming very important as structural materials, especially in the drive towards sustainable technologies and construction. For structural wooden products, it is very important to improve their properties to be more competitive and reliable as a sustainable low-carbon material and a major contributor to affordable buildings. This applies particularly to larger, more complicated structures where timber is becoming a realistic alternative. This Action aims to boost the performance of structural timber products/construction, thereby improving use of timber in construction in existing and new applications. This includes the enhanced predictability and reliability of timber structures. Improving the mechanical performance of connections and reinforcing timber in weak zones are large-scale research domains in Europe which will require coordination and scientific/engineering approaches. This COST Action will deliver increased knowledge of improving strengthening, stiffening and toughening techniques, modelling enhanced performance and experience in real projects to create new opportunities for timber construction. Exchanging information will highlight gaps in knowledge and inform future work and potential collaboration between research groups, supporting timber construction and its wider uptake in the European construction industry. This Action may also create opportunities for patenting possible new technologies and products for reinforcing timber mechanical properties.



Keywords: timber, improving properties, strengthening, stiffening, large timber structures

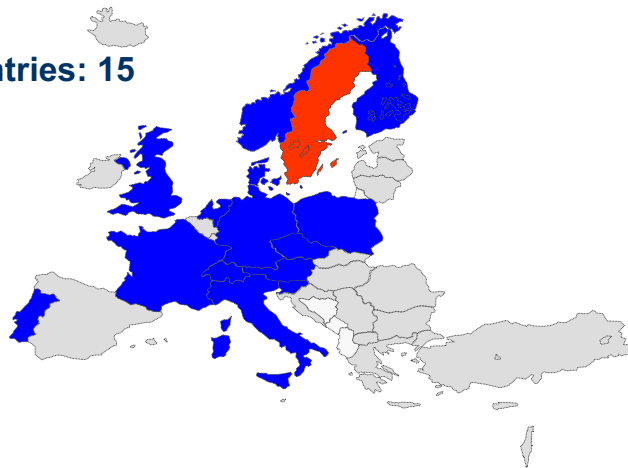
Working Groups

- WG1 Enhance performance of connections and structural timber in weak zones
- WG2 Enhance the mechanical properties of heavy timber structures with particular emphasis to timber bridges
- WG3 Modelling the mechanical performance of enhanced wood-based systems

Non-COST participation: Australia

Interested Countries: 15

Proposer: **SE**
AT, CH, CZ, DE,
DK, FI, FR, IT,
NL, NO, PL, PT,
SI, UK



Action FP1005

Fibre suspension flow modelling - a key for innovation and competitiveness in the pulp & paper industry

Objectives

To promote and disseminate validated computer modelling and simulation techniques in papermaking industry. These modern numerical tools, allowing for deep insight into the physics of the momentum, mass and heat transfer processes, provide new possibilities for design engineers resulting in innovative solutions unavailable with already utilised methodologies. As shown in other industrial branches this should strengthen, in short and mid-term perspective, the competitiveness of the pulp and paper manufacturing sector.

Abstract

Papermaking and new fibre-based products should be developed in order to maintain Europe's leading role in pulp and paper technology. Pulp and paper production is largely determined by fluid dynamics of fibre suspension flows. The objectives of the Action deal with numerical modelling of fibre suspension flows as well as validation measurements. The Action will offer industry a forum to solve test cases relevant to industry and to compare simulated results to experiments. Together simulations and experiments will result in more reliable simulation tools to industry. Fibre suspensions are extremely complex solid-liquid systems since their components interact mutually in a complex way. As a consequence of this complexity, the understanding of the suspension flow dynamics remains poor and incomplete, despite of its importance for the papermaking industry. This usually results in conservative design of industrial equipments and leads to low energy efficiency and equipment oversizing. Nowadays fast development of computer techniques and flow simulation methods allows, however, for much more precise predictions of fibre suspensions dynamics. Although it is still a fundamental research area, numerous examples of successful practical applications may be given. Their introduction into industrial practice seems to be the crucial issue for innovative and competitive European papermaking industry. The Action, by gathering together scientists, researchers and practitioners, will help to speed up this process.



Keywords: fibre suspension, papermaking, computational fluid dynamics, innovation and competitiveness, optimisation

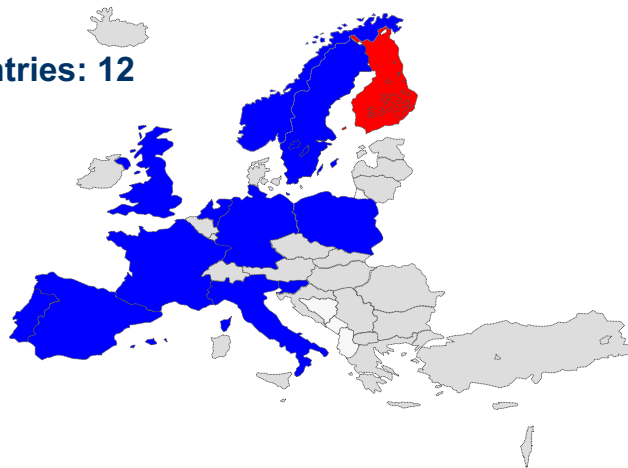
Working Groups

WG1 Experimental methods
WG2 Rheology modelling
WG3 Multi-phase flow modelling

Non-COST participation: Brazil, Canada, USA

Interested Countries: 12

Proposer: **FI**
DE, ES, FR, IT,
NL, NO, PL, PT,
SE, SI, UK



Action FP1006

Bringing new functions to wood through surface modification

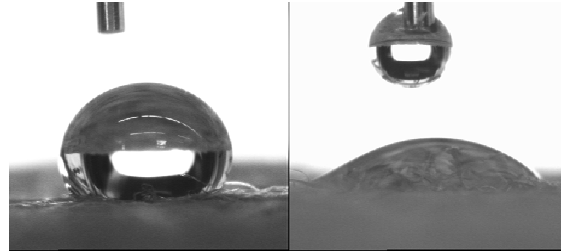
Objectives

The main objective of this COST Action is to provide the scientific-based framework and knowledge for enhanced surface modification of wood and wood products towards higher functionalization and towards fulfilment of higher technical, economic and environmental standards. Such improvement is essential for wider usage of wood and wood based products, also in the scope of tackling the climate changes, by lowering of usage of non-wood materials.

Abstract

Many applications of products are determined by their special surface properties, and based on the physical, chemical and biological interchange of various molecules with the materials surface. This is especially true for the use of wood and wood based products due to the special wood characteristics like anisotropy, UV-degradation. Thus, bringing new functions to wood through surface modification is needed in order to enhance the quality of the existing wood products and to open the way to new applications, products or markets.

This COST Action aims to provide the scientific-based framework and knowledge required for enhanced surface modification of wood and wood based products towards higher functionalization and towards fulfillment of higher technical, economic and environmental standards. This will be achieved by working within three main areas: Wood surface modification and functionalization, Wood interface modification and interface interaction and Process and Service life modelling



Keywords: Wood and Wood Based Products, Wood Surface Modification for New Functionalities, Mechanisms for surface and interface modification, Interdisciplinary, Biologically Derived Materials, Service Life Modelling

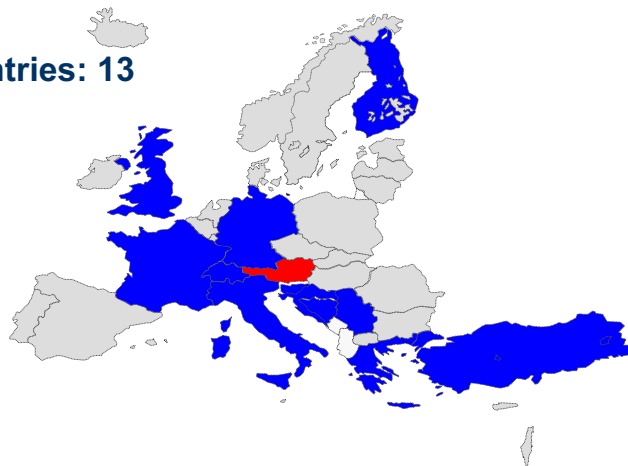
Working Groups

- WG1 Wood surface modification and functionalization
- WG2 Wood interface modification and interface interactions
- WG3 Process and service life modelling

Non-COST participation: New Zealand

Interested Countries: 13

Proposer: **AT**
BA, CH, DE, FI,
FR, EL, HR, IT,
RS, SI, TR, UK



Action CM1004

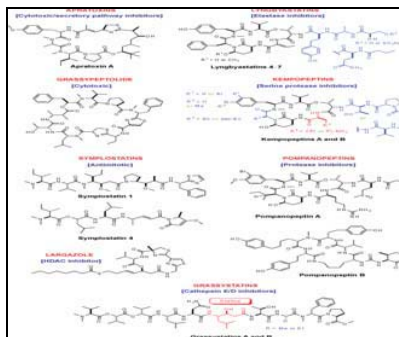
Synthetic Probes for Chemical Proteomics and Elucidation of Biosynthetic Pathways

Objectives

The main objectives of the Action are: 1) To design, prepare and apply chemical proteomics tools for fundamental and applied biological and biomedical studies. 2) To disseminate the results of these studies. 3) To make available the tools and results to the European life sciences research community at large. 4) To enable junior researchers to get exposure to and hands-on experience in the various chemical and biological mono-disciplinary research activities that are at the basis of this interdisciplinary Action.

Abstract

The main benefit of establishing SYSGENET will be at the scientific level. SYSGENET will allow researchers in different European countries to devise common research programmes and infrastructures which will give them access to various GRP resources from different European laboratories and to future GRP resources world-wide. The results from these research activities will provide the basis for a better understanding of human diseases and allow the development of new strategies for their prevention and therapy. In addition, SYSGENET will create a data sharing pan-European platform where the results of multiple phenotypic studies can be combined and new associations between phenotypes, gene networks and genotypes can be identified, allowing entering into the new area of systems genetics.



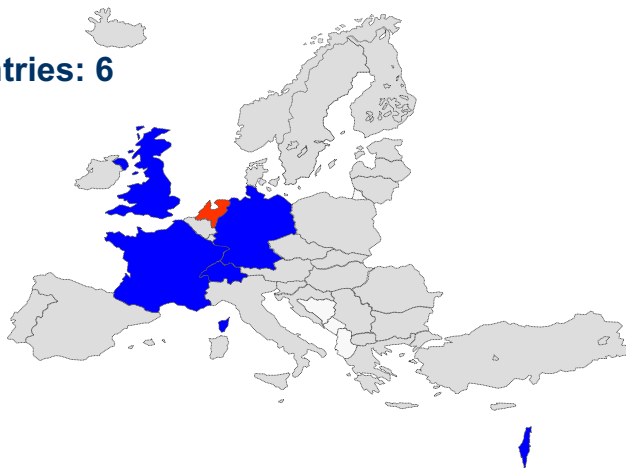
Keywords: Chemical proteomics, Chemical biology, Protein profiling, Activity-based probes, Proteasome, Post-translational modification, Biosynthetic pathways, Synthetic biology

Working Groups

- WG1 Chemical tool development by design and synthesis
- WG2 Chemical tool development from secondary metabolites and by biosynthetic engineering
- WG3 Biochemical and biophysical tool analysis in relevant biological systems

Interested Countries: 6

Proposer: **NL**
DE, FR, IL, CH,
UK



Action CM1005

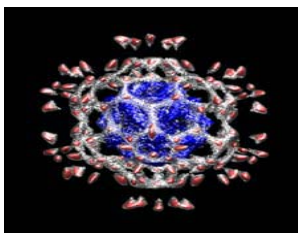
Supramolecular Chemistry in Water

Objectives

Through the investigation and control of the multiple weak reversible non-covalent, but collectively powerful, interactions that allow efficient and selective recognition processes to occur in water, it will be possible to boost the application of such systems towards the achievement of several major goals: (i) the 'de novo' design of receptors able to monitor biologically and environmentally relevant species in an aqueous environment with high selectivity and affinity; (ii) the control of supramolecular reactivity in water by biomimetically inspired systems; (iii) the production in water of self assembled organized structures which are stimuli responsive and which can be used for programming functions in materials and devices.

Abstract

The objective of this COST Action is to develop supramolecular systems that work in water. Such supramolecular systems should allow to (i) monitor environmentally or biologically relevant species in water (ii) control selectivity of reactions in water, and (iii) produce self-assembled organized structures in water which are stimuli responsive and which can be used for programming functions in materials and devices. The Action aims at improving our understanding of the multiple weak non-covalent, but collectively powerful interactions that allow efficient and selective recognition processes to occur in water.



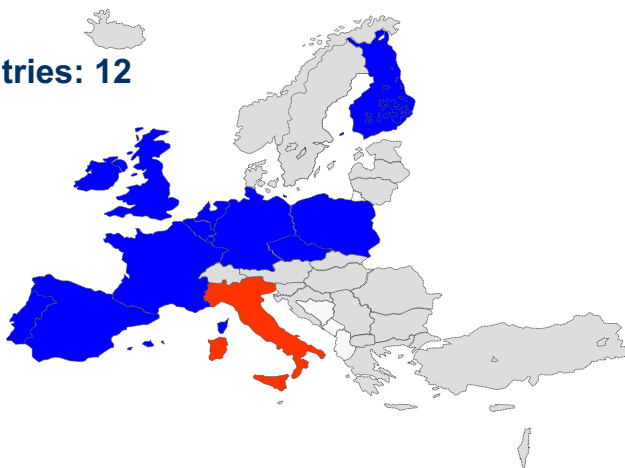
Keywords: molecular recognition in water, supramolecular control of reactivity in water, chemosensors, responsive auto-assembled materials, environmental monitoring and biological diagnostics

Working Groups

- WG1 Supramolecular Recognition and Supramolecular Sensing in water
- WG2 Supramolecular Control of Reactivity in Water
- WG3 Self-Assembly in Water

Interested Countries: 12

Proposer: **IT**
BE, CZ, DE, ES,
FI, FR, IE, NL,
PL, PT, UK



Action CM1006

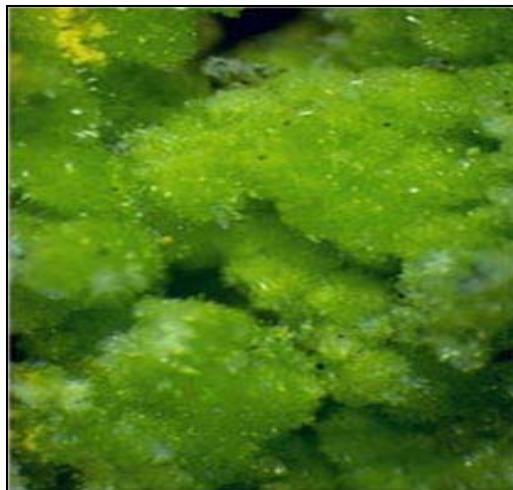
EUFEN: European F-Element Network

Objectives

The main objective is to attain a concerted, organised collaborative research activity that effectively focuses on areas of strategic importance to f-element chemistry in Europe and to foster an environment where, via a multi-group approach (including industry), remarkably novel, transformative f-element research is delivered which forms the basis for, or is, inter- and multi-disciplinary in nature.

Abstract

f-Element chemistry (the block of 28 elements at the bottom of the periodic table) contributes to medical imaging, magnetic, electronic, and photonics devices, catalysis, energy, and metal extraction and is therefore strategically crucial to EU science, energy, security, training, sustainability, and society. Despite this, research, teaching, and key skills of f-element chemistry are disappearing from universities, but it is essential that knowledge is improved and handed down. There is no coordinated forum for cooperative mobility mechanisms for nationally funded f-element chemists pursuing fundamental frontier research to initiate collaborations, training, networking, and dissemination with each other. This COST Action will provide mechanisms to promote such goals by establishing a network linking the EU f-element community in order to invigorate and expand the area. This will enhance the supply routes of trained researchers from universities to industry, restructure the EU science-base, and give research output greater than the sum of its parts. There has never been a COST Action in this area and the EU needs to compete now or be left behind by the USA.



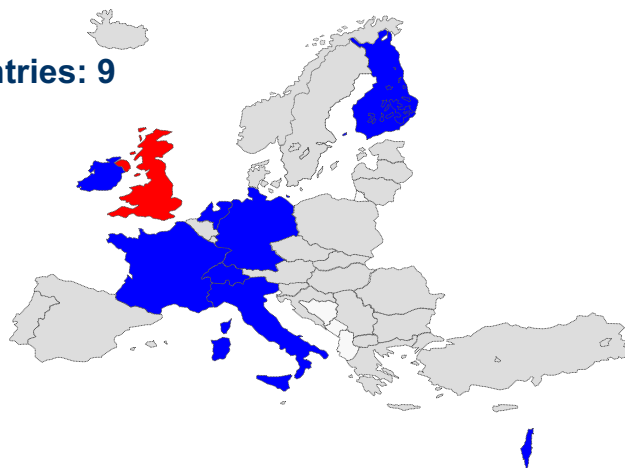
Keywords: Lanthanides, Actinides, Nuclear, Chemistry, Inorganic Chemistry, Magnetism, Photonics, Catalysis, Medical Imaging, Metal Extraction

Working Groups

WG1 Synthesis and Structure
WG2 Spectroscopy and Computation
WG3 Applications

Interested Countries: 9

Proposer: **UK**
CH, DE, FI, FR,
IE, IL, IT, NL



Action TD1004 (CMST, BMBS)

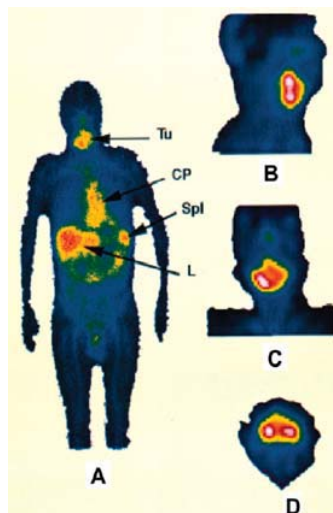
Theranostics Imaging And Therapy: An Action To Develop Novel Nanosized Systems For Imaging-Guided Drug Delivery

Objectives

The main objective of the Action is to exploit nanotechnology advances in pharmaceutical and biomedical imaging fields to develop innovative image-guided therapies for the cure of highly social impact diseases.

Abstract

The Action brings together the major European research groups working on the development of novel combined diagnostic/therapeutic agents (theranostic agents). Properly designed agents will allow the *in vivo* quantitative assessment of the amount of drug reaching a pathological region and the visualisation of molecular changes due to the therapeutic effects of the delivered drug. The main objective of the Action is to demonstrate the potential of image-guided therapies in the treatment of diseases with high social impact. Researchers will join efforts to develop novel therapeutic treatments based on the visualisation of drug delivery/release processes and the monitoring of associated therapeutic effects. The Action goals will be reached thanks to a strong interdisciplinary coordination work mostly focused to get a better understanding of crucial aspects of the whole drug delivery process *in vivo*, in particular regarding the efficiency of drug targeting and release and the relationship with the therapeutic effect. The implementation of therapies and surgical interventions with imaging technologies will provide physicians with an extraordinary tool for accelerating the desirable translation towards molecular and personalized medicine, thus considerably extending the armoury of solutions for successfully combating the diseases.



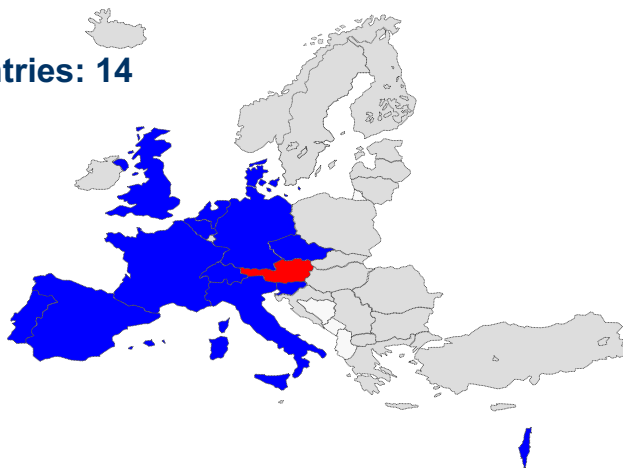
Keywords: In vivo imaging, Drug delivery, Image-guided therapies, Interventional imaging, Nanocarrier

Working Groups

- WG1 Imaging reporters for theranostic agents
- WG2 Nanocarriers for theranostic agents
- WG3 Preparation and selection of targeting vectors
- WG4 Theranostic agents responsive to endogenous and external stimuli
- WG5 Set-up of preclinical theranostic protocols

Interested Countries: 14

Proposer: **AT**
BE, CH, CZ, DE,
DK, ES, FR, IL,
IT, NL, PT, SI,
UK



Action ES1004

European framework for online integrated air quality and meteorology modelling (*EuMetChem*)

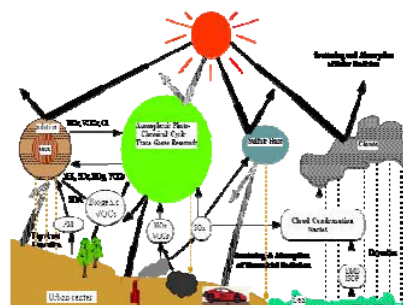
Objectives

The overall objective of the Action is to set up a multi-disciplinary forum for online integrated air quality/meteorology modelling and elaboration of the European strategy for a new-generation integrated ACT/NWP-CLIM modelling capability/framework.

The main topics are: 1. Online versus offline modelling: advantages and disadvantages, 2. Analysis of priorities focusing on interaction/feedback mechanisms, 3. Chemical data assimilation in integrated models, 4. European strategy/framework/centre for online integrated modelling, 5. Evaluation and validation framework of online ACT/NWP-CLIM models, 6. Collection of suitable datasets for model development, testing and evaluation.

Abstract

The COST Action - European framework for online integrated air quality and meteorology modelling (*EuMetChem*) - will focus on a new generation of online integrated Atmospheric Chemical Transport (ACT) and Meteorology (Numerical Weather Prediction and Climate) modelling with two-way interactions between different atmospheric processes including chemistry (both gases and aerosols), clouds, radiation, boundary layer, emissions, meteorology and climate. At least, two application areas of the integrated modelling are aimed to be considered: (i) improved numerical weather prediction (NWP) and chemical weather forecasting (CWF) with short-term feedbacks of aerosols and chemistry on meteorological variables, and (ii) two-way interactions between atmospheric pollution/ composition and climate variability/change. The framework will consist of four Working Groups namely: 1) Strategy and framework for online integrated modelling; 2) Interactions, parameterisations and feedback mechanisms; 3) Chemical data assimilation in integrated models; and finally 4) Evaluation, validation, and applications. Establishment of such a European framework (involving also key American experts) will enable the EU to develop world class capabilities in integrated ACT/NWP-Climate modelling systems, including research, forecasting and education.



Keywords: online integrated meteorology - air quality modelling systems, chemistry-aerosols-clouds-radiation-climate feedbacks, numerical weather prediction, chemical weather forecasting, chemical data assimilation

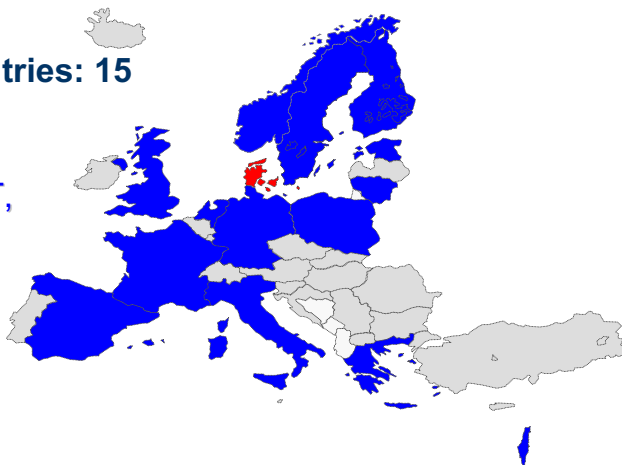
Working Groups

- WG1 Strategy and framework for online integrated modelling
- WG2 Interactions, parameterizations and feedback mechanisms
- WG3 Chemical data assimilation in integrated models
- WG4 Evaluation, validation and applications

Non-COST participation: Canada, Russia, USA

Interested Countries: 15

Proposer: **DK**
DE, EE, ES, FI,
FR, EL, IL, IT, LT,
NL, NO, PL, SE,
UK



Action ES1005

Towards a more complete assessment of the impact of solar variability on the Earth's climate

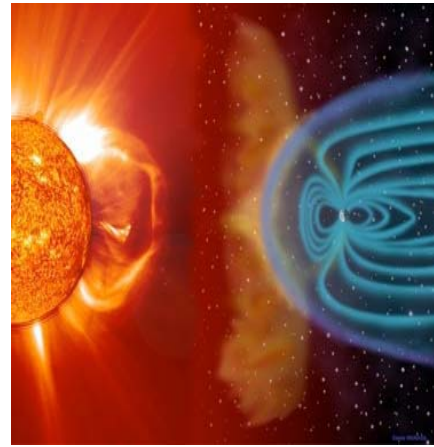
Objectives

The main objective of the Action is to assess quantitatively the impacts of solar variability on climate through a collective and multidisciplinary effort involving different scientific communities in Europe. This Action will quantify the different solar contributions, consolidate and enhance current knowledge into a form that is accessible both to the different scientific communities and to policy makers, and develop a series of tools to improve the description and the modelling of the coupling between the different layers that span the terrestrial atmosphere.

Abstract

The role of solar variability in climate change is a topic of considerable scientific and societal importance, and also a topic of controversy. The mechanisms by which solar variability affects various layers of the terrestrial atmosphere are still poorly known. European teams have developed strong expertise on various aspects, but the lack of interaction has hampered progress toward a more global and quantitative picture. The objective of this Action is to make solid progress on this problem, by assessing quantitatively the different contributions of solar variability to the terrestrial environment.

Four Working Groups will address respectively the impact of solar radiative forcing, interplanetary perturbations, and energetic particles upon the atmosphere, and the interfacing between upper and lower atmospheric layers and corresponding models. The deliverables include online tools such as a catalogue of proxy data for solar, interplanetary and energetic particle variability, a catalogue of models, best practices for validation, fact sheets for policy makers, and capacity building events for training young researchers. The main benefits will be an authoritative source of information on the role of the Sun in global climate change, a significant enhancement of present knowledge and a long-term structural improvement in the interaction between scientific communities.



Keywords: solar variability, climate change, solar-terrestrial science

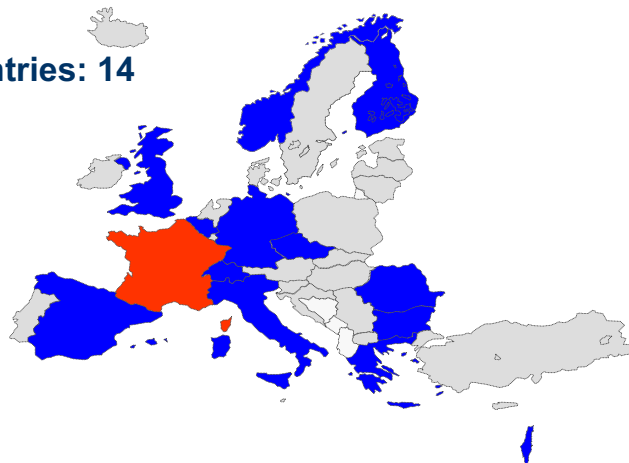
Working Groups

- WG1 Climate impact of solar radiation
- WG2 Climate impact of interplanetary and near-Earth conditions and perturbations
- WG3 Climate impact of energetic particles
- WG4 Model interfaces

Non-COST participation: Russia

Interested Countries: 14

Proposer: **FR**
BE, BG, CH, CZ,
DE, EL, ES, FI,
IL, IT, NO, RO,
UK



Action ES1006

Evaluation, improvement and guidance for the use of local-scale emergency prediction and response tools for airborne hazards in built environments

Objectives

The main objective of the Action is to evaluate and improve the reliability of neighbourhood-scale emergency response tools based on a comprehensive and cross-national approach. This will be achieved by providing both a substantially improved scientific background and comprehensive practical guidance for the use of models for tracking and predicting the dispersion of airborne hazards, resulting from accidental or deliberate releases in complex urban and industrial environments.

Abstract

Releases of hazardous agents in complex built environments pose a tremendous challenge to emergency first responders and authorities in charge due to the large number of casualties potentially involved. Air motions in built-up areas are very complex and adequate modelling tools have to be applied properly in order to predict the dispersion of hazardous materials with sufficient accuracy within a very short time. Different types of tools are applied; however, it is not always clear what the advantages and limitations of individual model approaches are. Therefore, it is of exceptional interest to compile a detailed inventory of the different models and methodologies currently in use, to characterize their performance and to establish strategies for their improvement. A consensus on reliable, efficient and suitable model approaches for given local threats and their scientific advancement is imperative. Consequently, the Action is aiming for a substantial improvement in the implementation of local-scale emergency response tools. By characterizing threat scenarios, compiling dedicated test cases, revealing model limitations and improving model approaches, the Action is delivering guidance for a reliable application of local-scale emergency response tools. The Action is a first cross-community initiative to join, to coordinate and to harmonize European efforts in threat assessment and reduction for local-scale airborne hazards.



Keywords: airborne hazards threat assessment, local-scale dispersion modelling, model evaluation, emergency response tools, European harmonization

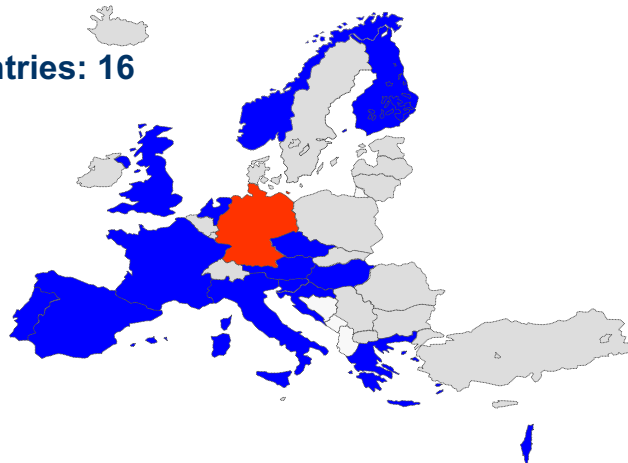
Working Groups

- WG1 Threats, Models and Data Requirements
- WG2 Test, Evaluation and Further Development
- WG3 Applicability, Implementation and Practical Guidance

Non-COST participation: Japan, USA

Interested Countries: 16

Proposer: **DE**
AT, CZ, EL, ES,
FI, FR, HR, HU,
IL, IT, NL, NO,
PT, SI, UK



Action MP1004

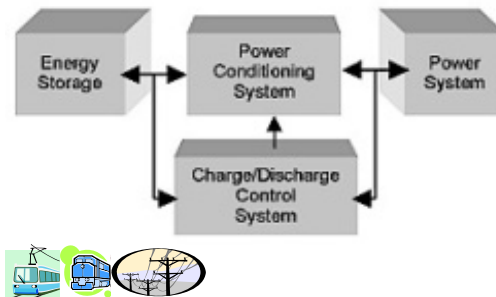
Hybrid-ES – Hybrid Energy Storage Devices and Systems for Mobile and Stationary Applications

Objectives

Hybrid-ES will provide scientific and technological knowledge to develop innovative hybrid energy storage devices and systems and to prepare an appropriate platform for their adequate practical implementation in transportation and energy technique.

Abstract

The recent turmoil in global economy once more dramatically raised the currently unsatisfied demand for appropriate energy storage solutions. In these circumstances it was highlighted once more that the topic of energy storage solutions deserves to be treated with increased attention from scientists and engineers and from society as a whole. This COST Action addresses hybrid energy storage devices and systems based on innovative materials and technologies as well as innovative system architecture. Innovative materials and material processing for improved energy storage devices and associated "intelligent" hybrid solutions will emerge from reduced fragmentation and the enhancement of multidisciplinary and multinational cooperation during this Action. In this manner the Action will strengthen the competitiveness of European industry in this field and provide a framework for European responses to the economic and societal needs for resource efficient, environmentally-friendly and reliable solutions for transport and energy.



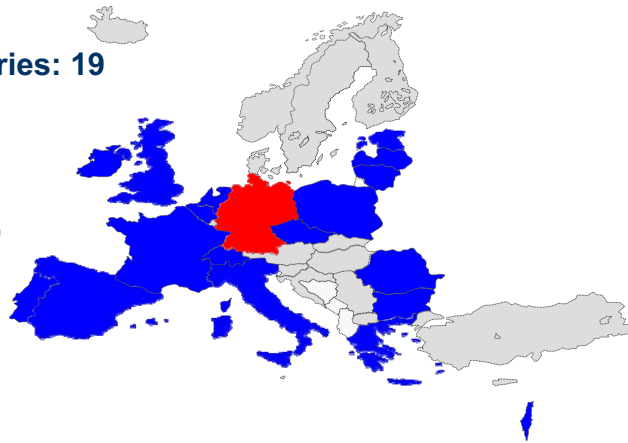
Keywords: Improved materials and material processing, hybrid energy storage devices, energy storage systems, innovative system architecture, hybrid solutions, transport and energy technique

Working Groups

- WG1 Improved materials for energy storage devices (ESD's)
- WG2 Strategy to build "intelligent" hybrid energy storage devices and systems
- WG3 Hybrid energy storage solutions for mobile applications
- WG4 Hybrid energy storage solutions for stationary applications

Interested Countries: 19

Proposer: **DE**
BE, BG, CH, CZ,
EE, EL, ES, FR,
IE, IL, IT, LT, LV,
NL, PL, PT, RO,
UK



Action MP1005

NAMABIO - From nano to macro biomaterials (design, processing, characterization, modelling) and applications to stem cells regenerative orthopaedic and dental medicine

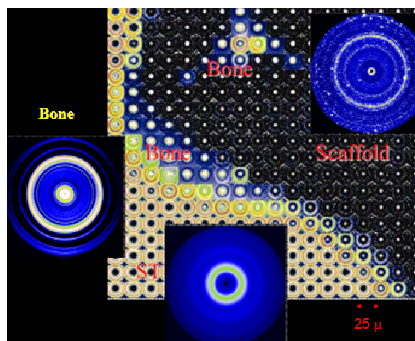
Objectives

The main objective of NAMABIO is to develop innovative biomaterials and their applications (through stem cell) in regenerative medicine of bones and teeth. The concrete outcomes of the Action will be to produce an information exchange as a basis for activity coordination, improvement through a feedback loop between the end-user (biologist and clinicians) and the different material scientists involved.

Abstract

Regenerative medicine is a new discipline based on biomaterial development and increasing knowledge in cell science. NAMABIO will be focused only on the interdisciplinary research related to biomaterials and stem cells of interest for the regenerative medicine of bones and teeth. The aim of NAMABIO is to coordinate research efforts in order to obtain a real breakthrough in these areas. In particular the partners of the present Action are scientists involved in the following activities:

(a) processing of innovative biomaterials, (b) chemical, physical and mechanical characterization, (c) modeling of physical and mechanical properties, (d) stem cells loading on biomaterials, implantation on animals, and histological and molecular evaluation, (e) 3D structural characterization of tissue engineered bones and teeth by X-ray synchrotron microtomography (or holotomography), (f) Biomedical evaluation of the results obtained in (e).



Keywords: Knowledge-based biomaterials, tissue engineering, nanoparticles, regenerative medicine, bones, teeth, processing techniques, experimental characterization, chemo-physical motivated multiscale modeling, stem cells

Working Groups

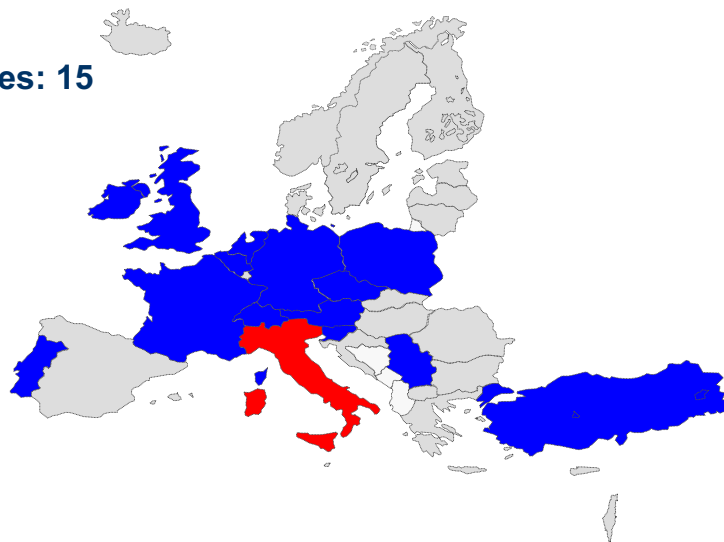
- WG1 Processing of innovative biomaterials
- WG2 Chemical, physical and mechanical characterization of Biomaterials and scaffolds
- WG3 Modeling of physical and mechanical properties
- WG4 Stem cell biology in bone and dental tissue regeneration

Non-COST participation: Canada, China, Russia

Interested Countries: 15

Proposer: **IT**

**AT, BE, CH, CZ,
DE, FR, IE, NL, PL,
PT, RS, SI, TR, UK**



Action MP1006

FPQP – Fundamental Problems in Quantum Physics

Objectives

The Actions objectives include the clarification of quantum paradoxes, the detailed analysis of the quantum-to-classical transition, analysis of the connection with relativity, and experimental tests of its limits of validity. Strategic objectives include the coordination of the research units, the involvement of early-stage researchers, the dissemination of results, aimed at unifying the community, boosting the research, strengthening the leading role of Europe in the field.

Abstract

Europe has the largest number of scientists working on the fundamental problems of quantum mechanics. There is an urgent need to create a common platform to overcome the existing fragmentation. There is a need for unifying research in a multidisciplinary and coordinated approach, to reach the goal of a full understanding of the quantum world. This Action will be the first network in the world, focused on the foundations of quantum mechanics. The Action aims at strengthening the cooperation and boosting the research activity among European groups working in the foundations of quantum mechanics. By combining existing research strengths in mathematical, theoretical and experimental physics and quantum chemistry, major breakthroughs in foundational questions will be achieved. The Action will create the necessary platform for enhancing synergies among the participants, exchanging knowhow, coordinating the research and disseminating the results.



Keywords: Quantum Mechanics, Foundations of Quantum Theory, Nonlocality and Entanglement, Decoherence and Open Quantum Systems, Effective Quantum Dynamics

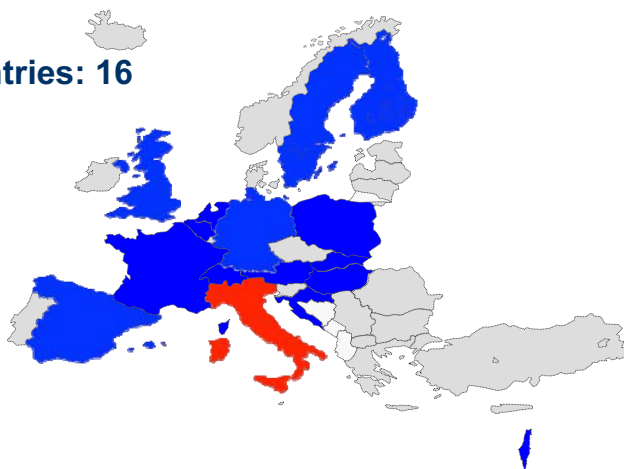
Working Groups

- WG1 Quantum theory without observers
- WG2 Effective descriptions of complex systems
- WG3 Quantum theory meets relativity
- WG4 From theory to experiments

Interested Countries: 16

Proposer: **IT**

**AT, BE, CH, DE,
ES, FI, FR, HR,
HU, IL, NL, PL,
SE, SK, UK**



Action TD1007 (MPNS, CMST, BMBS)

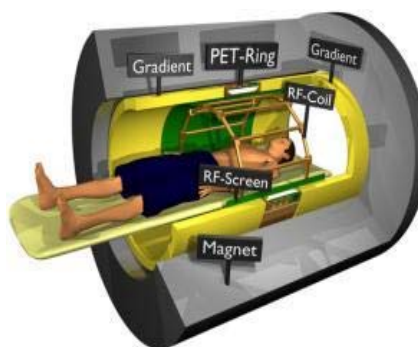
Bimodal PET-MRI molecular imaging technologies and applications for *in vivo* monitoring of disease and biological processes

Objectives

The main objective of this Action is to create a framework in which researchers involved in the development of PET/MRI equipment, bimodal probes and related applications can share and increase knowledge and information.

Abstract

The rapid growth in genetics and molecular biology combined with the development of techniques for transgenic small animals has led to an increased interest in *in vivo* preclinical molecular imaging; PET-MRI has gained attention over the past five years due to the complementary advantages of those technologies, including soft tissue contrast and low radiation. Molecular imaging with PET-MRI is an interdisciplinary topic; new instrumentation, data acquisition strategies, image processing and reconstruction algorithms need to be developed, evaluated and optimised. In addition, bimodal contrast agents, including nanoparticles are promising candidates for a number of preclinical and clinical diagnostic and therapeutic applications. Although a number of prototype hybrid systems are being developed, enhancing interaction with end users is still critical. Recently, four prototypes of integrated hybrid PET/MRI scanners were installed at two PET centres in Europe (Germany) and the United States. Understanding the emerging biological needs, preclinical and clinical challenges, will provide the directions for the design of efficient bimodal probes and optimized imaging equipment. The Action fulfils the need for European coordinated research in the development and application of peak technologies, aiming to bridge the gap between basic biological research and preclinical application with significant social impact.



Keywords: bimodal contrast agents, PET/MRI, multimodal molecular imaging, positron emission tomography, magnetic resonance imaging

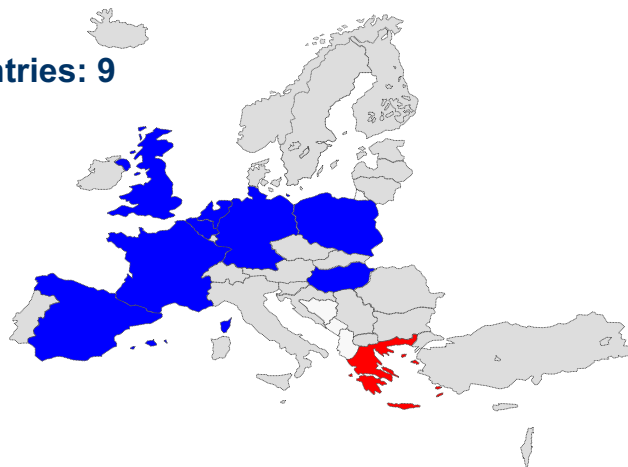
Working Groups

- WG1 Hardware group
- WG2 Software group
- WG3 Bimodal agents group
- WG4 Preclinical application group
- WG5 Clinical application group

Non-COST participation: Ukraine, USA

Interested Countries: 9

Proposer: **EL**
BE, DE, ES, FR,
HU, NL, PL, UK



Action IS1004

WEBDATANET: web-based data-collection - methodological challenges, solutions and implementations

Objectives

WEBDATANET will contribute to the creation of a multidisciplinary network of web-based data collection experts, (web) survey methodologists, psychologists, sociologists, economists, media researchers and public opinion researchers to accumulate and synergize knowledge of methodological problems of data collection on the internet. The proposed network will provide a platform to develop a sound theoretical and empirical foundation for web-survey methodology, web-based experimenting, testing, non-reactive data collection, and mobile Internet research, as well as for new emerging forms of web-based data collection.

Abstract

WEBDATANET will benefit from communication throughout the social sciences by establishing a network bringing together social scientists, survey and web-based data collection experts, and data users. It will tackle several web-based data collection problems and discuss scientific validity by using different data sources, such as existing web-surveys, social networks, and other web 2.0 technologies.. WEBDATANET will promote web-based data usage in the EU by supplying web-based teaching and discussion platforms, disseminating findings, and organizing conferences, working groups, and research exchanges. It will contribute to the theoretical foundation of web-based data collection, stimulate its integration into the entire research process (e-science), and enhance its credibility in the name of public interest.



Keywords: web-based data collection, web-survey, web experiments/testing, non-reactive data collection, mobile Internet research, social sciences, public interest

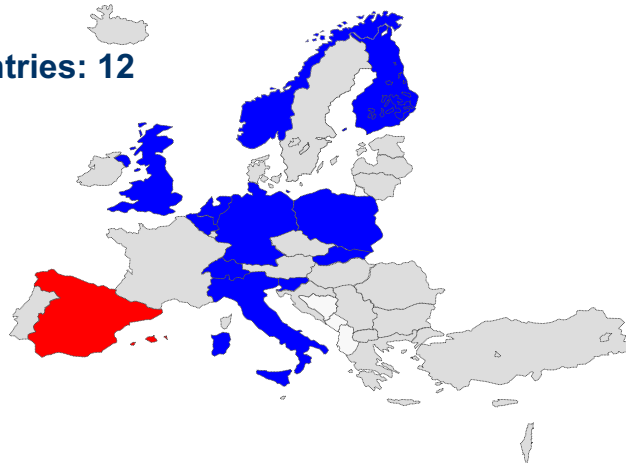
Working Groups

- WG1 Quality issues of web surveys
- WG2 Innovations in web-based data collection
- WG3 Guidelines, codes, standards, implementation, and dissemination

Non-COST participation: USA

Interested Countries: 12

Proposer: **ES**
BE, CH, DE, FI,
IT, NL, NO, PL,
SI, SK, UK



Action IS1005

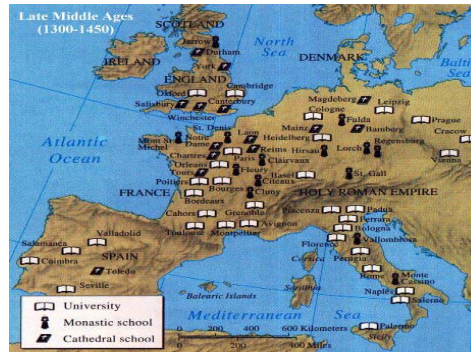
Medieval Europe - Medieval Cultures and Technological Resources

Objectives

Medioevo Europeo will increase the accessibility to and the integration of medieval research results and tools through improved technological instruments and skills. Its final outcome will be the creation of a Virtual Centre for Medieval Studies (VCMS), a portal providing information on digitalised manuscripts, authenticity lists of medieval authors, bibliographies on medieval cultures and a library of medieval texts. The VCMS will integrate existing databases containing texts on medieval cultures, bibliographical references and dictionary articles.

Abstract

Medioevo Europeo will create a Virtual Centre for Medieval Studies: a virtual, team work space in which to collaborate, communicate and share work and research tools. Medioevo Europeo links modern technology to medieval studies and combines technological development with intensive training of researchers. The European framework offers the means to connect the wealth of scientific material available, while ensuring interoperability, data security, and suitability for differing academic contexts. Medioevo Europeo promotes social, technological and scientific advances and an understanding of Europe as a union of diverse but complimentary heritages. It develops a key scientific resource and defines improved technical standards for academic databases.



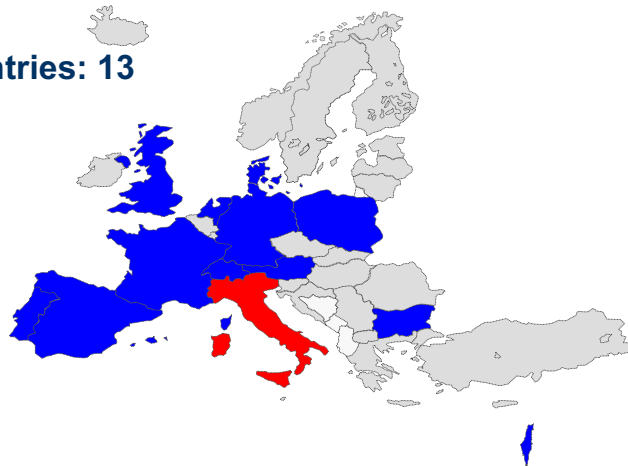
Keywords: Medieval Studies, Databases, Virtual Research Environments, Interoperability, Heritage

Working Groups

- WG1 Authors and texts: repertoires, authority lists, bibliographies
- WG2 Manuscripts and textual tradition
- WG3 Textual corpora and reading tools
- WG4 VCMS design

Interested Countries: 13

Proposer: **IT**
AT, BG, CH, DE,
DK, ES, FR, IL,
NL, PL, PT, UK



Action IS1006

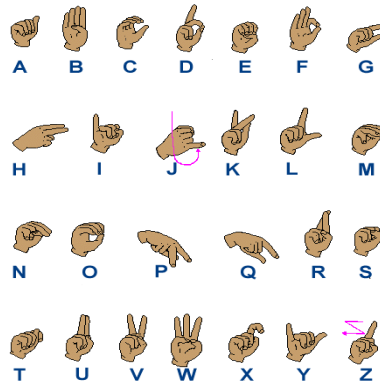
Unravelling the grammars of European sign languages: pathways to full citizenship of deaf signers and to the protection of their linguistic heritage

Objectives

This Action will design a blueprint for the creation of reference grammars of individual sign languages which is descriptively thorough and theoretically grounded, so that deaf users, policy makers and researchers of sign languages across Europe can rely on a solid basis for their initiatives.

Abstract

Language policies for signing deaf Europeans require reliable reference grammars of their sign languages (SLs), which are generally lacking or of limited validity if they exist. They constitute the basis for teaching and training purposes. In addition, descriptive grammars are essential for the documentation of a European linguistic and cultural heritage which is largely unrecognized to date. Making SL grammars available to signing communities, policy makers, linguists and to civil society in general will strengthen the status of SLs and support full participation of their users in society. In parallel, deepening the knowledge on SL grammars with a theoretically informed comparative approach will contribute to the characterization of the human faculty of language, whose study is severely biased towards spoken languages. In this way, empirical and theoretical results from SLs will have an impact on several domains of the current agenda of Cognitive Sciences.



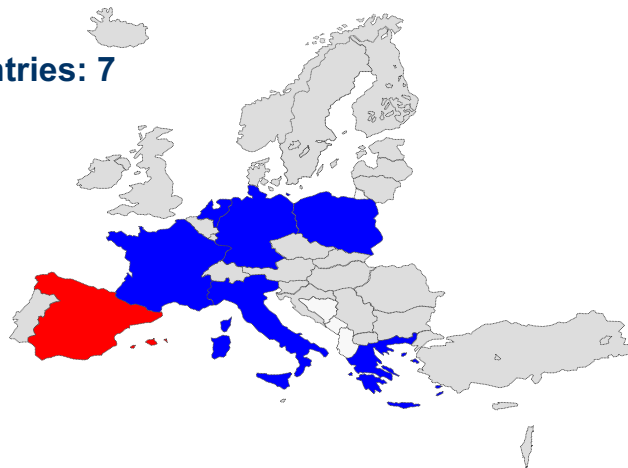
Keywords: Sign language grammar, linguistic and human rights of the deaf, language policy, deaf education, theoretical comparative linguistics, linguistic research methodology

Working Groups

- WG1 Phonology and Morphology
- WG2 Syntax
- WG3 Semantics and Pragmatics
- WG4 Methodology of data collection and grammar design

Interested Countries: 7

Proposer: **ES**
DE, FR, EL, IT,
NL, PL



Action IS1007

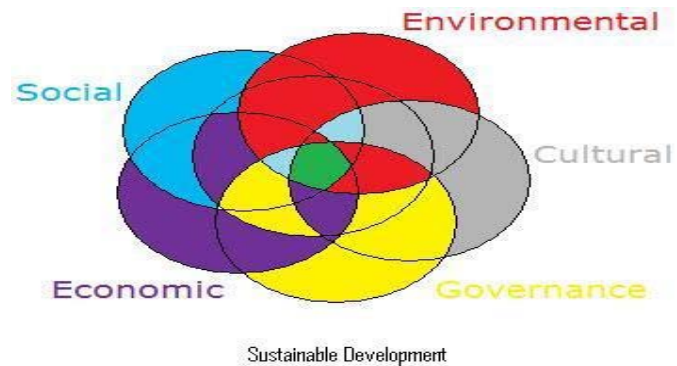
Investigating Cultural Sustainability

Objectives

The Action will focus on the role of culture as a fundamental issue, even a precondition to be met on the path towards Sustainable Development (SD). In order to better define understanding of culture within the general frames of sustainability, the Action will conceptualise and mobilize the cultural dimension of sustainable development, examine and compare best policy practices and investigate frameworks and indicators for cultural sustainability assessments.

Abstract

The ultimate goal of this COST Action is to increase understanding of and determine the role of culture in Sustainable Development (SD) based on multidisciplinary principles. The work will be carried out 1) by investigating and operationalizing the concept of culture in the context of SD through multidisciplinary approaches and analyses; 2) by examining the best practices for bringing culture into policy and practical domains, and 3) by developing means and indicators for assessing the impacts of culture on SD. The results of the Actions will be exploited by the scientific community, policy makers, administrative personnel and practitioners working with sustainability and culture from the EU to the local level.



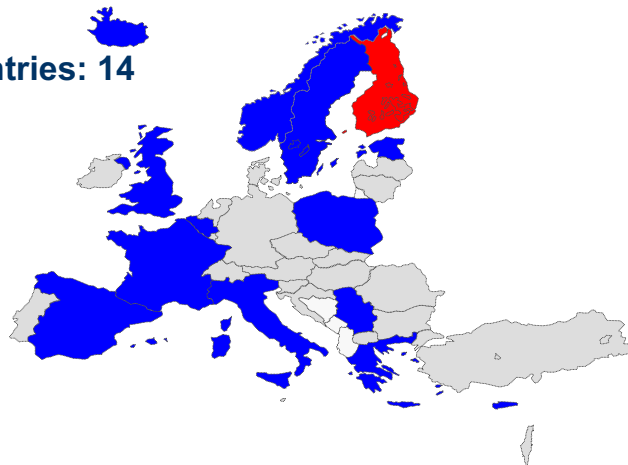
Keywords: Sustainable development, culture, cultural sustainability, cultural policy, indicators

Working Groups

- WG1 Conceptualisations of culture in the context of sustainable development
- WG2 Policy practices for cultural sustainability
- WG3 Indicators for cultural sustainability

Interested Countries: 14

Proposer: FI
BE, CY, EE, ES,
FR, EL, IS, IT,
NO, PL, RS, SE,
UK



Action TD1005 (ISCH, BMBS)

Pain Assessment in Patients with Impaired Cognition, especially Dementia

Objectives

The main objective of the Action is the development of a comprehensive and internationally agreed-on toolkit for assessing pain in adults with cognitive impairment; especially with dementia.

Abstract

The number of older adults will increase considerably in the next decades. Since age is the main risk factor for dementia and pain, the number of patients with both dementia and pain will also grow. When dementia and pain concur, their impact on the European society multiplies and asks for transnational solutions. It seems already now evident that pain is grossly undertreated in dementia. Other unanswered questions regard the underlying brain pathology, optimal pain treatment and care, etc. The lack of validated pain assessment tools has yet prevented major progress. A few centres in Europe have started relevant research but these are not yet linked in a systematic fashion. This COST Action will bring together leading researchers from a wide range of scientific disciplines. The major aim is the development of a comprehensive and internationally agreed-on assessment toolkit for older adults targeting the various subtypes of dementia and various aspects of pain, including pain diagnostics, cognitive examination and guidelines for proper assessment. Validation of this toolkit requires joint action of both basic and clinical sciences. Only hereby, the urgently needed improvement of pain management in dementia can start.



Keywords: Impaired cognition, dementia, pain, diagnosis, treatment

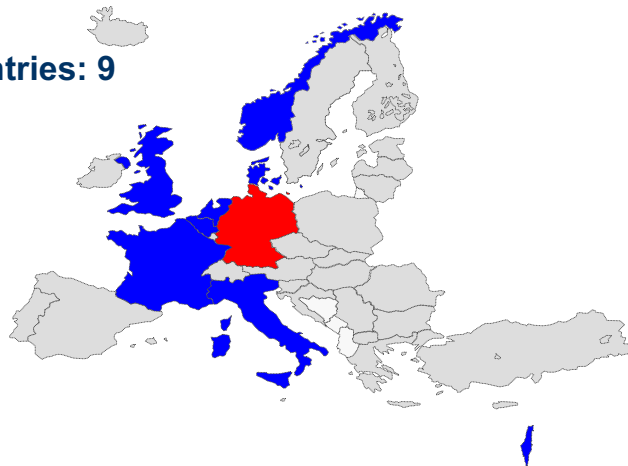
Working Groups

- WG1 Psychometrics and Algesimetry
- WG2 Nursing and Care
- WG3 Clinical Evaluation and Epidemiology
- WG4 Experimental Evaluation
- WG5 Palliative Care

Non-COST participation: Australia

Interested Countries: 9

Proposer: **DE**
BE, DK, FR, IL,
IT, NL, NO, UK



Action IC1004

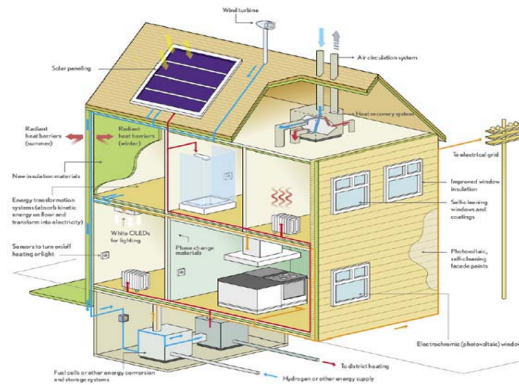
Cooperative Radio Communications for Green Smart Environments

Objectives

The main objective of the Action is to increase knowledge of cooperative communications applied to Green Smart Environments, by exploring and developing new methods, models, techniques, strategies and tools. Training of young researchers is also one of its objectives, to be pursued e.g. via annual training schools.

Abstract

Smart Environments (SEs), like the human body, energy efficient buildings, vehicular or urban environments, are populated by many devices connected by wireless networks. The radio channel is central to SEs, as it impacts the design of transmission techniques and communication protocols. Radio communications in SEs need to be green and based on cooperative paradigms to mitigate the effect of interference and improve efficiency. This Action addresses research issues in the field of cooperative radio communications to make our society cleaner, safer, and more energy efficient. The main goal of the Action is to increase knowledge of cooperative communications applied to Green SEs (GSEs), by exploring and developing new methods, models, techniques, strategies and tools, in a context enriched by deep industry-academia links. Europe will benefit from the activities of this Action, as GSEs will be one of the key components of the broader field (and exploding market) of the Internet of Things, a domain of interest to many large and small companies in Europe.



Keywords: Green Cooperative Radio Communications, Radio Channel, Radio Links and Networks, Smart Environments, Energy Efficiency

Working Groups

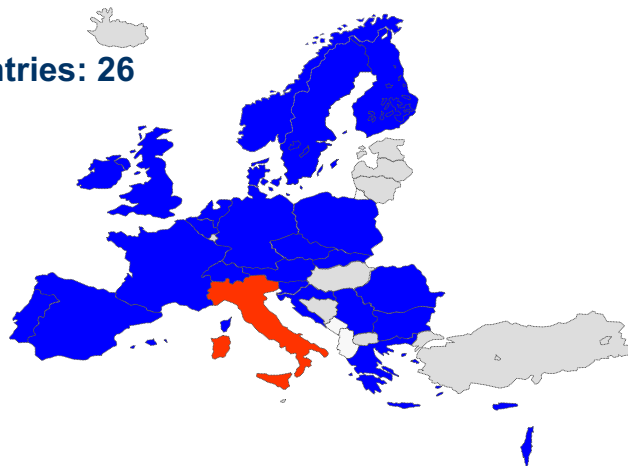
- WGB Body Environment
- WGI Indoor Environment
- WGU Urban Environment
- WGV Vehicular Environment
- WG1 Radio Channel
- WG2 Radio Signalling
- WG3 Radio Networks

Non-COST participation: Canada, China, Colombia, Japan, Singapore, USA

Interested Countries: 26

Proposer: **IT**

- AT, BE, BG, CH,
- CY, CZ, DE, DK,
- ES, FI, FR, EL,
- HR, IE, IL, NL,
- NO, PL, PT, RO,
- RS, SE, SI, SK,
- UK



Action IC1005

HDRi: The digital capture, storage, transmission and display of real-world lighting

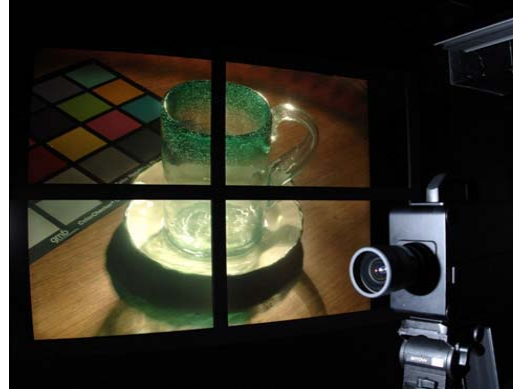
Objectives

The main objective of the Action is to integrate, foster and grow innovative academic and industrial activities in High Dynamic Range (HDR) technology from multiple disciplines and sectors across Europe in order to agree on a set of effective standards for the entire HDR pipeline.

Abstract

The natural world presents our eyes with a wide range of colours and intensities from moonlight to bright sunshine. We can see detail in regions that vary significantly in luminance. Current imaging techniques are incapable of accurately capturing or displaying such a range of lighting. Some areas are under-exposed and others over-exposed. High Dynamic Range (HDR) imaging can capture, store, transmit and deliver real-world lighting. This gives a step change in viewing experience, for example the ability to clearly see the football when it is kicked from the shadow of the stadium into sunshine.

Widespread uptake of HDR requires common interface standards. Currently they do not exist. There are isolated pockets of high-quality HDR endeavour across Europe, but not a co-ordinated approach. 2009 saw the appearance of the first commercial HDR display and the world's first HDR video camera. These European-led developments reinforce the timeliness of developing HDR standards and the special position Europe is in to lead the rapid acceleration of future HDR developments and market penetration. This COST Action (HDRi) assembles leading academic and industrial researchers and practitioners to propose a set of standards for the complete HDR pipeline and establish Europe firmly as the world leader in HDR.



Keywords: High Dynamic Range imaging, Capturing and manipulating and delivering real-world lighting, New set of standards for entire HDR pipeline, Human perception in imaging, Knowledge transfer across sectors and disciplines, Training and networking for multidisciplinary early-stage researchers

Working Groups

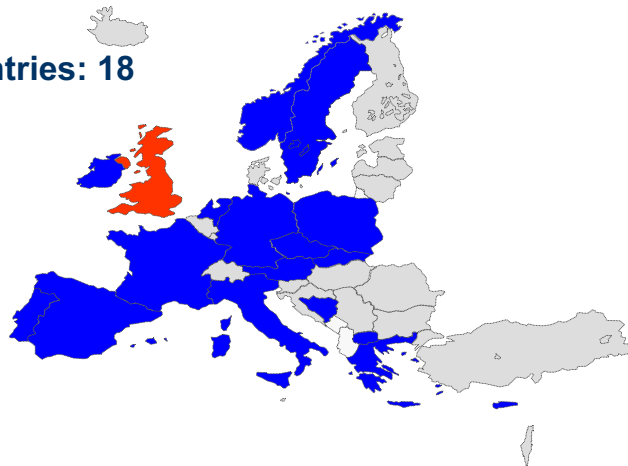
- WG1 HDR Capture
- WG2 HDR Manipulation
- WG3 HDR Delivery
- WG4 Adoption of Standards and Uptake

Non-COST participation: USA

Interested Countries: 18

Proposer: **UK**

**AT, BA, CY, CZ,
DE, ES, FR, EL,
IE, IT, MK, NL,
NO, PL, PT, SE,
SK**



Action TU1003

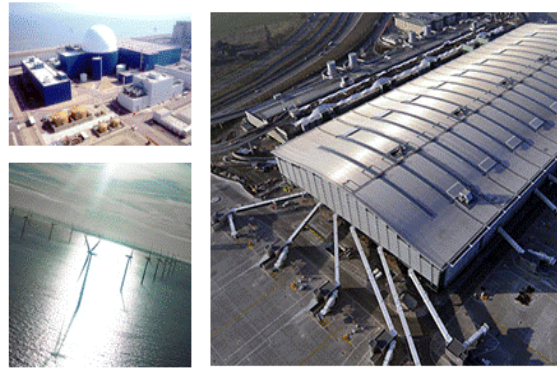
MEGAPROJECT: The Effective Design and Delivery of Megaprojects in the European Union

Objectives

MEGAPROJECT will help to understand how megaprojects can be designed and delivered more effectively to ensure their effective commissioning within Europe. Effective design and delivery means not only insuring that the megaproject is delivered on-time and to budget but that it satisfies the societal and commercial needs that motivated its creation and that it continues to do so throughout its entire life-cycle.

Abstract

Megaprojects (sometimes known as 'major projects' or 'complex projects and services') are extremely large-scale investment projects typically costing more than EUR 0.5 billion. Megaprojects include powerplant (conventional, nuclear or renewable), oil and gas extraction and processing projects and infrastructural projects such as highways and tunnels, bridges, railways, seaports and even cultural events such as the Olympics. Megaprojects are united by their extreme complexity (both in technical and human terms) and by a long record of poor delivery. Their inability to be designed appropriately and delivered on time and to budget has profound implications not only for the construction organisations delivering them but also for the client organisations commissioning them (which are often governments spending public money.) This Action seeks to bring together multi-disciplinary researchers from across COST countries to tackle the issues of megaproject design and delivery. The Action will produce immediate guidelines to influence practice and a framework to guide future decisions on resourcing EU research in megaproject design and delivery.



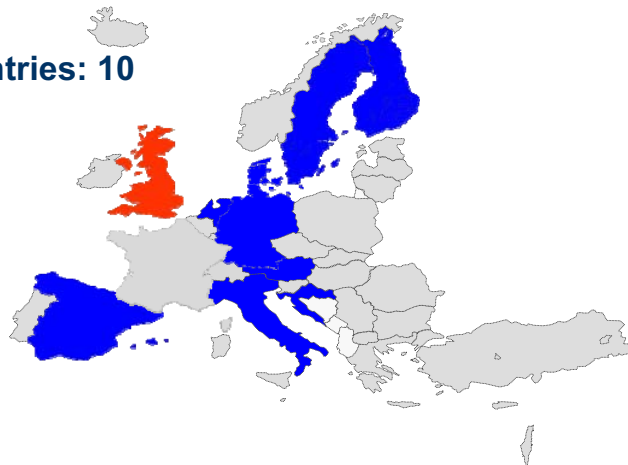
Keywords: Infrastructure Management and Investment Decisions, Energy and Transport Policy, Megaprojects, Project and Programme Management, Life-Cycle Costing

Working Groups

- WG1 A Meta Cross-Case Analysis of European Megaprojects
- WG2 Developing a Research and Dissemination Framework
- WG3 Enacting and Disseminating the Framework

Interested Countries: 10

Proposer: **UK**
AT, DE, DK, ES,
FI, HR, IT, NL,
SE



Action TU1004

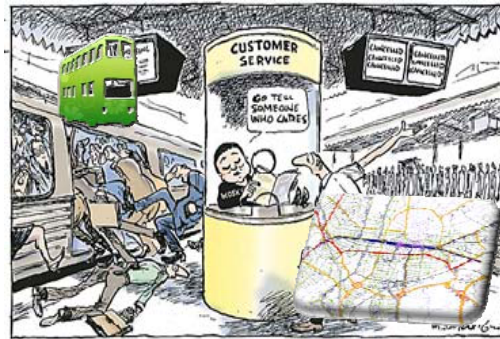
Modelling public transport passenger flows in the era of intelligent transport systems

Objectives

The Action will develop and disseminate up-to-date, comprehensive, and reliable transit assignment models to support an effective and efficient use of public transport resources in the era of Intelligent Transport Systems. Scenarios will be built describing the role of public transport in the European cities and regions of the future. An experimental, evidence-based approach to transit modelling will be nurtured.

Abstract

The challenge of sustainability that the European Union is facing calls for a shift of the demand for mobility from individual to collective means of transport. Hence more attractive public transport systems are required, above all in urban contexts. Since a shortage of funds for public transport is envisaged for the next years, efforts are needed to allocate money in the most effective and efficient way. Transit assignment models describe and predict the patterns of network usage by passengers, which are a fundamental input for transport planning. The models currently used do not take adequately into consideration the effects on transit operations and transit user behaviour of increasingly advanced and widespread Intelligent Transportation Systems, nor do they exploit to the full the amount of high quality data made available by such new technologies. This deficiency can delay the realisation of the benefits of enhanced passenger information provision. This Action gathers together researchers in the field of transport and urban and regional planning, transport operators and authorities, consultancies and software developers with the main aim of giving rise to and of disseminating a new generation of transit assignment models tailored to the era of Intelligent Transport Systems.



Mark Knight Cartoon, Herald Sun, downloaded from <http://savehollandpark.blogspot.com/2008/12/mark-knight-cartoon-herald-sun.html>

Keywords: Public transport; Assignment models; Intelligent Transport Systems; Experimental approach to transit modelling

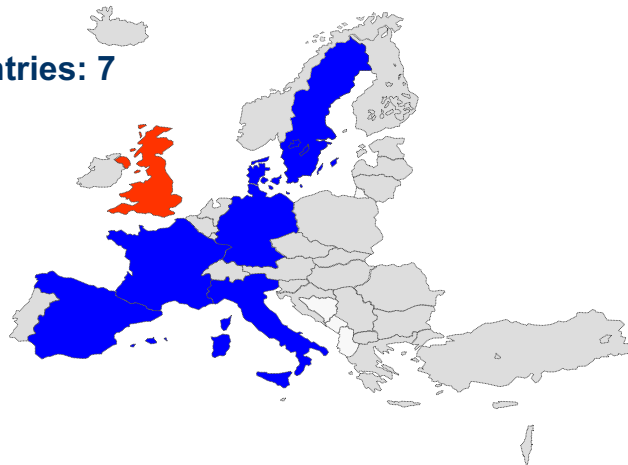
Working Groups

- WG1 Public transport in the era of ITS
- WG2 Existing transit assignment models
- WG3 Advances in transit assignment models
- WG4 The experimental approach to transit modelling

Non-COST participation: Japan, USA

Interested Countries: 7

Proposer: **UK**
DE, DK, ES, FR,
IT, SE



Participation of Non-COST countries

Life Sciences Cluster

Food and Agriculture (FA)

FA1004 – Australia (AU), Canada (CA), Japan (JP)	9
FA1005 –Canada (CA), New Zealand (NZ)	10

Forests, their Products and Services (FPS)

FP1004 – Australia (AU)	12
FP1005 – Brazil (BR), Canada (CA), USA (US).....	13
FP1006 – New Zealand (NZ)	14

Natural Sciences Cluster

Earth System Science and Environmental Management (ESSEM)

ES1004 – Canada (CA), Russia (RU), USA (US)	19
ES1005 – Russia (RU).....	20
ES1006 – Japan (JP), USA (US)	21

Materials, Physical and Nanosciences (MPNS)

MP1005 – Canada (CA), China (CN), Russia (RU)	23
TD1007 – Ukraine (UA), USA (US).....	25

Science in Society Cluster

Individuals, Societies, Cultures and Health (ISCH)

IS1004 –USA (US)	26
TD1005 – Australia (AU).....	30

Information and Communication Technologies (ICT)

IC1004 – Canada (CA), China (CN), Colombia (CO), Japan (JP), Singapore (SG), USA (US)	31
IC1005 – USA (US).....	32

Transport and Urban Development (TUD)

TU1004 – Japan (JP), USA (US)	34
-------------------------------------	----

COST Office

149 avenue Louise

1050 Brussels

Belgium

Tel: +32 (0)2 533 3800

Fax: +32 (0)2 533 3890

E-mail: office@cost.eu

Website: <http://www.cost.eu>

