

# New COST Action proposals

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# Contents

## Life Sciences

### Biomedicine and Molecular Biosciences (BMBS)

BM1205 – European Network for Skin Cancer Detection using Laser Imaging .....	5
BM1206 – Cooperation Studies on Inherited Susceptibility to Colorectal Cancer .....	6
BM1207 – Networking towards clinical application of antisense-mediated exon skipping .....	7
BM1208 – European Network for Human Congenital Imprinting Disorders .....	8
BM1209 – Regenerative Sphincter therapy (ReST) .....	9

### Food and Agriculture (FA)

FA1206 – Strigolactones: biological roles and applications .....	10
FA1207 - Towards Control of Avian Coronaviruses: Strategies for Vaccination, Diagnosis and Surveillance.....	11
FA1208 – Pathogen-informed strategies for sustainable broad spectrum crop resistance .....	12

### Forests, their Products and Services (FPS)

FP1203 – European non-wood forest products (NWFPs) network .....	13
FP1204 –Green Infrastructure approach: linking environmental with social aspects in studying and managing urban forests .....	14
FP1205 – Innovative applications of regenerated wood cellulose fibres.....	15
FP1206 – European mixed forests: Integrating Scientific Knowledge in Sustainable Forest Management (EuMIXFOR) .....	16
FP1207 – Orchestrating forest-related policy analysis in Europe (ORCHESTRA).....	17

## Natural Sciences

### Chemistry and Molecular Sciences and Technologies (CMST)

CM1204 – XUV/X-ray light and fast ions for ultrafast chemistry (XLIC) .....	18
CM1205 – Catalytic Routines for Small Molecule Activation (CARISMA) .....	19
CM1206 – EXIL – Exchange on Ionic Liquids.....	20
CM1207– GLISTEN: GPCR – Ligand Interactions, Structures and Transmembrane Signalling: a European Research Network .....	21

### Earth System Science and Environmental Management (ESSEM)

ES1205 – The transfer of engineered nanomaterials from wastewater treatment & stormwater to rivers ..	22
ES1206 – Advanced Global Navigation Satellite Systems tropospheric products for monitoring severe weather events and climate (GNSS4SWEC) .....	23
ES1207 – A European BREWer NETwork - EUBREWNET .....	24

### Materials, Physics and Nanosciences (MPNS)

MP1206 –Electrospun Nano-fibres for bio inspired composite materials and innovative industrial applications .....	25
MP1207 – Enhanced X-ray Tomographic Reconstruction: Experiment, Modelling, and Algorithms .....	26
MP1208 – Developing the Physics and the Scientific community for Inertial Confinement Fusion at the time of NIF ignition .....	27

MP1209 – Thermodynamics in the Quantum Regime .....	28
MP1210 – The String Theory Universe .....	29

## Science in Society

### Individuals, Societies, Cultures and Health (ISCH)

IS1206 – Femicide across Europe .....	30
IS1207 – Local Public Sector Reforms: An International Comparison .....	31
IS1208 – Collaboration of Aphasia Trialists (CATs) .....	32
IS1209 – Comparing European Prostitution Policies: Understanding Scales and Cultures of Governance (ProsPol) .....	33
IS1210 – Appearance Matters: Tackling the Physical and Psychological Consequences of Dissatisfaction with Appearance .....	34
IS1211 – Cancer and Work Network (CANWORK) .....	35

### Information and Communication Technologies (ICT)

IC1206 – De-identification for privacy protection in multimedia content .....	36
IC1207 – PARSEME: PARSing and Multi-word Expressions. Towards linguistic precision and computational efficiency in natural language processing .....	37
IC1208 – Integrating devices and materials: a challenge for new instrumentation in ICT .....	38

### Transport and Urban Development (TUD)

TU1204 – People Friendly Cities in a Data Rich World .....	39
TU1205 – Building Integration of Solar Thermal Systems (BISTS) .....	40
TU1206 – SUB-URBAN – A European network to improve understanding and use of the ground beneath our cities .....	41
TU1207 – Next Generation Design Guidelines for Composites in Construction .....	42
TU1208 – Civil Engineering Applications of Ground Penetrating Radar .....	43
TU1209 – Transport Equity Analysis: assessment and integration of equity criteria in transportation planning (TEA) .....	44

### Trans-Domain Proposal (TDP)

TD1205 – Innovative methods in radiotherapy and radiosurgery using synchrotron radiation ( <b>BMBS</b> , MPNS, CMST) .....	45
TD1206 – Development and Implementation of European Standards on Prevention of Occupational Skin Diseases (StanDerm) ( <b>ISCH</b> , BMBS) .....	46
TD1207 – Mathematical Optimisation in the Decision Support Systems for Efficient and Robust Energy Networks ( <b>ICT</b> , ESSEM) .....	47
TD1208 – Electrical discharges with liquids for future applications ( <b>CMST</b> , BMBS, MPNS) .....	48
TD1209 – European Information System for Alien Species ( <b>FA</b> , FPS, ESSEM, ICT, ISCH) .....	49
TD1210 – Analyzing the dynamics of information and knowledge landscapes – KNOWeSCAPE ( <b>ISCH</b> , MPNS, ICT) .....	50

<b>Participation of Non-COST countries .....</b>	<b>51</b>
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## Action BM1205

### European Network for Skin Cancer Detection using Laser Imaging

#### Objectives

The main objective of this Action is to coordinate efforts and enhance interaction of researchers, as well as to promote development and application of early, accurate diagnosis of skin cancer known to be the key determinant of patient outcome.

#### Abstract

The Action will provide an interdisciplinary framework to enhance interaction activities within the field of optical biosensing, between world-class academic groups, labs and system integrators from the industry. It will exploit novel laser sources and innovative feedback interferometry in specific biomedical applications. Recent developments in the design of solid-state laser sources at near-infrared, mid-infrared and terahertz frequencies, coupled with novel self-mixing approaches to signal detection and the integration of these into imaging platforms, provide a way forward in the design of the next generation of detection systems. Specifically, we propose extending the non-invasive interrogation of skin tissue into these frequencies. The Action will exchange knowledge, explore and compare technology platforms and perform clinical validation and evaluation of new devices which will permit detection of both the changes in skin lesions and disordered blood flow patterns and tissue perfusion typical of malignancy. The COST scheme is an ultimate choice for this network as it will bring together COST-countries academia, industry and clinical end-users which would be virtually impossible through any other European funding mechanism.



**Keywords:** Early cancer diagnosis, Medical imaging of Skin Cancer, Infrared and Terahertz imaging, Optical feedback Interferometry, Laser Self-Mixing sensors.

#### Working Groups

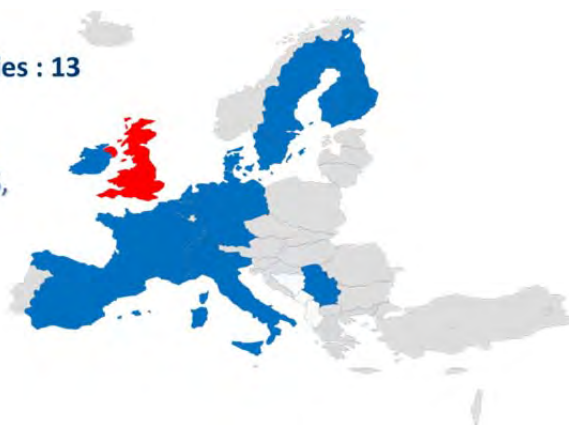
- WG1 VCSEL array perfusion imaging
- WG2 Tissue characterization at mid infrared frequencies using Quantum Cascade Lasers (QCLs)
- WG3 Tissue characterisation at terahertz frequencies using THz QCLs SMI
- WG4 Validation and evaluation of combined sensing modalities

**Non-COST participation: Australia**

**Interested Countries : 13**

Proposer : **UK**

BE, CH, DE, DK, ES,  
FI, FR, IE, IT, NL, RS,  
SE



## Action BM1206

### Cooperation Studies on Inherited Susceptibility to Colorectal Cancer

#### Objectives

The main objective of this Action is to comprehensively understand the impact of inherited susceptibility in CRC for profiling individual disease risk and performing early screening and treatment monitoring. By doing so, new molecular biomarkers will be implemented and validated for personalized CRC medicine.

#### Abstract

Colorectal cancer (CRC) is one of the most frequent neoplasms worldwide and an important cause of morbidity in the developed world. It is necessary to identify individuals with a medium-high CRC risk in order to develop adequate preventive measures. The identification of inherited genetic factors involved in CRC susceptibility can help to profile individual disease risk and may enable early screening and treatment monitoring. Participants interested in networking in this Action include 19 research groups actively working on CRC genetics with high success and with access to more than 50,000 CRC cases and 50,000 controls through cohorts in 11 countries. This Action will permit the articulation of the cooperation between these research groups in Europe in order to comprehensively understand the impact of inherited susceptibility to CRC and to describe the genetic landscape of this disease, providing a highly innovative and unconditional tool for personalized CRC medicine with a future application in early screening and treatment monitoring for this disease.



**Keywords:** Colorectal cancer, genetic susceptibility, risk profiling, treatment monitoring, genotype-phenotype correlation.

#### Working Groups

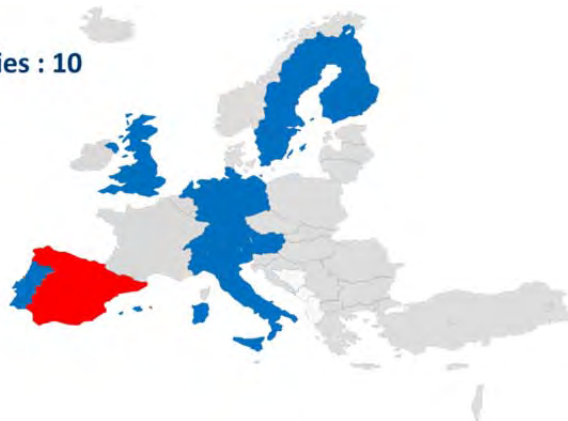
WG1	Genetic Association Studies
WG2	Functional Genomics
WG3	Next Generation Sequencing
WG4	Statistical Modelling

**Non-COST participation: USA**

**Interested Countries : 10**

Proposer : **ES**

AT, CZ, DE, FI, IT,  
NL, PT, SE, UK



## Action BM1207

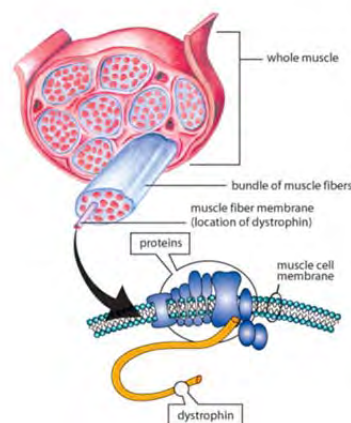
### Networking Towards Clinical Application of Antisense-Mediated Exon Skipping

#### Objectives

The aim of the Action is to accelerate the clinical development of antisense-mediated exon skipping for rare diseases, with a focus on Duchenne muscular dystrophy.

#### Abstract

This COST Action aims to advance the development of antisense-mediated exon skipping for rare diseases, focusing on Duchenne muscular dystrophy for which this approach is currently assessed in phase 3 clinical trials. Several challenges hamper its development to wide clinical application: 1) There is no standardized protocol for important biological outcome measures, such as dystrophin restoration. 2) The approach is mutation specific; development for patient subgroups is challenging as most mutations are rare. 3) Fragmentation: several European groups work on preclinical optimization. 4) There is therapeutic misconception amongst patients and unrealistic expectations. This COST Action will address the described issues through: 1) meetings and training to standardize outcome measures, 2) meetings with regulatory authorities to discuss alternatives to develop this approach for small patients groups, 3) networking workshops where unpublished data are shared confidentially between Parties to foster synergistic work and avoid duplication, 4) training of young scientists in unbiased and clear communication to patients. Networking is crucial for research in the orphan disease field and this model is applicable to other rare diseases for which exon skipping is currently in preclinical development. Groups involved are anticipated to join the Action when their research moves towards the clinical trial phase.



**Keywords:** Personalized medicine, rare diseases, Duchenne muscular dystrophy, antisense oligonucleotide-mediated exon skipping, therapeutic misconception.

#### Working Groups

- WG1 Biochemical Outcome Measurements
- WG2 Regulatory Models
- WG3 Meeting on Antisense Therapeutics
- WG4 Stakeholder Communication

**Non-COST participation: USA**

**Interested Countries : 5**

Proposer : **NL**  
FR, IT, SE, UK



## Action BM1208

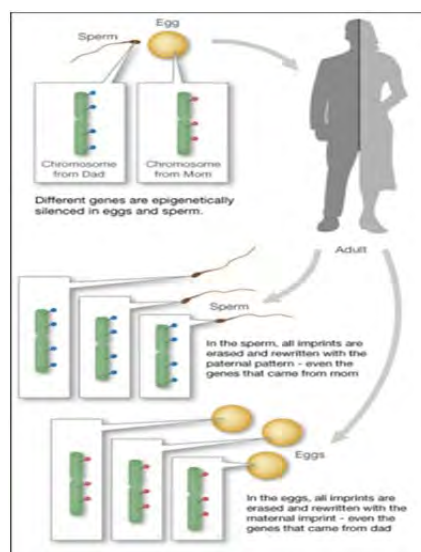
### European Network for Human Congenital Imprinting Disorders

#### Objectives

Progress in our understanding of IDs necessitates the co-ordinated efforts of specialist clinicians: general paediatricians and paediatric endocrinologists; molecular geneticists; as well as basic scientists, epidemiologists, bioinformaticians and the experience of patient groups. The aim of this COST Action is the creation of a pan-European interdisciplinary network to promote ID research from molecular studies to treatment; improve the standard of clinical and molecular diagnosis for IDs across Europe; and educate the public and professionals about the disorders. Altogether, the ID network will join forces and complement studies to reduce health care costs and increase the life quality of patients.

#### Abstract

Imprinting disorders (IDs) are a group of rare congenital diseases affecting growth, development and metabolism with a lifelong impact on patients' quality of life. Despite their common underlying (epi)genetic aetiologies, IDs are usually studied separately by small groups working in isolation, and the basic pathogenesis and long term clinical consequences of IDs remain largely unknown. Efforts to elucidate the aetiology of IDs are currently fragmented across Europe and standardisation of diagnostic and clinical management is lacking. This COST Action will, for the first time, draw together researchers of all eight known human IDs in an interdisciplinary pan-European Network for Human Congenital IDs, working to advance understanding of the pathophysiology with the major aim of translating this knowledge to improvement of diagnostic and clinical management for the benefit of the patients and their families. The Action will harmonise a common ID classification system, develop guidelines for treatment through consensus, create standard operation procedures (SOPs) for diagnosis based on best current practice, coordinate databases held in different countries to make them compatible and useful as a springboard for collective research initiatives, identify new imprinting disorders through collaborative effort, educate researchers and stimulate translational exchange. The ID network will join forces and complement studies to reduce health care costs and increase the life quality of patients.



**Keywords:** Congenital imprinting disorders, clinical assessment, biobanking, epigenetic mechanisms, best practice guidelines.

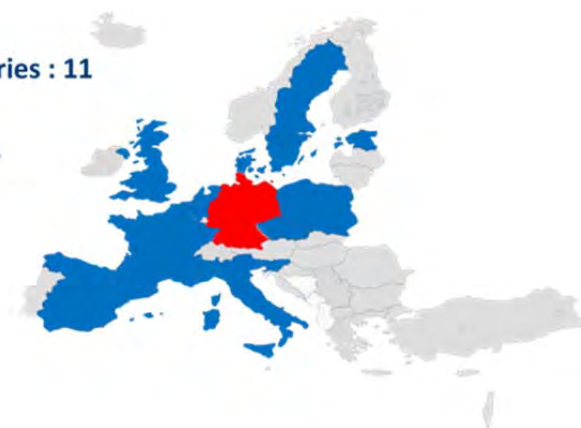
#### Working Groups

- WG1 European clinical integration – standardisation and harmonisation of clinical phenotyping and medical management.
- WG2 Molecular Biology
- WG3 Molecular Diagnostics
- WG4 Capacity building
- WG5 Dissemination

**Interested Countries : 11**

**Proposer : DE**

BE, DK, EE, ES, FR,  
IT, NL, PL, SE, UK





## Action BM1209

### Regenerative Sphincter Therapy (ReST)

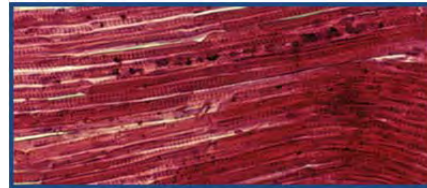
#### Objectives

Our aim is the establishment of a unique international interdisciplinary research network in cell-based therapy dedicated to developing standards for a novel cell-based Regenerative Sphincter Therapy (ReST) for treatment of a malfunctioning sphincter muscle. Defining standardized methods at the end of an international multi-centre study for approval by the EMA for all partnering countries is envisaged.

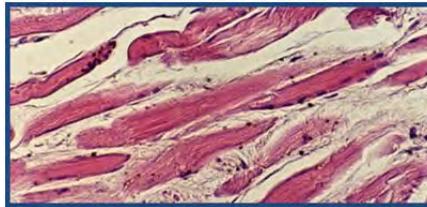
#### Abstract

Urinary incontinence is a major health burden. For many patients stress urinary incontinence is associated with progressive degeneration of the muscular tissue. During this process muscle cells die. Novel cell-based therapy for regeneration and improvement of the sphincter muscle can tackle the etiology of incontinence rather than the consequences. Unfortunately, different laboratories use different cell-based sphincter approaches. This COST Action, Regenerative Sphincter Therapy (ReST), will endorse a strong interdisciplinary collaboration in academic, clinical, and medical technology. The major aim of this COST Action is to assemble an International Board of Experts in order to harmonize cell-based patient therapy methods that would lead to a global multi-centre study for approval by the European Medicines Agency (EMA). COST will allow us to interact with other networks across various disciplines to promote pan-European teaching and investigation. COST will contribute not only to the quality of life of patients affected, but in the long run will serve to control high costs caused by incontinence by providing knowledge on efficacy and information on effective methods of application of the various regenerative sphincter therapies.

Human sphincter - newborn



Human sphincter – 80 years



**Keywords:** Urinary incontinence, stress urinary incontinence, cell-based therapy, coordination of multi-centre studies.

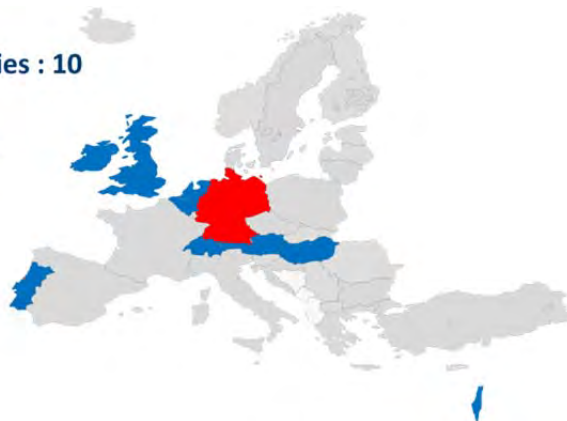
#### Working Groups

- WG1 Academic
- WG2 Technical
- WG3 Clinical
- WG4 Surgical
- WG5 Communication

#### Interested Countries : 10

Proposer : DE

AT, BE, CH, HU, IE,  
IL, NL, PT, UK



## Action FA1206

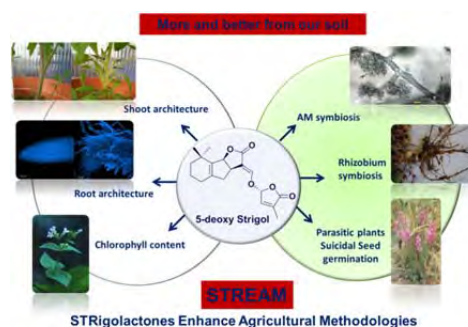
### Strigolactones: Biological Roles and Applications

#### Objectives

The aim of this COST Action is the creation of a multidisciplinary network of experts, of basic and applied sciences, who can share expertise and developmental knowledge about the multifaceted biological role of Strigolactones. The coordination of the research activities is aimed at the exploitation of SLs in the development of new agro-technologies.

#### Abstract

Strigolactones (SLs) are newly discovered phytohormones that contribute to define plant morphology, also in response to environmental conditions, and to the dialogue with organisms in the rhizosphere. As a consequence, SLs have become a cutting-edge topic in plant biology and agronomy, having a great potential in modern agriculture. However, little is known about how they act, their biosynthesis and signaling pathways. Because of their both endogenous and exogenous role as signaling molecules, SLs are well placed to mediate both adaptive changes in the plant architecture and beneficial rhizosphere interactions. Even though SLs are a prime interest for many laboratories across disciplines, there are no official networks, either in Europe or in the rest of the world, on this subject. The outcome of an EU network on this subject would be sustaining and would promote the EU leadership in SLs-related sciences, the coordination of SLs research activities and a transfer of knowledge which may lead to the development of targeted and sustainable agro-technologies. The aim of this proposal is the creation of such multidisciplinary network of experts, of both basic and applied sciences, who can share expertise through the flexibility of the COST framework.



**Keywords:** Strigolactones, crop improvement, arbuscular mycorrhizal fungi, plant hormones, pest management.

#### Working Groups

- WG1 SLs as Plant hormones
- WG2 SLs as signals for parasitic plants
- WG3 Role of SLs in the soil biota
- WG4 Biochemistry of SLs/design and synthesis of analogues

**Non-COST participation: Japan, Australia and USA**

**Interested Countries : 16**

**Proposer : IT**

AT, BE, CH, CZ, DE,  
EL, ES, FR, IL, NL,  
PL, PT, RO, SK, UK



## Action FA1207

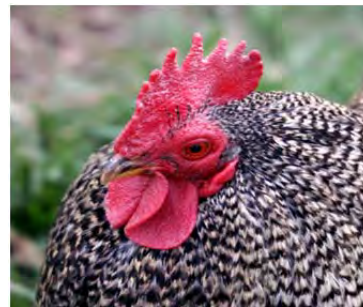
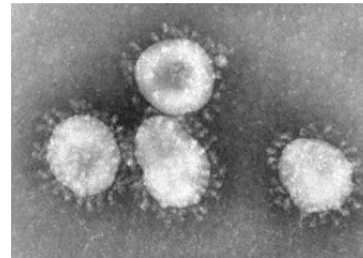
### Towards Control of Avian Coronaviruses: Strategies for Vaccination, Diagnosis and Surveillance

#### Objectives

The aim of the Action is to define and develop an internationally standardized nomenclature and standardized, fast and accurate detection technologies and methods for typing and subtyping of Avian Coronaviruses as well as a general classification of AvCoV, taking into account the genetic, immunological, clinical and epidemiological aspects.

#### Abstract

For several decades, poultry production worldwide has been struggling with severe diseases and huge economic losses caused by Avian Coronavirus (AvCoV) infections. Control of the disease is hampered by the variations within this virus family. As a result of its variability, the nomenclature as well as detection methods and classification of the virus strains are not consistent. This Action creates a network between scientists with expertise in AvCoV. It stimulates cooperation between researchers, fosters harmonization of nomenclature and classification, and facilitates surveillance. In order to achieve this and to cover all important aspects, five interlinked Working Groups are established which deal with Molecular Virology, Serology and Immunology, Clinic and Pathology, Epidemiology and conceptualizing an infrastructure for collaborative research, respectively. Furthermore, a joint website is created where general information on AvCoV, notifications of outbreaks and research results are shared between the COST members. COST is the ideal platform to accomplish the described aims as different research projects concerning AvCoV are currently funded. The COST Action provides the possibility to connect researchers working on the topic and thereby enabling them to use their resources more efficiently. European poultry producers, industry, veterinarians and consumers will benefit from results generated in the course of this Action.



**Keywords:** Avian Coronaviruses, diagnosis, protectotype, surveillance, poultry.

#### Working Groups

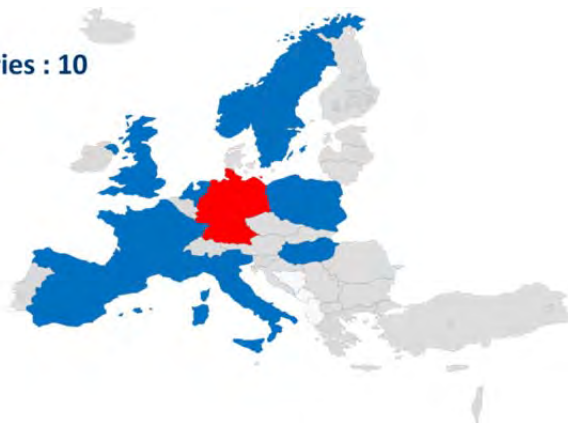
- WG1 Molecular Virology
- WG2 Serology and Immunology
- WG3 Clinic and Pathology
- WG4 Epidemiology
- WG5 Conceptualizing an infrastructure for collaborative research

**Non-COST participation:** Australia, Brazil, India, Japan, USA

**Interested Countries : 10**

Proposer : **DE**

ES, FR, HU, IT, NL,  
NO, PL, SE, UK



## Action FA1208

### Pathogen-Informed Strategies for Sustainable Broad-Spectrum Crop Resistance

#### Objectives

The main objective of the Action is to develop innovative pathogen-informed strategies to obtain sustainable and broad spectrum resistant varieties of cereal and solanaceous crops.

#### Abstract

Restrictions on the use of pesticides mean that there is a need for new, sustainable pest control methods. Exploiting natural plant disease resistance is highly attractive, as it reduces the dependency on pesticides. However, the use of crop resistance is bound by two factors: the limited number of resistance sources against important diseases in major crops and the frequent breakdown of resistance due to rapid evolution of pathogens. Both issues can now be addressed by innovative and powerful approaches developed on the basis of recent and unprecedented progress in research on plants and their pathogens fostered by the revolution in next generation sequencing and the investigation of pathogen effector proteins. The challenge is to implement these novel pathogen-informed strategies for the generation of sustainable broad-spectrum crop resistance. Hence, this COST Action aims to create a European network of scientists and breeders for the translation of breakthroughs in plant-pathogen interaction research into effective breeding strategies for durable disease resistance in cereal and solanaceous crops which are of primary importance for European agriculture.



**Keywords:** Sustainable agriculture, plant diseases, crop protection, crop improvement, durable plant resistance.

#### Working Groups

- WG1 Understanding the contribution of pathogen effectors to virulence
- WG2 Host processes and proteins targeted by central pathogen effectors
- WG3 Evolutionary constraints on pathogen effectors and emergence of new pathotypes
- WG4 Plant immune receptors and allelic variants of host targets for sustainable and broad-spectrum resistance breeding

#### Interested Countries : 15

Proposer : **FR**

AT, BE, CH, DE, DK,  
ES, HU, IL, IT, NL,  
PL, RO, SI, UK





## Action FP1203

### European Non-Wood Forest Products (NWFPs) Network

#### Objectives

The aim of the Action is to build a multidisciplinary European-wide network of NWFP researchers and managers, who will review current knowledge, highlight existing innovation, share information, identify research topics, seek research synergies and generally increase European knowledge about NWFP ecology, modelling, management and economics.

#### Abstract

Non-wood forest products (NWFPs) have important commercial, environmental, social and recreational roles in many European forests. They also have a relevant place in the multifunctional sustainable forest management (MSFM) paradigm, being the main source of income from forests in several regions. Although the importance of NWFPs is recognised and accepted, forest research remains mainly focussed on timber production. Consequently knowledge about European NWFPs is comparatively scarce, as is research on their ecology, management and economics, required to optimize sustainable simultaneous production of different products from forests. It is proposed that a multidisciplinary European network on NWFPs will help to bridge these gaps. In this context, the main goal of the Action is to build a broad multidisciplinary network of European NWFPs researchers and managers, to review the current state of the art, highlight existing innovation, share information and experience, identify research topics, seek research synergies and by increasing the European-wide theoretical and practical understanding of NWFPs, promote their sustainable management.



**Keywords:** Non-wood forest products, NWFP, multi-purpose forestry, Sustainable forest management, European NWFPs.

#### Working Groups

- WG1 Mushrooms and Truffles
- WG2 Tree Products
- WG3 Understory Plants
- WG4 Animal Origin

**Non-COST participants:** Australia, Chile, Georgia, Morocco, New Zealand, Tunisia, Ukraine, USA

#### Interested Countries : 25

Proposer : **PT**

AT, BG, CH, CZ, DE,  
DK, EE, EL, ES, FI,  
FR, HR, IT, LT, MK,  
NL, PL, RO, RS, SE,  
SI, SK, TR, UK



## Action FP1204

### Green Infrastructure Approach: Linking Environmental with Social Aspects in Studying and Managing Urban Forests

#### Objectives

The aim of the Action is to increase the understanding of the role of UF in the context of GI in terms of ecosystem services provision. This ambitious goal will be achieved by bringing together a community of forest scientists with a multidisciplinary profile, ranging from ecology, ecophysiology, modeling, genetics, arboriculture, wood production, social sciences, landscape architecture, and urban planning, and who therefore have the capabilities to be able to study the relationships between UF and environmental and social ecosystem services.

#### Abstract

Green Infrastructure (GI) has recently gained prominence as a planning tool at regional and local levels. GI provides a range of ecosystem services, and new initiatives can build on state-of-the-art research and on delivery mechanisms such as urban forestry (UF). However, greater attention is needed on integrating the environmental and social benefits produced, particularly in the context of climate change adaptation and mitigation. The COST Action aims to: 1) increase the understanding of the role of UF in the context of GI from a scientific and a socio-economic perspective, in terms of the ecosystem services provided to people and to the urban environment; 2) to identify priorities and challenges for future research in the field; 3) to provide indicators and/or thresholds to be included by policy makers in local, national or international regulations about GI and UF; 4) to develop guidelines for GI planners and managers on how to implement GI approaches with an emphasis on linking the environmental and social services of UF. Undertaking a COST Action on this topic is crucial because of the diversity of GI and UF approaches at European level and because of the need to create a structured interaction among scientists, citizens, policy makers and managers.



**Keywords:** Green Infrastructure, Urban forestry, ecosystem services, climate change, governance.

#### Working Groups

- WG1 Environmental services of GI and UF and implications of climate change
- WG2 Social/cultural services of GI and UF
- WG3 Governance of UF in a GI approach
- WG4 Integrating and disseminating to stakeholders (Task-Force for dissemination)

**Non-COST participants:** Armenia, Algeria, USA

#### Interested Countries : 22

Proposer : **IT**

AT, BE, BG, CZ, DE,  
DK, EE, EL, ES, FI,  
FR, HR, IL, MT, NL,  
NO, PL, SE, SI, TR,  
UK



## Action FP1205

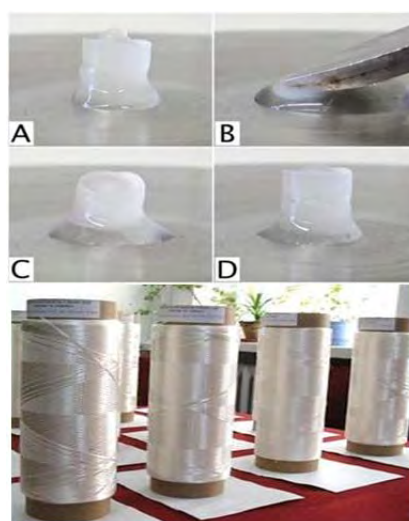
### Innovative Applications of Regenerated Wood Celulose Fibres

#### Objectives

The main objective of the Action is to improve the knowledge on the processing and use of cellulosic fibres derived from wood sources in a wide range of emerging innovative markets. This Action will help in the understanding of products such as nanocellulose, cellulose whiskers, cellulose gels and films and regenerated textile fibres from wood-based resources. In order to achieve this, this Action aims to bring together fibre technologists, chemists, analytical scientists, wood scientists and polymer scientists from academia and industry to increase the potential of these materials. Thus, this Action will help overcome challenges related to the scaling-up of research findings and full industrial production, optimising processing conditions, improving product properties and developing innovative product ranges from the understanding of cellulosic fibres from wood through the provision of a networking and information portal.

#### Abstract

Demand for high performance products is increasing globally, as is the demand for more environmentally responsible sourcing. The combination of these facts places significant strain on traditional material supplies and processing. Fibre demand and nanocellulose are two such area of increasing demand, where diversification of fibre supplies is necessary to provide the demands and allow use of land for agricultural food purposes and biorefinery / biofuel supply. One area where fibre supply is increasing in supply is through the wood industry. This is through greater forest reserves under sustainable forestry practices, especially across Europe. However, it is necessary to think "outside the box" on how this resource can be put to optimum value (i.e. in areas in addition to construction, pulp & paper and bioenergy). This Action aims to develop the sustainable emerging technologies in the areas of textile fibre production, cellulosic fibres, and the various forms of nanocellulose derived solely from wood. This advancement needs to be undertaken within a COST framework not only to provide a means of information sharing, but to educate and train scientists in new areas of development. Through a programme of collaboration and knowledge exchange and training, this Action will develop a pan-European leap in capabilities, product and processes. This will lead to an improvement in the environmental credentials of advanced cellulose-based materials, strengthening R&D and innovative material production across Europe.



**Keywords:** Wood, Cellulose fibres, Nanocellulose, Production, Properties.

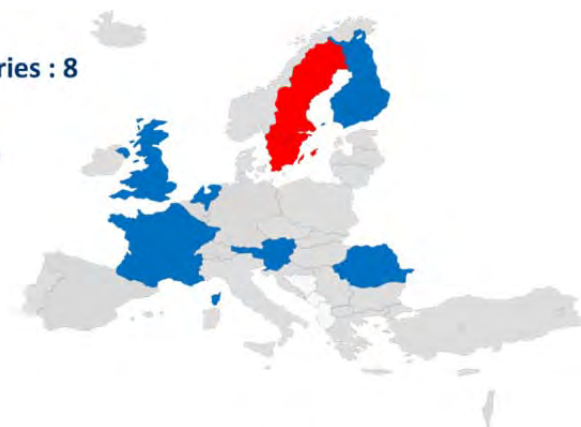
#### Working Groups

- WG1 Fabric and textile manufacture
- WG2 Science and uses of nanocellulose
- WG3 Cellulose foams and films

**Interested Countries : 8**

Proposer : **SE**

AT, FI, FR, NL, RO,  
SI, UK



## Action FP1206

### European Mixed Forests. Integrating scientific knowledge in sustainable forest management (EuMIXFOR)

#### Objectives

The aim of the Action is to establish a lasting European research network on mixed forests, which can contribute to the increase of knowledge, the sustainability of management, and the future expansion, conservation and improvement of mixed forests on the basis of science, innovation and rural development in Europe.

#### Abstract

Structure, dynamics and functioning of admixtures of tree species is a research topic of increasing relevance across Europe. The reason is that it is frequently suggested that mixed forests present (i) more resistance and resilience to human or non-human disturbances, (ii) higher biodiversity levels (iii) higher carbon storage capacity and thus higher potential for mitigation strategies, (iv) better adaptation strategies to global change, and (v) higher productivity and support for ecosystem services. To date, these features have been studied separately for different mixtures of species, management practices and specific growing conditions. Consequently, the knowledge gained is local and a common and lasting European perspective on mixed forest sustainable management has yet to be developed. EuMIXFOR aims at creating a European research network on mixed forests, which can contribute to the increase of knowledge of adaptive forestry, the sustainability of management and the conservation and improvement of mixed forests to support rural development. The accomplishment of the objectives and the development and innovation activities involved in this Action will result in the definition of silvicultural recommendations that will help decision makers to promote the social, economic and environmental functions of European mixed forests.



**Keywords:** Mixed-forests, sustainable forest management, science-based knowledge, networking.

#### Working Groups

- WG1 Mixed forests dynamics and functioning
- WG2 Adaptive management of mixed forests
- WG3 Mixed forests extension and innovation network

**Non-COST participation:** Argentina, Canada, Costa Rica, Algeria, Tunisia, USA

#### Interested Countries : 16

Proposer : **ES**

AT, BA, BE, CZ, DE,  
FR, IT, NO, PL, PT,  
RO, SE, SK, TR, UK





## Action FP1207

### Orchestrating forest-related policy analysis in Europe (ORCHESTRA)

#### Objectives

The Action aims to support the coherence of forest-related policy targets and the efficiency of policy measures by considering together the many policies influencing forestry at EU and MS levels, and by bringing together policy makers, quantitative modellers, economists, sociologists and policy scientists to develop the use of models for integrated policy analysis and support.

#### Abstract

When preparing forest-related policies, the multilevel and multi-stakeholder governance make it challenging to foresee their economic, social and environmental impacts. To coordinate and streamline the development and implementation of forest-related policy targets and measures at different levels and sectors, new means for policy analyses should be developed. Based on the recent advances in sociology, policy science, economics, and quantitative modelling this COST Action aims: i) to analyse how different forest-related targets have been and could be implemented at supranational, national and sub-national level; ii) to enhance the use of models for integrated policy analysis; and iii) to develop new methodologies and related good practices for the orchestration of policy modelling and analyses. The COST framework will facilitate multinational, transdisciplinary collaboration between sociologists, policy scientists, economists and modellers as well as active interaction with various stakeholders. Especially in the context of Europe 2020, post-2013 Rural Development Policy and other relevant policies, the Action will support the coherence of policy targets and efficiency of policy measures. The generated new knowledge can be used by European policy and decision makers to adjust forest-related policies and their implementation to the requirements of multilevel and multi-stakeholder governance.



**Keywords:** Forest-related policies, multilevel and multi-stakeholder governance, policy support, policy modelling, integrated policy analysis.

#### Working Groups

- WG1 Forest-related policy targets and measures
- WG2 Forestry modelling for integrated policy analysis
- WG3 Orchestration of forest-related modelling and policy analyses

**Non-COST participation: Institutions in International Organisations**

#### Interested Countries : 24

Proposer : FI

AT, BA, BE, DE, DK,  
EE, ES, FR, HR, IE,  
IT, LT, LV, MK, NL,  
NO, PL, PT, RO, SE,  
SI, SK, UK



## Action CM1204

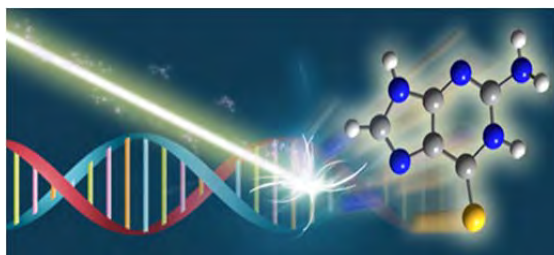
### XUV/X-Ray Light and Fast Ions for Ultrafast Chemistry (XLIC)

#### Objectives

The main objective of this Action is to explore and control the complex chemical dynamics of molecules interacting with XUV and X-ray radiation or highly energetic ions. The knowledge obtained by combining experts in advanced theoretical tools and in cutting-edge experiments will provide the necessary guidelines for the design of new experiments in large European facilities as synchrotrons, XFEL or ion accelerators. The Action aims at keeping Europe's science at the forefront of this emerging field, by forming and attracting young scientist to use these new techniques of high potential for industrial applications.

#### Abstract

The use of novel light sources and fast ions is opening new avenues in the study of chemical reactivity. XUV/X-ray pulses with attosecond duration permit to "visualize" the movement of electrons inside a molecule and a much better control of chemical reactions. X-ray Free Electron Lasers, synchrotrons or collision with fast ions can be used to generate molecules in highly excited and highly charged states that present new and unexpected reactivity. The study of molecules under these extreme intensities and time resolution conditions requires new theoretical models that can serve as guidance for experiments. The scientific objective of the Action is to understand, monitor and control the complex ultrafast electronic and nuclear dynamics that occur in medium-sized and large molecules, to develop new control strategies of reactions and to develop a new generation of ultrafast spectroscopies combining attosecond temporal and sub-Angstrom spatial resolutions. This is an interdisciplinary field in which European groups are very active but work separately. COST is thus the perfect framework to enhance exchange of knowledge, bringing together leading experts in generating, manipulating and modeling these new phenomena. The collaboration between groups will reinforce the European leadership in XUV/X-ray-, attosecond-, synchrotron- and ion-based research in chemistry.



**Keywords:** Attochemistry, Ultrafast spectroscopies, Time dependent quantum chemistry, Control of chemical reactions, Molecular excitation ionization and dissociation.

#### Working Groups

- WG1 Ultrafast electron dynamics in molecules
- WG2 Reactivity of highly excited and highly charged molecules
- WG3 Control of chemical reactivity

#### Interested Countries : 15

Proposer : **ES**

AT, CH, DE, DK, FI,  
FR, HU, IE, IT, NL,  
PL, RO, SE, UK



## Action CM1205

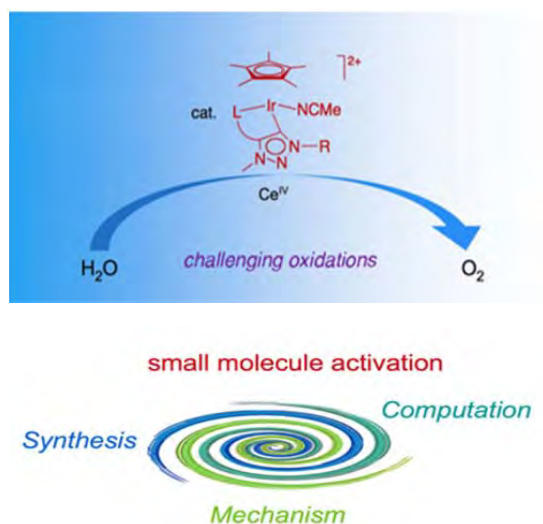
### Catalytic Routines for Small Molecule Activation (CARISMA)

#### Objectives

The aim of the Action is to attain a fundamental understanding of the catalytic principles involved in the transition metal-catalyzed activation of small molecules through concerted research activities *in silico* and *in vitro*, using an integral approach to catalysis that includes homogeneous, heterogeneous, and mechanistic aspects.

#### Abstract

CARISMA will set the stage for an unprecedented Action where the most advanced computational and experimental minds will meet to foster synergies with one priority mission: disruptive catalysis. The Action will provide new processes for the selective and sustainable transformation of small and pervasive molecules like H<sub>2</sub>O, CO<sub>2</sub>, NH<sub>3</sub> into high-value chemical feedstocks and energy resources. CARISMA will promote new collaborations, lab-knowledge exchange, frontier training, and a virtual open-space to enable a strongly iterative advancement of theory and experiment, with input from experts in computational chemistry, spectroscopy, kinetics, catalysis, synthesis and materials science. Such interactions will spur the discovery of innovative catalytic processes and of advanced theory. Methods and concepts emerging from CARISMA will significantly shorten demands of time and resources for catalyst optimization, and will result in tailor-made systems with broad implications for fundamental and industrial areas.



**Keywords:** Catalytic activation of small molecules, rapid evolution of catalysts, harnessing abundant feedstocks for energy and synthesis, understanding of reaction mechanisms, identification of intermediates.

#### Working Groups

- WG1 Catalyst design and synthesis
- WG2 Experimental mechanistic analysis
- WG3 Theoretical methods

#### Interested Countries : 15

Proposer : IE

CH, DE, DK, ES, FI,  
FR, HU, IL, IT, NL,  
PL, PT, SE, UK



## Action CM1206

### EXIL – EXchange on Ionic Liquids

#### Objectives

The aim of the Action is to focus research activities on ionic liquids (ILs) across Europe, and to explore their full potential in the context of chemistry, materials science and engineering with emphasis on the critical evaluation in the field of green chemistry and exploration of their potential as novel, advanced, smart materials.

#### Abstract

The objective of this Action is to coordinate European research activities and knowledge exchange on ionic liquids (ILs, low melting salts, many of them liquid at room temperature and below) and to explore their full potential in the context of fundamental and applied chemistry, materials science and engineering. The COST Action will provide a coordinated forum for; an efficient intra- and interdisciplinary knowledge and expertise exchange, networking and dissemination of information and results, training and initiating collaborations, harmonizing research activities, establishing an open public database and supplying the scientific community with systematic high quality information on ILs and their applications. The Action aims to combat misinformation as well as contradicting data and reports. EXIL will facilitate technology transfer from university to industry, enhance the supply routes of trained researchers from universities to industry, and structure the European science base. Transferring ILs from the laboratory workbench to true beneficial applications is the long-term goal of EXIL - the European exchange network on Ionic Liquids. An IL-COST action will lead to an improvement of everyday life through new and improved technologies and materials, not to mention cleaner and safer production techniques and will thus contribute to strengthening European research and economy.



**Keywords:** Synthetic Inorganic and Organic Chemistry, Physical and Computational Chemistry, Materials Science, Engineering.

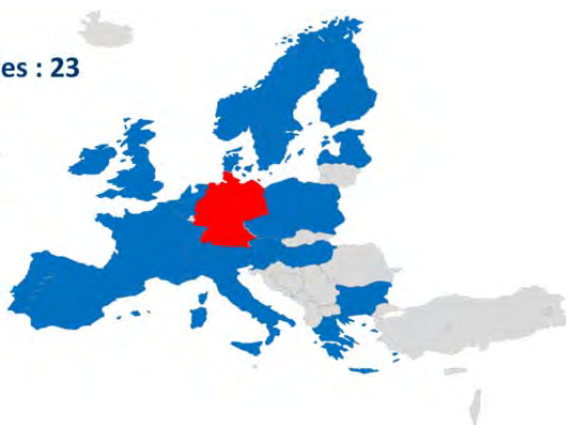
#### Working Groups

- WG1 Design and synthesis of ionic liquids with specific functions
- WG2 Fundamental chemical and physical properties of ionic liquids
- WG3 Application of ILs in Synthesis
- WG4 Long term prospects and scale-up challenges

#### Interested Countries : 23

Proposer : **DE**

AT, BE, BG, CH, CZ,  
DK, EE, EL, ES, FI,  
FR, HU, IE, IT, LV,  
NL, NO, PL, PT, SE,  
SI, UK





## Action CM1207

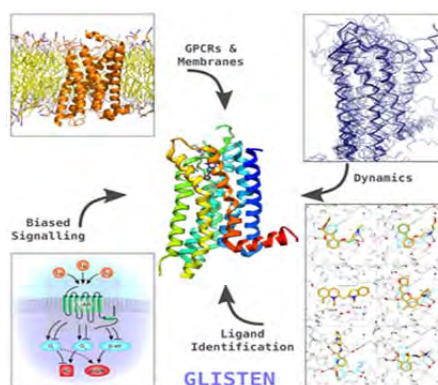
### GLISTEN: GPCR-Ligand Interactions, Structures and Transmembrane Signalling: a European Research Network

#### Objectives

The aim of the Action is to create a pan-European multidisciplinary network of researchers investigating all aspects of G protein-coupled receptor signalling with the goal to gain in-depth and general understanding of GPCR mechanisms and to use this knowledge to identify and design chemical modulators of GPCR-mediated signalling. The individual research groups will contribute biophysical, chemical, computational and pharmacological methods and focus on four areas, namely GPCR dynamics, biased signalling, GPCR-lipid/protein interactions, and the discovery and design of GPCR ligands.

#### Abstract

G protein-coupled receptors (GPCRs) are the largest family of proteins involved in signal transduction across membranes and one of the most important pharmaceutical drug target classes. In the past five years, an unprecedented number of X-ray structures of GPCRs have been solved, affording us first peeks at the molecular details of their function. Based on these and forthcoming structures, this COST Action will bring together experts in a wide range of complementary methods to unravel details of the activation mechanism, ligand binding, and the effect of the membrane and other interaction partners on GPCRs. The information exchange that will be made possible by the COST Action will lead to innovative insights into mechanistic details of GPCR function. This will in turn give rise to novel effector molecules to be used as lead structures for drug development, offering valuable new opportunities for European pharmaceutical research and industry.



**Keywords:** G protein-coupled receptor, biased signalling, activation mechanism, drug discovery, GPCR-membrane interactions.

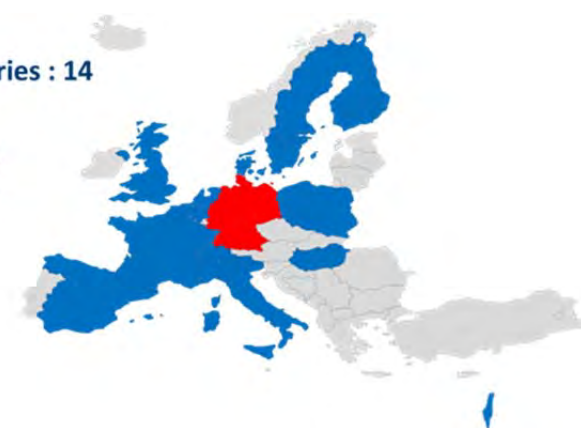
#### Working Groups

- WG1 Dynamics
- WG2 Biased Signalling
- WG3 GPCR Lipid/Protein Interactions
- WG4 Discovery & Design of GPCR Ligands

#### Interested Countries : 14

Proposer : **DE**

BE, CH, DK, ES, FI,  
FR, HU, IL, IT, NL,  
PL, SE, UK



## Action ES1205

### The Transfer of Engineered Nanomaterials from Wastewater Treatment & Stormwater to Rivers

#### Objectives

The aim of this COST Action is the creation and maintenance of a pan-European inter- and transdisciplinary network in order to provide new insights into the role of urban water systems in controlling the release of ENMs to the aquatic environment. Enter will significantly improve the transparency of scientific research to the non-scientific community. Furthermore, potential sinks for ENMs within urban wastewater systems will be evaluated thus providing new perspectives in terms of their lifecycle stages.

#### Abstract

Concerning the transfer of Engineered Nanomaterials from wastewater Treatment & stormwater to Rivers (ENTER) the following issues require clarification: (i) which and (ii) what amounts of Engineered NanoMaterials (ENMs) are released, (iii) how persistent are they and (iv) to what extent do they cause in situ toxicity? Reasons for knowledge gaps are a lack of suitable analytical methods, insufficient databases on usage and release, and the absence of comprehensive monitoring networks. ENTER will help to advance scientific knowledge on release and fate of ENMs in the urban water cycle and to communicate expert knowledge in an appropriate manner to the non-scientific community. ENTER will break down barriers between scientific and public pressure groups by an intensified scientific exchange via, e.g., the position papers. The ENTER products are needed to improve the decision-making process by supporting end users such as politicians, the EU and national public servants. ENTER will clearly aid in advancing the understanding on the transport and transformation processes of ENMs released to the urban wastewater systems and to understand the transfer of ENMs to the aquatic environment. This Action will improve the collaboration between scientists and the public by striking a new path towards an efficient knowledge exchange.



**Keywords:** Engineered nanomaterials, wastewater treatment plants, stormwater, surface water, urban water cycle.

#### Working Groups

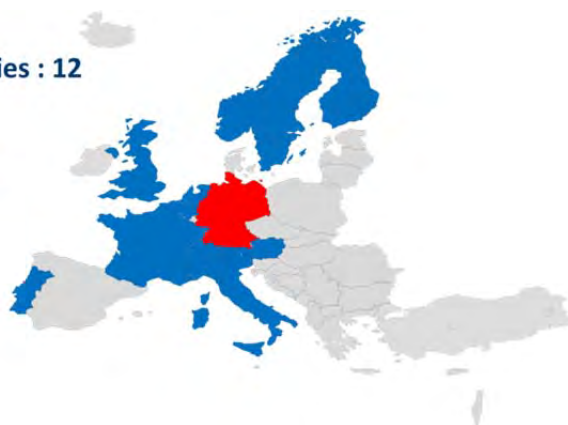
- WG1 Fate and transport of ENMs in urban water cycle
- WG2 The analytical toolbox: ways to detect, differentiate and quantify ENMs in the aquatic environment
- WG3 From toxicity studies to regulation

**Non-COST participation: USA**

#### Interested Countries : 12

Proposer : **DE**

AT, BE, CH, FI, FR,  
IT, NL, NO, PT, SE,  
UK



## Action ES1206

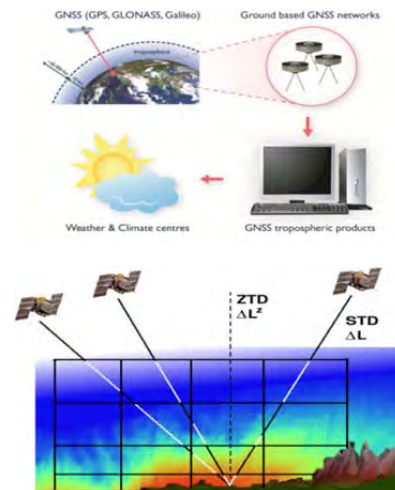
### Advanced Global Navigation Satellite Systems Tropospheric Products for Monitoring Severe Weather Events and Climate (GNSS4SWEC)

#### Objectives

The aim of the Action is to enhance existing and develop new, ground-based multi-GNSS tropospheric products, to assess their usefulness in forecasting of severe weather and climate monitoring, and to improve GNSS real-time positioning accuracy through enhanced atmospheric modelling. A main focus is to strengthen and intensify this interdisciplinary collaboration on a European level and to encourage cross-border cooperation.

#### Abstract

Global Navigation Satellite Systems (GNSS) have revolutionised positioning, navigation, and timing, becoming a common part of our everyday life. Aside from these well-known civilian and commercial applications, GNSS is now an established atmospheric observing system which can accurately sense water vapour, the most abundant greenhouse gas, accounting for 60-70% of atmospheric warming. Severe weather forecasting is challenging, in part due to the high temporal and spatial variation of atmospheric water vapour. Water vapour is under-sampled in the current meteorological and climate observing systems - obtaining and exploiting more high-quality humidity observations is essential to weather forecasting and climate monitoring. This Action will address new and improved capabilities from concurrent developments in both the GNSS and meteorological communities. For the first time, the synergy of the three GNSS systems (GPS, GLONASS and Galileo) will be used to develop new, advanced tropospheric products, exploiting the full potential of multi-GNSS water vapour estimates on a wide range of temporal and spatial scales, from real-time monitoring and forecasting of severe weather, to climate research. In addition the action will promote the use of meteorological data in GNSS positioning, navigation, and timing services. The Action will stimulate knowledge transfer and data sharing throughout Europe.



**Keywords:** Global Navigation Satellite Systems (GNSS), ground-based atmospheric sounding of water vapour, monitoring and forecasting of severe weather, climate change trends and variability, global warming.

#### Working Groups

- WG1 Advanced GNSS processing
- WG2 Use of GNSS tropospheric products for monitoring severe weather
- WG3 Use of GNSS tropospheric products for climate monitoring

**Non-COST participation:** Australia, Canada, Hong Kong, Tunisia, USA

#### Interested Countries : 23

Proposer : **UK**

AT, BE, BG, CH, CZ,  
DE, DK, EE, EL, ES,  
FR, HU, IT, LU, LV,  
NL, NO, PL, PT, SE,  
SK, TR



# Action ES1207

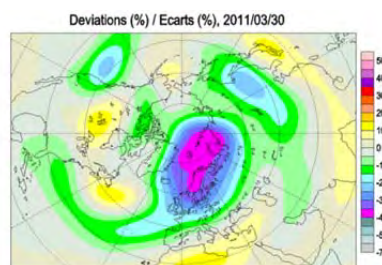
## A European Brewer Network - EUBREWNET

### Objectives

The aim of the Action is to establish a coherent network of European Brewer Spectrophotometer monitoring stations in order to harmonise operations and develop approaches, practices and protocols to achieve consistency in quality control, quality assurance and coordinated operations.

### Abstract

This proposal will coordinate Brewer Spectrophotometer measurements of ozone, spectral UV and aerosol optical depth (AOD) in the UV within Europe, and unite the ozone, UV and AOD communities, through a formally managed European Brewer Network capable of delivering a consistent, spatially homogeneous European data resource, significant for the World Meteorological Organisation (WMO), the World Ozone and UV Data Centre (WOUDC), the International Ozone Commission (IO3C), the Intergovernmental Panel on Climate Change (IPCC), Global Monitoring for Environment and Security (GMES) and the ozone trend assessment panels. Around 50 Brewer Spectrophotometers are deployed in Europe, independently funded by national agencies, each duplicating efforts to achieve separately best practices and accuracy. A COST Action is the ideal mechanism to remove this disparity, establish knowledge exchange and training, and open up a route to links with international agencies and other networks globally.



**Keywords:** Ozone, ultraviolet, aerosol, Brewer spectrophotometer, irradiance, optical depth, stratospheric, depletion, real time, monitoring, atmospheric, radiation, network, satellite validation

### Working Groups

- WG1 Instrument characterisation and calibration
- WG2 Algorithm developments
- WG3 Network governance and data management
- WG4 Users, public outreach and applications

**Non-COST participation: Canada, Institutions in International Organisations**

**Interested Countries : 17**

Proposer : **UK**

AT, BE, CH, CZ, DE,  
DK, EL, ES, FI, HU,  
IT, NL, PL, PT, SE,  
TR





## Action MP1206

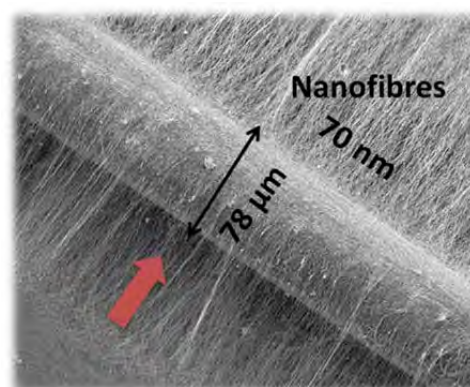
### Electrospun Nano-Fibres for Bio Inspired Composite Materials and Innovative Industrial Applications

#### Objectives

The aim of the Action is to form a European multidisciplinary knowledge platform on electrospinning of nanofibres to facilitate their rapid development and applications. In particular, this platform will help to promote cooperation between researchers from different scientific disciplines, efficiently exchanging ideas and strategies in order to lead developments in science, technology and innovative applications of electrospun nanofibres and materials derived therefrom.

#### Abstract

Electrospinning, an electro-hydrodynamic process is a versatile and promising platform technology for the production of electrospun nanofibrous materials consisting of diverse polymers and polymer composites. This platform process can provide bio- or oil based polymer nanofibrous materials for the fabrication of innovative biomedical devices and for the fabrication of new technical applications. By forming an interdisciplinary knowledge platform the COST Action will strengthen the European R&TD on electrospun nanofibrous materials and nanofibrous composites and will generate fast progress in the state of the art. The COST Action will cover scientific breakthroughs and innovations in the electrospinning process itself, nanofibrous materials and nanofibrous composite advancements and the post treatment processing of electrospun materials. Applications in the biomedical and technical fields as well as health, societal and environmental issues are considered.



**Keywords:** Electrospinning, polymer nanofibres, bio-inspired materials, nanofibrous composite materials, health and environmental impact.

#### Working Groups

- WG1 Electrospinning processes of nanofibres
- WG2 New electrospun nanofibrous materials
- WG3 Biomedical applications of electrospun nanofibrous materials
- WG4 Technical applications of electrospun nanofibrous materials
- WG5 Health/environment/societal aspects of electrospinning of nanofibres

**Non-COST participation:** Australia, Canada, China, Japan, New Zealand, Puerto Rico, Singapore

#### Interested Countries : 25

Proposer : **AT**

BE, BG, CH, CZ, DE,  
DK, ES, FI, FR, HR,  
HU, IE, IL, IT, NL,  
NO, PL, PT, RO, RS,  
SE, SK, TR, UK



## Action MP1207

### Enhanced X-Ray Tomographic Reconstruction: Experiment, Modeling, and Algorithms

#### Objectives

The main objective of the Action is to establish an active, interdisciplinary research network that bridges the gap between the experimental X-ray tomography community and the mathematical image reconstruction community, which will enable the development of next generation X-ray tomography techniques and algorithms for absorption, phase, diffraction, and fluorescence contrast imaging.

#### Abstract

The aim of this Action is to establish an active, interdisciplinary research network that bridges the gap between the experimental X-ray tomography community and the mathematical image reconstruction community. While the advanced X-ray imaging community (i.e. synchrotron imaging, advanced lab setups) and the image reconstruction community have each made strong progress in various research projects within Europe, further advances require the combination of efforts and ideas from both fields. A joint network must be established including both communities, where experiences, ideas and computational tools can be exchanged and cross-fertilization can take place in a concerted effort. The goal is to develop the next generation of X-ray tomography techniques and algorithms for absorption, phase, diffraction, and fluorescence contrast imaging. As a result, both the spatial and temporal resolution of advanced X-ray imaging will be strongly increased, facilitating high-tech research and industrial applications in a wide range of fields (materials science, life sciences, biomedical sciences, etc.).



**Keywords:** X-ray tomography, image reconstruction, scientific computing.

#### Working Groups

WG1	Software and data exchange
WG2	Quantitative modeling
WG3	Algorithm development
WG - T11	Absorption contrast and phase contrast tomography
WG - T12	Diffraction contrast tomography
WG - T13	Fluorescence contrast

#### Interested Countries : 15

Proposer : **NL**

BE, CH, DE, DK, EL,  
ES, FR, HU, IL, IT,  
MK, PL, SE, UK



## Action MP1208

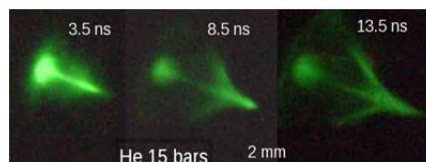
### Developing the Physics and the Scientific Community for Internal Confinement Fusion at the time of NIF Ignition

#### Objectives

Develop the physics and the scientific community for Inertial Confinement Fusion at the time of NIF ignition, via networking activities.

#### Abstract

The present Action aims at directly contributing to develop a scientific community in Europe working in Inertial Confinement Fusion and High Energy Density Physics. This will be complementary and synergic to several initiatives going on in Europe at the moment, in particular the construction of the lasers Megajoule and PETAL in France (LMJ/PETAL facility), the upgrade of high-energy laser facilities already working, the HiPER and ELI projects. At the same time, the physics related to the development of high-energy laser facilities is very interesting and fascinating in itself, opening new perspectives and new fields of research. The objectives of the present Action address Networking on one side and the Study of relevant physics on the other. In particular, LMJ/PETAL will be open the European academic community for civilian research in 2015. This will be a unique system in the world (comparable only to NIF in US) and this Action will contribute to the elaboration of the scientific program for such facility over the next 10 years. No other European research program is at the moment directly covering such topics and all mentioned programs are related to "facility development" rather than "community building". Therefore this Action will fill an "empty slot" in a way which is synergic to running programs.



**Keywords:** Inertial Confinement Fusion, High-energy lasers, Laser-produced Plasmas, Diagnostics, Laboratory Astrophysics, Extreme states of matter, Advance Schemes for Ignition, Hydrodynamics.

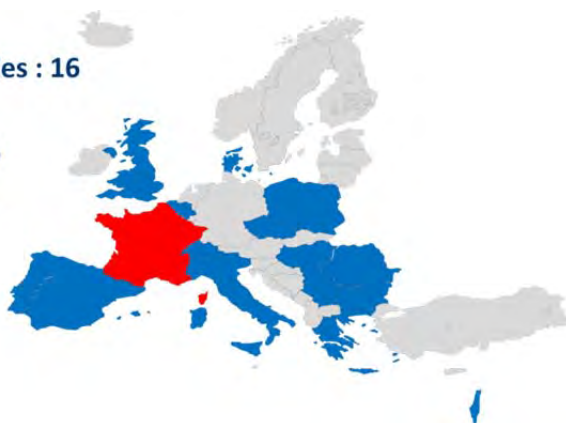
#### Working Groups

- WG1 Study of fast ignition and fast electron transport
- WG2 Study of the shock ignition Approach to ICF
- WG3 Study of Plasma and Laser Diagnostics
- WG4 Complementary aspects: Secondary sources of particles and radiation
- WG5 Complementary aspects: Astrophysics in the laboratory

#### Interested Countries : 16

Proposer : **FR**

BE, BG, CH, CZ, DK,  
EL, ES, HU, IL, IT,  
PL, PT, RO, RS, UK



## Action MP1209

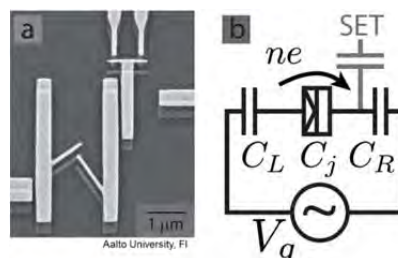
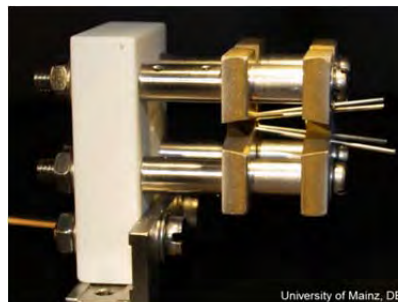
### Thermodynamics in the Quantum Regime

#### Objectives

The main objective of the Action is to establish the scientific foundations for thermodynamic technologies in the quantum regime.

#### Abstract

Modern technologies, which now miniaturise to the nanoscale and into the quantum regime, have the potential to revolutionise many upcoming socio-economic challenges. Historically, thermodynamics has been highly successful, enabling the development of technologies that changed our lives, ranging from fridges to jet planes. While these applications involve macroscopic systems, described accurately by the laws of classical physics, little is known about the applicability of standard notions of thermodynamics in the quantum regime. The aim of the Action is to establish and develop the scientific basis that underpins future thermodynamic technologies at the nanoscale. Central to this is the understanding of fundamental thermodynamic processes for small ensembles, particularly in the quantum regime, in- and out - of equilibrium. These are topics of the emerging cross-over field, "Quantum Thermodynamics", which is overwhelmingly pioneered by researchers currently located in Europe, many at an early stage in their careers. However, this research across Europe is fragmented and needs large-scale coordination to pave the way for swift progress. This Action is designed to bring researchers from different backgrounds together, foster interdisciplinary exchange and coordinate domestically funded European research to create an internationally leading knowledge base in this emerging and technologically important field.



**Keywords:** Equilibration and emergence of the canonical state, Heat, work and entropy in quantum dynamical processes, Thermodynamic experiments in the quantum regime, Quantum engines, Information theory - thermodynamics link.

#### Working Groups

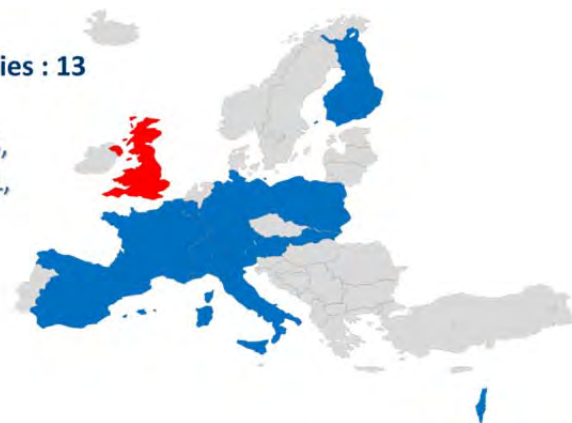
- WG1 Equilibrium & thermalisation, emergence of canonical states
- WG2 Thermodynamic and information theoretic relations for general quantum systems
- WG3 Implementations: from classical to quantum thermodynamic experiments

**Non-COST participation: Argentina, Japan, Singapore**

**Interested Countries : 13**

Proposer : **UK**

AT, BE, CH, DE, ES,  
FI, FR, IL, IT, LU, PL,  
SK





## Action MP1210

### The String Theory Universe

#### Objectives

The main objective of the Action is to exploit complementary expertise of different research groups in Europe to enhance the understanding of String Theory and its applications to Particle Physics, Condensed Matter, Cosmology and Quantum Gravity.

#### Abstract

Although String Theory has been around for more than forty years, it has never been so important for physical reality as it is now, due to its novel outstanding applications to different areas of Physics and Mathematics. While the Large Hadron Collider (LHC) narrows down the experimental limits on supersymmetric particles and satellite missions such as WMAP and PLANCK probe the very early Universe, this Action aims at creating a strong European Network focused on fundamental, forefront research exploring the role played by String Theory in Particle Physics, Cosmology and Condensed Matter Physics. The large majority of European world experts in String Theory will be involved in this Action. This will ensure a top quality research output, achieved through an intense exchange of expertise, intra-European collaboration and co-organization of scientific activities. The Action will ensure fair gender representation and simultaneously adopt specific measures for promoting the involvement of women scientists at all levels. Moreover, it will foster the active participation of junior excellent scientists. The outcome of the Action is expected to have a positive impact on both science and society at a European level, in line with the strategic priorities of COST.



(Image to Follow)

**Keywords:** String Theory, Gauge/Gravity Correspondence, String Phenomenology, String Cosmology, Black Holes.

#### Working Groups

- WG1 Gauge/Gravity duality
- WG2 String phenomenology
- WG3 Cosmology and Quantum Gravity
- WG4 Promote cross-activities and exchange of knowledge
- WG5 Gender issues and outreach activities

**Non-COST participation: South Africa**

#### Interested Countries : 15

Proposer : **IT**

BE, BG, CH, DE, DK,  
EL, ES, FR, HU, IL,  
NL, PT, SE, UK



## Action IS1206

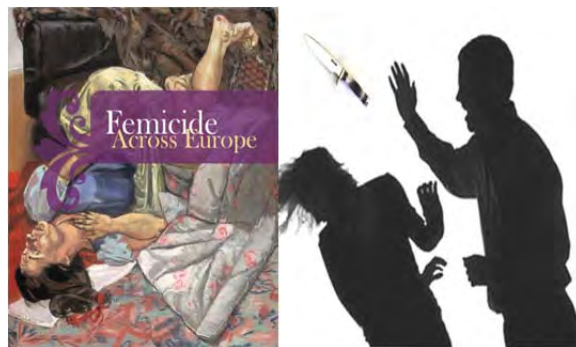
### Femicide Across Europe

#### Objectives

The aim of the Action is to establish the first-ever European coalition of experts on femicide in order to advance scientific knowledge, collate data and launch a European Observatory, while suggesting guidelines and interventions to policy-makers and practitioners on femicide in order to improve women's lives and safety in Europe. Expected scientific deliverables of the Action include: scientific workshops promoting awareness of femicide; joint papers, research books, and proceedings of conferences; a web forum for researchers, practitioners and members of the public; a regular newsletter; summer school for students and early-stage researchers; a European Observatory.

#### Abstract

Femicide is a leading cause of premature death for women globally, distinct from homicide and other forms of gender violence. Femicide research is abundant in the United States. In Europe, agencies have funded initiatives on gender and violence but not specifically on femicide. Research is in its infancy and uncoordinated. It requires an interdisciplinary approach, focusing on victim and perpetrator, upon cultural (e.g. "honour killings") and psychological causes, and on societal issues. The Action will establish the first pan-European coalition on femicide with researchers who are already studying the phenomenon nationally, in order to advance research clarity, agree on definitions, improve the efficacy of policies for femicide prevention, and publish guidelines for the use of national policy-makers. Different forms of publications will emerge from the Action, such as articles, books, newsletters and an Action internet site for the use of researchers, practitioners and policy-makers. Workshops will be held annually, adding advocates and researchers each year, and an Action Conference will be held to attract stakeholders until the Action will organise a pan-European conference to launch the idea of a European Observatory on femicide.



**Keywords:** Femicide; honour killings; domestic violence; European Observatory; advocacy.

#### Working Groups

- WG1 Definitions
- WG2 Reporting
- WG3 Intimate partner Femicide and "honour killings"
- WG4 Prevention

**Non-COST participation: New Zealand, USA**

**Interested Countries : 11**

Proposer : **IL**

BA, ES, FI, FR, IT,  
NL, PT, SE, TR, UK





## Action IS1208

### Collaboration of Aphasia Trialists (CATS)

#### Objectives

The aim of the Action is to develop, coordinate and align collaborative research activity which seeks to improve the assessment, diagnosis, prognosis and rehabilitation of people with aphasia.

#### Abstract

Aphasia, a language problem due to stroke, affects the understanding and expression of spoken and written language. Communication with families, friends and the wider community may be severely affected. Altered social interaction isolates the person with aphasia and impacts on their emotional wellbeing. Aphasia contributes to poorer functional recovery, mobility, discharge destination and return to employment. With an aging population and improved stroke survival, the societal and economic burden of aphasia will rise. Effective management and rehabilitation of aphasia is vital. Aphasia research faces methodological and infrastructural challenges. Typically it remains language, region and discipline specific limiting the efficiency, strength and broader relevance of any research. This Action aims to establish a network of leading European multidisciplinary aphasia investigators in rehabilitation, social science, linguistics and language research. This collaborative network will enhance knowledge, skills and methodology relating to aphasia research. Consensus activities will facilitate international synergy between members in aphasia assessment and diagnosis. Data sharing activities will support enhanced prognosis and rehabilitation of aphasia. In addition, this Action will foster and coordinate the development of high quality aphasia research activity which will address the needs of people with aphasia and their families, health and social care providers and voluntary groups.



**Keywords:** Communication, Aphasia, Language, Stroke, Rehabilitation.

#### Working Groups

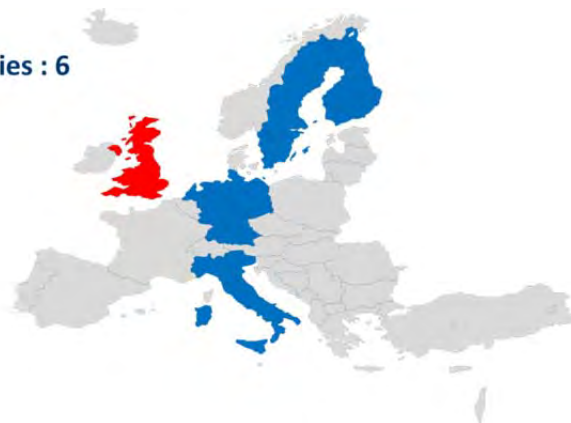
- WG1 Action Website
- WG2 Aphasia Assessment
- WG3 Prognosis and Predictors of Recovery
- WG4 Effectiveness of Rehabilitation Processes
- WG5 Societal Impact and Re-Integration

**Non-COST participation: Australia**

**Interested Countries : 6**

Proposer : **UK**

DE, FI, IT, NL, SE





## Action IS1209

### Comparing European Prostitution Politics: Understanding Scales and Cultures of Governance (PROSPOL)

#### Objectives

The aim of the Action is to exchange, enhance and compare knowledge about prostitution policies across Europe. By offering insight into the empirical effects and contexts of various regulatory regimes and techniques, the Action will inform future prostitution research and policy including comparative work between different prostitution policy regimes and their effects.

#### Abstract

ProsPol will compare and disseminate knowledge about the multiple contexts, features and effects of prostitution policies at the European, national and local levels. Due to the combined pressures of globalisation and changing patterns of migration, trafficking and the commercialisation of sex, prostitution has received unprecedented levels of attention in the last three decades. This has led to a heightened demand for effective models of regulation, for legal harmonization and sharing practice across jurisdictions. Nevertheless, much is contested in this field, with countries adopting varying approaches in light of their own particular political, social and legal cultures. At present there are no efficient strategies to address these complex issues and their comprehensive analysis remain fragmented, with little communication amongst researchers from different countries and between researchers and policy makers. This Action will fulfil the pressing need to exchange knowledge and develop comparative approaches on prostitution policies, their effects and the complex contexts influencing them. It will provide an innovative platform of exchange to enhance understanding of how concepts, policies and practices transfer across national cultures and local contexts, and the implications this has for knowledge exchange and coordination in the field.



**Keywords:** Prostitution, Policy design and transfer, Gender and sexuality, Migration and trafficking, Informal economy.

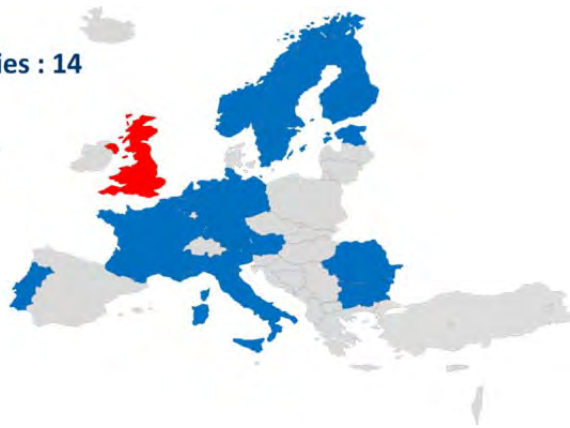
#### Working Groups

- WG1 Prostitution Policies and Politics
- WG2 Economic Dimensions
- WG3 Sex, Money & Society

#### Interested Countries : 14

Proposer : **UK**

AT, BE, BG, DE, EE,  
FI, FR, IT, NL, NO,  
PT, RO, SE



## Action IS1210

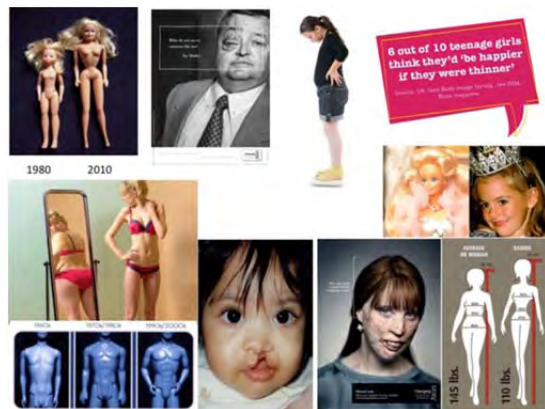
### Appearance Matters: Tackling the Physical and Psychological Consequences of Dissatisfaction with Appearance

#### Objectives

The aim of this Action is to increase, co-ordinate and harmonise European research in the field of appearance-related dissatisfaction. The Action will progressively construct a multidisciplinary community of researchers and practitioners which will develop comprehensive resources to support collaborative pan-European research to (a) determine the extent and impacts of appearance-related distress on key areas of living, (b) evaluate the effectiveness of interventions and (c) promote social activism to produce changes in policy and practice.

#### Abstract

Until recently, societal interest in 'looks' has been considered largely benign, however, debilitating levels of appearance dissatisfaction are now normative in resource-rich nations, with extensive and damaging impacts on physical and psychological health. Although there are examples of research and activism in the field in Europe, many researchers work in isolation, diluting the potential impact of their work. Europe currently lacks a harmonised approach to establishing levels of appearance-related distress, the impacts on key areas of living and to the systematic evaluation of interventions currently being implemented within and beyond Europe. This Action will co-ordinate and increase research across Europe, offer support to the high proportion of female and early career researchers in this field and will forge crucial links between researchers, practitioners and policy makers, offering the potential for significant benefits to the millions of Europeans adversely affected by these issues.



**Keywords:** Appearance dissatisfaction, body image, disfigurement, risks to physical and psychological health.

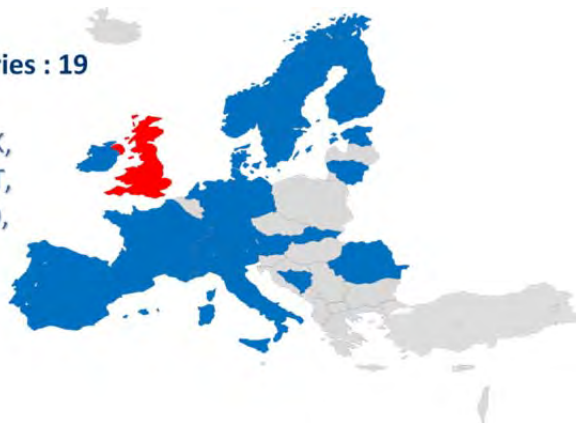
#### Working Groups

- WG1 Educational settings
- WG2 Vocational training settings
- WG3 Public health
- WG4 Health care settings
- WG5 Social and Cultural issues relating to appearance dissatisfaction

#### Interested Countries : 19

Proposer : **UK**

AT, BA, CH, DE, DK,  
EE, ES, FI, FR, IE, IT,  
LT, NL, NO, PT, RO,  
SE, SK



## Action IS1211

### Cancer and Work Network (CANWON)

#### Objectives

The aim of the Action is to integrate emerging knowledge on cancer and work to achieve insight into the return-to-work process in cancer survivors, work-related costs of cancer survivorship and role of employers; and to develop and evaluate highly innovative interventions which effectively enhance work participation of cancer patients.

#### Abstract

Each year in Europe, 3.2 million new cancer patients are diagnosed including 1.6 million patients of working age. The number of cancer survivors in Europe is rapidly growing due to improved treatment and ageing population. Many cancer survivors are at risk for unemployment which greatly affects their quality of life and financial situation. Research on cancer and work is therefore of great importance but scattered over Europe and lacking appropriate dissemination. Moreover, interventions supporting employment of cancer survivors are urgently required but scarcely developed. This Action aims to combine European knowledge on: 1) prognostic factors of unemployment in cancer survivors including gender- and country-specific differences; 2) work-related costs of survivorship for both patients and society; 3) the role of employers; and 4) development and evaluation of innovative, interdisciplinary interventions which effectively support employment. Furthermore, it aims at disseminating research knowledge and best practice over Europe. This CANWON Action unites 23 teams from 15 COST countries across different stakeholders and research areas. The expected benefits are rapid exchange of research knowledge, standardised methods and techniques, innovative interventions, future guidelines on cancer and work and the improvement of quality of life of cancer patients.



**Keywords:** Cancer, work, employment, costs, intervention.

#### Working Groups

- WG1 Prognostic factors of work participation of cancer patients
- WG2 Economic burden
- WG3 The role of employers in work participation
- WG4 Development of innovative interventions to enhance work participation of cancer patients

#### Interested Countries : 14

Proposer : **NL**

DE, DK, ES, FI, FR,  
HR, IE, IT, NO, PL,  
RS, SI, UK



## Action IC1206

### De-Identification for Privacy Protection in Multimedia Content

#### Objectives

The aim of the Action is to facilitate and promote coordinated efforts in automated person de-identification in multimedia content (text, image, audio and video) through the provision of an effective and innovative approach to the integration of relevant European experts, institutions and organisations, as well as non-COST experts (from China and United States).

#### Abstract

De-identification in multimedia content can be defined as the process of concealing the identities of individuals captured in a given set of data (images, video, audio, text), for the purpose of protecting their privacy. This will provide an effective means for supporting the EU's Data Protection Directive (95/46/EC), which is concerned with the introduction of appropriate measures for the protection of personal data. The fact that a person can be identified by such features as face, voice, silhouette and gait, indicates the de-identification process as an interdisciplinary challenge, involving such scientific areas as image processing, speech analysis, video tracking and biometrics. This Action aims to facilitate coordinated interdisciplinary efforts (related to scientific, legal, ethical and societal aspects) in the introduction of person de-identification and reversible de-identification in multimedia content by networking relevant European experts and organisations.



**Keywords:** De-Identification, Reversible De-Identification, Biometrics, Privacy Protection, Multimedia.

#### Working Groups

- WG1 De-identification methods for biometric identifiers
- WG2 De-identification methods for soft- and non-biometric identifiers
- WG3 Applications and added value of de-identified data
- WG4 Ethical, bioethical, societal and legal aspects and guidelines for de-identification and reversible de-identification

**Non-COST participation: China, USA**

**Interested Countries : 14**

Proposer : **HR**

CY, DE, DK, EL, ES,  
FI, FR, IT, MT, PL,  
PT, SI, UK





## Action IC1207

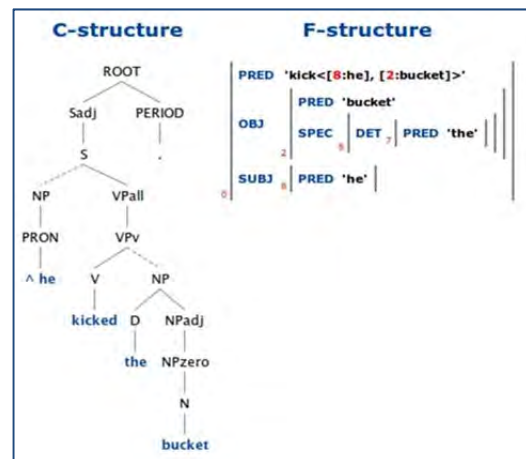
### PARSEME: Parsing and Multi-Word Expressions. Towards Linguistic Precision and Computational Efficiency in Natural Language Processing.

#### Objectives

The main objectives of the Action are: develop data mining software and methodologies to exploit a wide range of volunteered geographic information (VGI); define quality assessment criteria; establish an open and updatable repository of VGI analysis, integration tools, methods and case studies; develop VGI methods for understanding the local aspects of VGI datasets and their use.

#### Abstract

The Action, PARSEME, aims at increasing and enhancing the support of the European multilingual heritage from Information and Communication Technologies (ICT). This general aim is addressed through improving linguistic representativeness, precision and computational efficiency of Natural Language Processing (NLP) applications. The Action focuses on the major bottleneck of these applications: Multi-Word Expressions (MWEs), i.e. sequences of words with unpredictable properties such as "to count somebody in" or "to take a haircut". A breakthrough in their modelling and processing can only result from a coordinated effort of multidisciplinary experts in different languages. COST is the most adequate framework answering this need. Fourteen European languages will be addressed from a cross-theoretical and cross-methodological perspective, necessary for coping with current fragmentation issues. Expected deliverables include enhanced language resources and tools, as well as recommendations of best practices for cutting-edge MWE-aware language models. The Action will lead to a better understanding of the nature of MWEs. It will establish a long-lasting collaboration within a multilingual network of MWE specialists. It will pave the way towards competitive next generation text processing tools which will pay greater attention to language phenomena.



**Keywords:** Multilingualism, natural language processing, multi-word expressions, idioms, parsing.

#### Working Groups

- WG1 Lexicon/Grammar Interface
- WG2 Parsing Techniques for MWEs
- WG3 Hybrid Parsing of MWEs
- WG4 Annotating MWEs in Treebanks

**Non-COST participation: Brazil, USA**

**Interested Countries : 14**

Proposer : **PL**

BG, CH, CZ, DE, EE,  
FR, HU, IT, NO, PT,  
RS, SE, UK



## Action IC1208

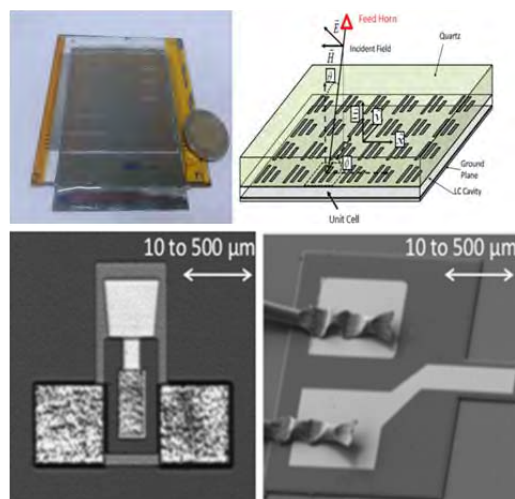
### Integrating Devices and Materials: A Challenge for New Instrumentation in ICT

#### Objectives

The aim of IDEM COST Action is to increase the scientific understanding and technical knowledge of the emerging field of integrating devices and materials for new instrumentation in ICT by exploring and developing the combination of novel nanostructured materials, preparation methods, techniques and devices. The resulting materials and devices are envisioned as an indispensable part of the future ICT equipments and instrumentation.

#### Abstract

This Action addresses the critical challenge of providing new devices for Information and Communication Technologies (ICT) applications running from sensors to photonics and optoelectronics. Traditional materials – such as liquid crystals– and devices –such as acoustic resonators– are now showing new and improved functionalities when combined with nanostructured materials. This leads to innovative devices, which broaden the horizon of the applications in many areas, from health (bio- and diagnostic sensors) to optical communications and photonics (reconfigurable optics, displays). Interdisciplinarity and improved use of knowledge are essential for undertaking challenges in the design of new devices derived from new materials. The action will develop new ideas for functional materials and devices in these areas and innovative training curricula for professionals and scientists that encourage an integrated approach to the design and implementation of breaking new devices for photonics, materials engineering (e.g. multiferroic ceramics) and sensor areas.



**Keywords:** Reconfigurable nanostructured liquid crystal, optics, biosensor, acoustic resonator, nanomultiferroic ceramics.

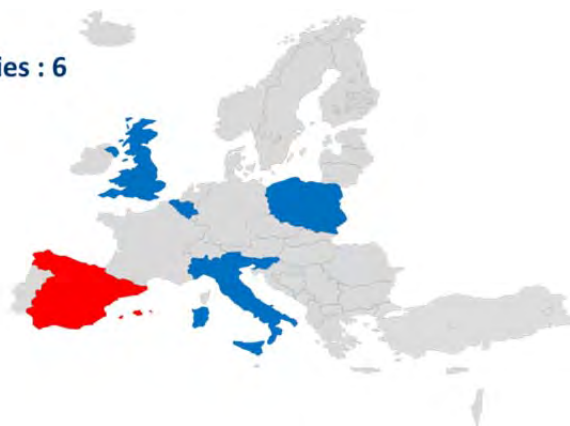
#### Working Groups

- WG1 LC modification with nanostructures
- WG2 Biosensors and reading electronics
- WG3 New ICT devices based on reconfigurable LCs and unconventional materials
- WG4 Tools for Integration; Tools for Dissemination

Interested Countries : 6

Proposer : ES

BE, IT, PL, SI, UK



# Action TU1204

## People Friendly Cities in a Data Rich World

### Objectives

The main objective is to foster a trans-disciplinary network of key stakeholders to identify new approaches, policies and research priorities for the emerging theme of smart and liveable cities; and so allow people to co-create cities where infrastructure, technology, innovative ICT and data driven solutions are aligned with user needs to promote well being, good health, a sustainable use of resources, within a people-centred form of economic, cultural, and political development.

### Abstract

Cities are the future. In 2008, the percentage of people living in urban areas surpassed those living rural communities. These trends are expected to continue; the United Nations estimates that over 70% of the world's population will be living in towns and cities by 2050. Not surprisingly cities elicit ever greater attention from government, researchers, and industry. Many of the initiatives focus upon the efficient use of resources and carbon reduction in response to climate change such as Europe 2020 and the European Covenant of Mayors' commitment to energy efficiency. Likewise the "Smart City" concept offers a similar if somewhat broader vision of a more efficient city. The focus upon smarter and more efficient cities is important, but incomplete. It is important that cities be sustainable and pleasant to live within. Against this background, the Action builds on an ESF exploratory workshop on the emerging theme of "smart and liveable cities". Supported by a European network of candidate cities, the Action co-ordinates a trans-disciplinary network of experts and non-experts that investigate the alignment of the "hardware" and "software" of a city with user needs to promote well being, good health, and a sustainable use of resources, within an evolving people-centred consultation framework for economic, cultural, and political development.



**Keywords:** Smart and Liveable Cities, Collaborative Urbanism, Trans-disciplinary Network, Digital Data, City Sounding Board.

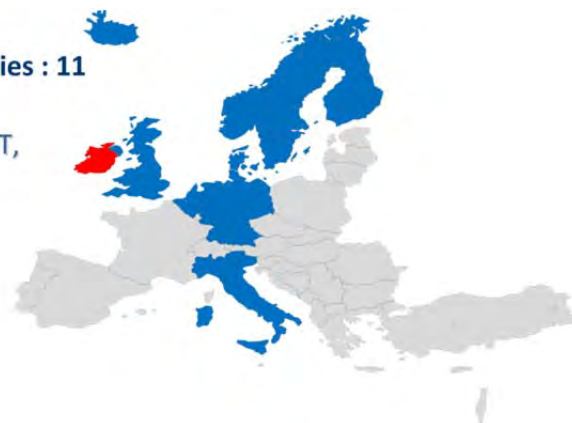
### Working Groups

- WG1 Roadmap and Research Strategy
- WG2 Knowledge Platform
- WG3 Living Laboratory
- WG4 Framework for Collaborative Urbanism

### Interested Countries : 11

Proposer : IE

BE, DE, DK, FI, IS, IT,  
NL, NO, SE, UK



# Action TU1205

## Building Integration of Solar Thermal Systems (BISTS)

### Objectives

The objectives for this Action focus on creating a platform from which a working environment is developed that generates methods to further the integration of STS in buildings. To ensure the success of the Action the following objectives are set.

### Abstract

Energy use in buildings represents 40% of the total primary energy used in the EU and therefore developing effective energy alternatives is imperative. Solar thermal systems (STS) will have a main role to play as they contribute directly to the heating and cooling of buildings and the provision of domestic hot water. STS are typically mounted on building roofs with no attempt to incorporate them into the building envelope, creating aesthetic challenges and space availability problems. The proposed Action will foster and accelerate long-term development in STS through critical review, experimentation, simulation and demonstration of viable systems for full incorporation and integration into the traditional building envelope. Viable solutions will also consider economic constraints, resulting in cost effective Building Integrated STS. Additionally, factors like structural integrity, weather impact protection, fire and noise protection will be considered. The most important benefit of this Action is the increased adoption of RES in buildings. Three generic European regions are considered; Southern Mediterranean, Central Continental and Northern Maritime Europe, to fully explore the Pan-European nature of STS integration. The proposed Action consortium presents a critical mass of European knowledge, expertise, resources, skills and R&D in the area of STS, supporting innovation and conceptual thinking.



**Keywords:** Building integration, Solar thermal systems, Renewable energy, Envelope integrity problems, Cost effective solutions.

### Working Groups

- WG1 Development and characterisation of new BISTS
- WG2 Modelling and Simulation
- WG3 Investigation of new applications for innovative BISTS
- WG4 Dissemination

**Non-COST participants: Canada, USA**

**Interested Countries : 9**

Proposer : **CY**

CH, DE, EL, ES, IE,  
PL, RS, UK



Trans-Domain Proposals (TDP)



## Action TU1206

### Sub-Urban – A European Network to Improve Understanding and use of the Ground Beneath our Cities

#### Objectives

The main objective of the Action is to provide a long-needed contribution to greater interaction and networking between experts who develop urban subsurface knowledge and those who can benefit most from it - urban decision-makers, practitioners (private consultants and contractors) and the wider research community by establishing a network to co-ordinate, integrate and accelerate the world-leading research into modelling the subsurface taking place in European institutions, and by developing a Toolbox to enable the knowledge to be widely disseminated and more easily incorporated in urban policy and planning.

#### Abstract

Increasing urbanisation throughout the world challenges the sustainable development and resilience of cities. Despite this, the importance of the ground beneath cities is under-recognised and often overlooked. The main aim of the Action is to provide a long-needed contribution to greater interaction and networking, and so transform the relationship between experts who develop urban subsurface knowledge and those who can benefit most from it - urban decision makers, practitioners and the wider research community. The Action will establish a network to co-ordinate, integrate and accelerate the world-leading research into modelling the subsurface taking place in European institutions and to develop a Toolbox to enable subsurface knowledge to be widely disseminated.



**Keywords:** Subsurface, city, 3D/4D modelling, urban sustainability and ecosystem services, geology and groundwater.

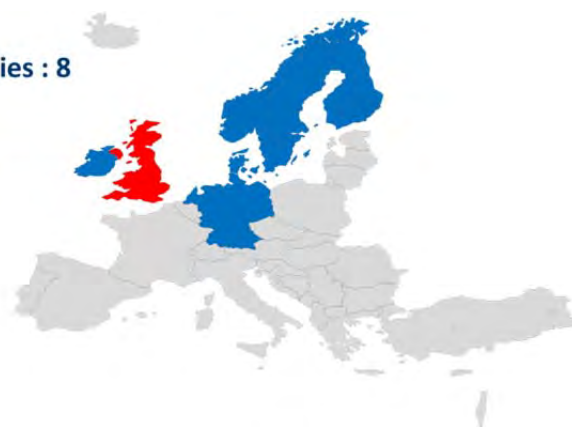
#### Working Groups

- WG1 Compile inventories of existing methods, practices and case studies
- WG2 Evaluation and integration of techniques
- WG3 Preparation of guidelines and a Toolbox
- WG4 Dissemination and training

**Non-COST participation:** Bangladesh, Hong Kong, Russia

**Interested Countries : 8**

Proposer : **UK**  
DE, DK, FI, IE, NL,  
NO, SE



# Action TU1207

## Next Generation Design Guidelines for Composites in Construction

### Objectives

The main aim of the Action is to contribute to the development of advanced design guidelines, compatible with European standards. These guidelines will address both new structures reinforced with FRPs, as well as the rehabilitation and strengthening of existing deficient concrete, masonry, steel and timber structures. Key scientific and technological challenges (individuated in part B.2) will be addressed along with the new challenges identified by this Action. Technical reports, databases, scientific publications, training and informative communications will be produced on four main priority areas: Material Development and Characterisation; New Structures; Strengthening Applications; Whole-life-costing and life cycle assessments.

### Abstract

Construction is rapidly becoming the leading outlet for FRP composites. Although the use of composite materials in construction started in the 1980s, civil engineers only recently started gaining confidence in this technology for use in primary structural applications. Despite the considerable technological developments in this field, there are still key scientific and logistical issues that need to be addressed for the widespread acceptance in construction. For example, existing design recommendations are largely based on work carried out more than fifteen years ago on first generation reinforcing products and their conservativeness is hindering the development of innovative and more efficient products and design solutions. This Action aims to: coordinate European research in the field; develop and maintain a critical mass of researchers; offer a link between academia and industry; and develop a new generation of design guidelines based on European Standards. This will facilitate the adoption of European products not only in Europe but also internationally and help Europe stay one step ahead of International competitors.



**Keywords:** Composites, Fibre Reinforced Polymers, Strengthening, Design Guidelines, Life Cycle Analysis.

### Working Groups

- WG1 Material Development and Characterisation
- WG2 New Structures
- WG3 Strengthening Applications
- WG4 Whole-life-costing and life cycle assessments

**Non-COST participation:** Australia, Canada, China, Hong Kong, Singapore, USA

**Interested Countries : 17**

Proposer : **UK**

BE, CY, CZ, DE, EL,  
ES, FR, HU, IT, LV,  
NO, PL, PT, RO, SE,  
SI



Trans-Domain Proposals (TDP)

## Action TU1208

### Civil Engineering Applications of Ground Penetrating Radar

#### Objectives

The aim of the Action is to exchange and increase scientific-technical knowledge and experience of Ground Penetrating Radar (GPR) techniques in Civil Engineering (CE), whilst simultaneously promoting throughout Europe the effective use of this safe and non-destructive technique in the monitoring of infrastructures and structures. The Action will establish active links between universities, research institutes, companies and end users working in this field, fostering and accelerating its long-term development in Europe.

#### Abstract

This Action focuses on the exchange of scientific-technical knowledge and experience of Ground Penetrating Radar (GPR) techniques in Civil Engineering (CE). The project will be developed within the frame of a unique approach based on the integrated contribution of University researchers, software developers, geophysics experts, Non-Destructive Testing equipment designers and producers, end users from private companies and public agencies. In this interdisciplinary Action, advantages and limitations of GPR will be highlighted leading to the identification of gaps in knowledge and technology. Protocols and guidelines for EU Standards will be developed, for effective application of GPR in CE. A novel GPR will be designed and realized: a multi-static system, with dedicated software and calibration procedures, able to construct real-time lane 3D high resolution images of investigated areas. Advanced electromagnetic-scattering and data-processing techniques will be developed. The understanding of relationships between geophysical parameters and CE needs will be improved. Freeware software will be released, for inspection and monitoring of structures and infrastructures, buried-object localization, shape reconstruction and estimation of useful parameters. A high level training program will be organized. Mobility of early career researchers will be encouraged. The project has already received the interest of key end users and excellent EU Institutions.



**Keywords:** Ground Penetrating Radar (GPR), Electromagnetic Direct and Inverse Scattering and Data-Processing, Non-Destructive Testing (NDT), Civil Engineering (CE), Surveying of pavements - bridges - tunnels and buildings - underground utilities and voids.

#### Working Groups

- WG1 Novel GPR instrumentation
- WG2 GPR surveying of pavements, bridges, tunnels and buildings; underground utility and void sensing
- WG3 EM methods for near-field scattering problems by buried structures; data processing techniques
- WG4 Different applications of GPR and other NDT technologies in CE

**Non-Cost participation: Australia, USA**

**Interested Countries : 15**

**Proposer : IT**

AT, BE, CH, CZ, DE,  
EL, ES, FI, FR, NL,  
PL, PT, TR, UK



Trans-Domain Proposals (TDP)

## Action TU1209

### Transport Equity Analysis: Assessment and Integration of Equity Criteria in Transportation Planning (TEA)

#### Objectives

The aim of the Action is to enhance the role of citizen sensing in mapping. The Action seeks to increase the value of volunteered data provided by citizen sensors for mapping applications, with a particular focus on map production and map evaluation. The core aim of the Action is to enhance the value of citizen sensors in mapping applications.

#### Abstract

Understanding the equity implications of transport policies and investments is becoming increasingly important, as underscored by social movements around the world. This poses a major challenge in the assessment and appraisal of transport projects and policies, in which equity issues are currently hardly addressed. In fact, current evaluation methods in transport do not account for equity issues, and this topic is not dealt with in EU guidebooks for project evaluation. Only Germany, as an exception, considers equity between regions (Länder), but not in terms of accessibility to key life activities within an urban region. This Action proposal contributes to the body of research by bringing together new approaches to incorporate equity consideration in transport project evaluation and decision making. The approaches consist of the measurement of accessibility with the literature on social justice, travel behaviour models and socio-economic impacts analysis in line with mainstream welfare economics. The three main objectives of this Action proposal are:

- 1) to establish a methodology to explore the links between transport accessibility and distributional factors;
- 2) to develop new transport evaluation criteria accounting for accessibility in the social welfare function;
- 3) to help embed equity assessment into future transport policies and investments.



**Keywords:** Equity, transport accessibility, distributional factors, travel behaviour models.

#### Working Groups

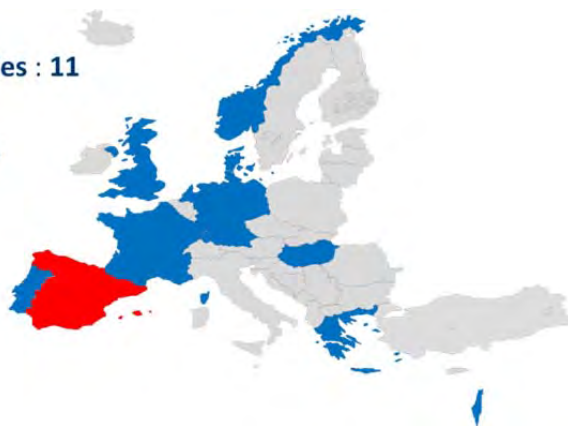
- WG1 Management
- WG2 Identify equity approaches
- WG3 Methods for integrating equity criteria in assessment practices
- WG4 Equity issues and challenges in the decision-making process
- WG5 Dissemination

**Non-COST participation: Canada**

**Interested Countries : 11**

Proposer : **ES**

DE, DK, EL, FR, HU,  
IL, NL, NO, PT, UK



Trans-Domain Proposals (TDP)



## Action TD1205 (*BMBS, MPNS, CMST*)

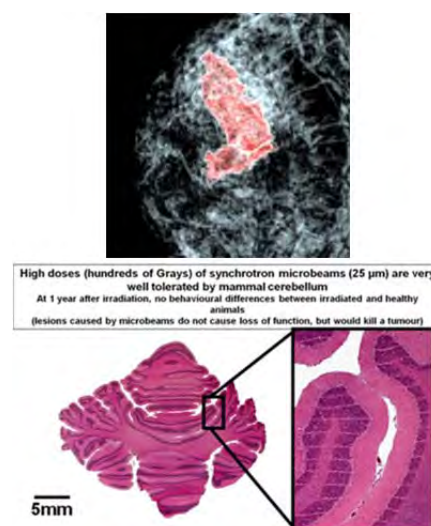
### Innovative Methods in Radiotherapy and Radiosurgery Using Synchronisation Radiation

#### Objectives

The main objective of the Action is to develop and coordinate a multidisciplinary network for developing synchrotron radiotherapy and radiosurgery to treat brain tumours and nervous diseases.

#### Abstract

Radiotherapy is one of the main treatment options for cancer patients. The physical properties of synchrotron-generated X-rays make them ideally suited for the design of new therapeutic approaches to treat both malignant and non-malignant diseases, in particular aggressive brain tumors. Centered around six multidisciplinary work groups, the COST teams will a) prepare for clinical trials in human patients preceded by, b) controlled trials in veterinary patients with spontaneous malignant tumours, c) preclinical studies in small animals, d) dosimetry, e) ethical aspects and patient care. SYRA3 will be an excellent coordination and communication tool for experienced scientists and Early Stage Researchers in the field of innovative radiotherapy & radiosurgery. International institutions and industrial partners are involved to apply standardization methods and for the dissemination/exploitation of results. The networking Action will be carried out by workshops and seminars, Short-Term Scientific Missions, training events, conferences and common joint publications.



**Keywords:** Radiation therapy, microbeam, stereotactic radiosurgery, synchrotron radiation, clinical trials.

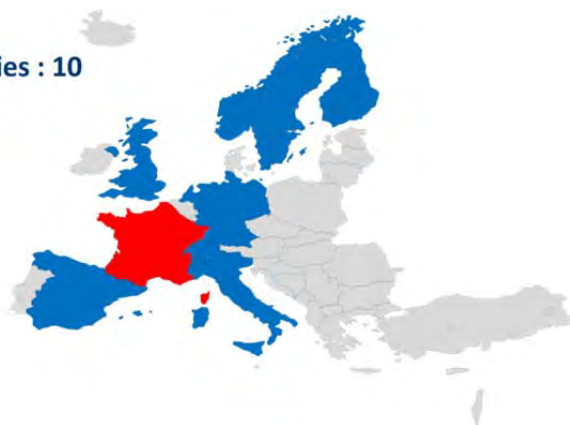
#### Working Groups

- WG1 Radiation Biology
- WG2 Treatment of brain tumors by MRT
- WG3 Dosimetry and treatment planning development for small fields and microbeams
- WG4 Improved drug delivery and dose enhancement
- WG5 Emerging applications of microbeams
- WG6 From bench to bedside

**Non-COST participation:** Australia, Canada, USA

#### Interested Countries : 10

Proposer : **FR**  
CH, DE, ES, FI, IT,  
NL, NO, SE, UK



Trans-Domain Proposals (TDP)



## Action TD1206 (ISCH, BMBS)

### Development and Implementation of European Standards on Prevention of Occupational Skin Diseases (STANDERM)

#### Objectives

The aim of the Action is to bundle research relevant for prevention of occupational skin diseases (OSD) in the participating countries, including basic sciences (aetiology and individual susceptibility), epidemiological surveillance, translational and applied clinical research. The outcome will be common European standards on evidence-based prevention of OSD and on the complete spectrum of medical and educational management of patients with OSD. This will provide (i) a safer working environment and (ii) easier access to targeted early intervention programmes for all workers in high risk professions throughout Europe. Thereby, both health and quality of life of workers will be improved, and detrimental socio-economic consequences of OSD for the individuals and the society diminished. This will, in turn increase economic competitiveness, particularly of small and medium sized companies where incidence of OSD is highest, and decrease the overall costs related to OSD.

#### Abstract

In Europe occupational skin diseases (OSD) represent up to 30% of occupational diseases. OSD related costs exceed 5 billion €/year in the EU by loss of productivity and cause extensive suffering for affected workers. Recently, the EU commission defined lacking prevention of OSD a top priority problem. There are isolated efforts in some countries; however, prevention programmes are poorly validated and there is no coordinated action between the stakeholders at national and international levels. Surveillance and diagnostics of OSD are hampered by lack of common monitoring of new allergens in workplaces. The proposed COST-Action comprising 26 countries aims to coordinate activities relevant for OSD prevention, including basic sciences (aetiology and individual susceptibility), epidemiological surveillance, transnational and applied clinical research. This involves regulatory issues (e.g. REACH), development of interdisciplinary workers' education concepts, identifying individual susceptibility markers enabling tailored prevention and pre-employment counselling. This COST-Action will allow setting up transnational controlled intervention studies in large cohorts in high-risk professions. The outcome will be evidence-based common European standards on OSD prevention and patient management. This will provide a safer working environment and targeted early intervention for workers throughout Europe enhancing economic competitiveness, particularly of small and medium sized companies.



**Keywords:** Occupational skin diseases, health surveillance, risk assessment, prevention, standards.

#### Working Groups

- WG1 Aetiology and Susceptibility
- WG2 Development of Common European Standards
- WG3 European Integration Studies
- WG4 Surveillance, Risk Assessment and Allergens
- WG5 Knowledge and Dissemination

#### Interested Countries : 26

Proposer : **DE**

AT, BE, BG, CH, CZ,  
DK, EE, EL, ES, FI,  
FR, HR, HU, IT, LT,  
LV, MK, MT, NL, PL,  
PT, RO, RS, SE, UK



## Action TD1207 (ICT, ESSEM)

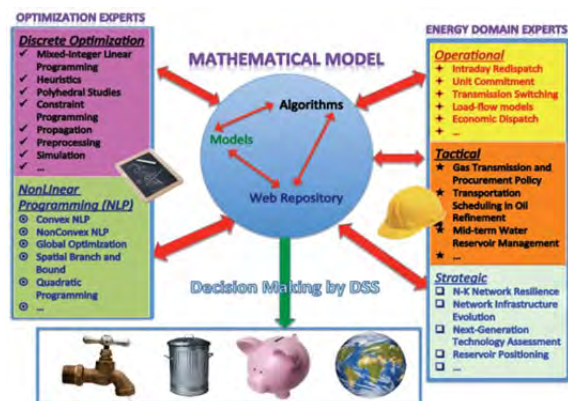
### Mathematical Optimization in the Decision Support Systems for Efficient and Robust Energy Networks

#### Objectives

The aim of the Action is to coordinate the ongoing efforts of experts of different fields, from academia and industry, in developing innovative tools for quantitative decision making, and applying them to the efficient and robust design and management of energy networks. The use of Decision Support Systems and their use in the energy production and distribution context aims at improving the economic, environmental and social impact of energy management in Europe.

#### Abstract

Energy Production and Distribution (EP&D) is among the biggest challenges of our time, since energy is a scarce resource whose efficient production and fair distribution is associated with many technical, economic, political and ethical issues like environmental protection and people health. EP&D networks have rapidly increased their size and complexity, e.g. with the introduction and interconnection of markets within the EU. Thus, there is an increasing need of systems supporting the operational, regulatory and design decisions through a highly inter-disciplinary approach, where experts of all the concerned fields contribute to the definition of appropriate mathematical models. This is particularly challenging because these models require the simultaneous use of many different mathematical optimization tools and the verification by experts of the underlying engineering and financial issues. The COST framework is instrumental for this Action to be able to coordinate the inter-disciplinary efforts of scientists and industrial players at the EU level.



**Keywords:** Energy Networks Optimization and Safety, Infrastructure Optimization, Energy Saving, Mixed Integer Linear and Non-Linear Programming, Mathematical Modeling for Decision Support.

#### Working Groups

- WG1 State of the Art
- WG2 Methodology
- WG3 Validation
- WG4 Software

**Non-COST participation:** Brazil, China, Japan, Kenya, USA

**Interested Countries : 16**

Proposer : **IT**

AT, BE, CH, DE, DK,  
EL, ES, FR, HU, IL,  
NL, NO, PT, TR, UK



## Action TD1208 (CMST, BMBS, MPNS)

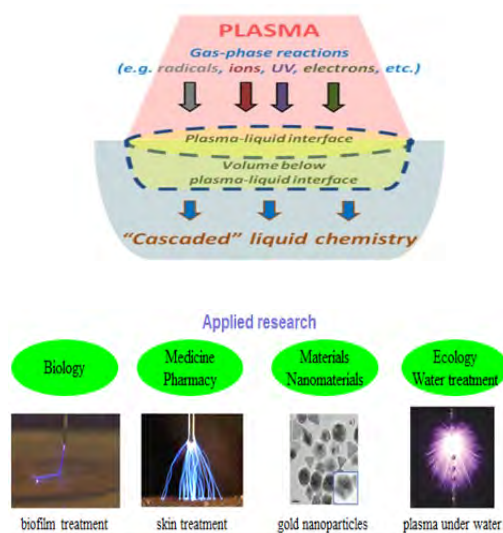
### Electrical Discharges with Liquids for Future Applications

#### Objectives

The overall aim of the Action is the establishment of an internationally leading virtual-centre in Europe concerned with the development of theoretical and experimental knowledge and expertise on discharge plasmas-liquid interactions. This Action's developments will lead to future studies and applications in physics, chemistry, biomedicine and materials engineering.

#### Abstract

Plasmas generated in liquids and gas discharges interacting with liquids are today hot topic greatly interesting plasma physicists and plasma chemists due to the broad field of potential applications. Plasma-liquid systems can produce strongly non-equilibrium environments. Plasma-liquid interactions represent a great opportunity for developing novel chemistries and related technologies. This proposed Action aims bringing together a high level of experimental, simulation and theoretical expertise available around Europe. This Action will support a coordinated effort that will improve our knowledge of basic processes responsible for initiating and sustaining discharges in/on liquids. New applications will be identified with direct benefits to the European industrial sector. Potential technological impact is foreseen in a range of application fields such as water and surface treatment, synthesis of nanoparticles, catalysis, formation of new organic compounds, and biochemistry. The Action will bring together researchers and practitioners from diverse fields including physics, chemistry, materials science, engineering and biology. The Action's activities exhibit a strongly interdisciplinary character and will represent the basis for future developments. The research platform as well as the new infrastructure, obtained knowledge and experience developed under the Action will form an effective background for the future research and deep international collaboration across all disciplines involved.



**Keywords:** Plasmas in liquids, plasma-liquid interaction, plasma chemistry and modelling, plasma diagnostics, chemical analyses.

#### Working Groups

- WG1 Plasmas generated directly in the liquid phase
- WG2 Plasmas interacting with liquids
- WG3 Elementary physical and chemical processes initiated by discharges
- WG4 Interaction of plasma reactive species with materials and surfaces

**Non-COST participation:** Belarus, Japan, Russia, Ukraine, USA

#### Interested Countries : 21

Proposer : CZ

AT, BE, BG, DE, EE,  
ES, FR, HU, IL, IT,  
NL, PL, PT, RO, RS,  
SE, SI, SK, TR, UK



## Action TD1209 (FA, FPS, ESSEM, ICT, ISCH)

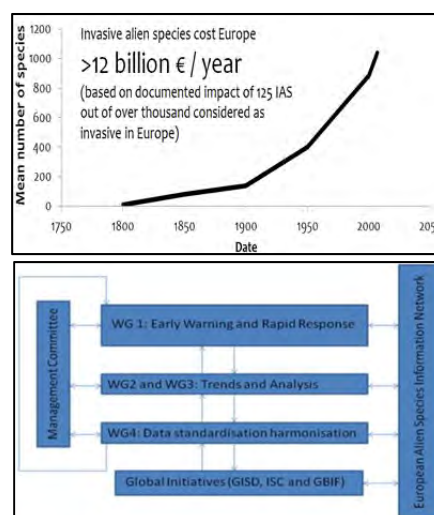
### European Information System for Alien Species

#### Objectives

The aim of the Action is to facilitate enhanced knowledge gathering and sharing to provide support to a European information system for effective and informed decision-making in relation to IAS. The COST Action will achieve this through inter-related objectives.

#### Abstract

Invasive Alien Species (IAS) threaten biodiversity, society, human-health, well-being and the economy. The economic impact to Europe is estimated 12.5 to 20 billion € (annually). Europe has committed to tackling IAS through Target 5 of the EU Biodiversity Strategy to 2020 which is in line with target 9, COP 10 Decision X/2; an information system is a prerequisite to meet strategy through effective early warning and rapid response for prevention and control of IAS. Initiatives to collate information on IAS have resulted in the development of many databases differing in their geographic, taxonomic and ecological coverage. There are a number of constraints that might limit the effective use of existing databases: data obsolescence, lack of interoperability and uncertainties for long-term sustainability of the various tools. This COST Action will facilitate enhanced knowledge gathering and sharing through a network of experts, providing support to a European IAS information system which will enable effective and informed decision-making in relation to IAS. An overarching priority will be to identify the needs and formats for alien species (AS) information by different user groups and specifically for implementation of EU 2020 Biodiversity Strategy. Correspondingly early warning tools and rapid response protocols will be developed.



**Keywords:** Invasive alien species (IAS), Early Warning and Rapid Response System, European IAS Information Network, EU Biodiversity Strategy, Pathways and Impact.

#### Working Groups

- WG1 Early Warning and Rapid Response
- WG2 Trends and analyses on pathways and priority species
- WG3 Trends and analyses on impacts of priority species
- WG4 Data standardisation and harmonisation

**Non-COST participation: New Zealand, USA**

#### Interested Countries : 29

Proposer : **UK**

AT, BE, BG, CH, CY,  
CZ, DE, DK, EE, EL,  
ES, FI, FR, HU, IE, IL,  
IT, LT, MT, NL, NO,  
PT, RO, RS, SE, SI,  
SK, TR





## Action TD1210 (MPNS, ICT, ISCH)

### Analyzing the Dynamics of Information and knowledge landscapes - KNOWeSCAPE

#### Objectives

The aim of the Action is the development of knowledge maps for the study and curation of large information spaces and effective navigation through them.

#### Abstract

There is no escape from the expansion of information, so that structuring and locating meaningful knowledge becomes ever more difficult. This Action will tackle this urgent problem using the unique networking and capacity-building features provided by the COST framework. For the first time, a platform will be created where information professionals, sociologists, physicists, digital humanities scholars and computer scientists collaborate on problems of data mining and data curation in collections. The main objective of this Action is advancing the analysis of large knowledge spaces and systems that organize and order them. The combination of insights from complexity theory and knowledge organization will improve our understanding of the collective, self-organized nature of human knowledge production and will support the development of new principles and methods of data representation, processing, and archiving. To this end, the knowledge organization in web-based information spaces such as Wikipedia as well as collections from libraries, archives, and museums will be studied. This Action aims to create interactive knowledge maps. Their end users could be scientists working between disciplines and seeking mutual understanding; science policy makers designing funding frameworks; cultural heritage institutions aiming at better access to their collections; and students seeking a first orientation in academia.



(Image to Follow)

**Keywords:** Evolving knowledge orders in information spaces, complex networks, information seeking behaviour and retrieval, big data mining and curating, open linked data.

#### Working Groups

- WG1 Phenomenology of knowledge spaces
- WG2 Theory of knowledge spaces
- WG3 Visual analytics of knowledge spaces – knowledge maps
- WG4 Data curation and navigation based on knowledge maps

**Non-COST participation: Ukraine, USA**

#### Interested Countries : 20

Proposer : **NL**

AT, BE, BG, DE,  
EL, ES, FI, FR, HR,  
IE, IL, IT, LU, PL,  
RS, SE, SI, TR, UK





# Participation of Non-COST countries

## Life Sciences

### **Biomedicine and Molecular Biosciences (BMBS)**

BM1205 – Australia (AU) .....	5
BM1206 – USA (US) .....	6
BM1207 – USA (US) .....	7

### **Food and Agriculture (FA)**

FA1206 – Australia (AU), Japan (JP), USA (US) .....	10
FA1207 – Australia (AU), Brazil (BR), India (IN), Japan (JP), USA (US) .....	11

### **Forests, their Products and Services (FPS)**

FP1203 – Australia (AU), Chile (CL), Georgia (GE), Morocco (MA), New Zealand (NZ), Tunisia (TN), Ukraine (UA), USA (US) .....	13
FP1204 – Armenia (AM), Algeria (DZ), USA (UA) .....	14
FP1206 – Argentina (AR), Canada (CA), Costa Rica (CR), Algeria (DZ), Tunisia (TN), USA (US) .....	16
FP1207 – Institutions in International Organisations (XI) .....	17

## Natural Sciences

### **Earth System Science and Environmental Management (ESSEM)**

ES1205 – USA (US) .....	22
ES1206 – Australia (AU), Canada (CA), Hong Kong (HK), Tunisia (TN), USA (US) .....	23
ES1207 – Canada (CA), Institutions in International Organisations (XI) .....	24

### **Materials, Physics and Nanosciences (MPNS)**

MP1206 – Australia (AU), Canada (CA), China (CN), Japan (JP), New Zealand (NZ), Puerto Rico (PR), Singapore (SG) .....	25
MP1209 – Argentina (AR), Japan (JP), Singapore (SG) .....	28
MP1210 – South Africa (ZA) .....	29

## Science in Society

### **Individuals, Societies, Cultures and Health (ISCH)**

IS1206 – New Zealand (NZ), USA (US) .....	30
IS1208 – Australia (AU) .....	32

### **Information and Communication Technologies (ICT)**

IC1206 – China (CN), USA (US) .....	36
IC1207 – Brazil (BR), USA (US) .....	37

### **Transport and Urban Design (TUD)**

TU1205 – Canada (CA), USA (US) .....	40
TU1206 – Bangladesh (BD), Hong Kong (HK), Russia (RU) .....	41
TU1207 – Australia (AU), Canada (CA), China (CN), Hong Kong (HK), Singapore (SG), USA (US) .....	42
TU1208 – Australia (AU), USA (US) .....	43
TU1209 – Canada (CA) .....	44

### **Trans-Domain Proposals (TDP)**

TD1205 – Australia (AU), Canada (CA), USA (US) .....	45
TD1207 – Brazil (BR), China (CN), Japan (JP), Kenya (KE), USA (US) .....	47
TD1208 – Belarus (BY), Japan (JP), Russia (RU), Ukraine (UA), USA (US) .....	48
TD1209 – New Zealand (NZ), USA (US) .....	49
TD1109 – Ukraine (UA), USA (US) .....	50



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