

2009

About COST

**European
Cooperation
in Science and
Technology**

Note

The aim of this pocket guide is to bring together all relevant information about COST into an “easy to use” publication. This guide covers the whole of the COST system for research cooperation in Europe, including information about COST governance, contact points and financial instruments plus, most importantly, the COST Actions.

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Foreword

The Council of the European Union adopted in 2007 a Decision concerning the Specific Programme “Cooperation” implementing the Seventh Framework Programme (FP7) of the European Community. The Decision stated that of the total “Cooperation budget” of EUR 32 413 million at least EUR 210 million and up to EUR 250 million subject to the mid-term evaluation should be attributed to COST.

The increase in financial support to COST of 50% and possibly about 80% compared to the Sixth Framework Programme (FP6) was a reward of paramount importance for the entire COST community: the members of the COST Committee of Senior Officials (CSO) whose dedication and sense of ownership made it possible to introduce a number of reforms which are real milestones in the history of COST; the Chairs and members of the scientific COST Domain Committees, nominated among the most outstanding European scientists; the participants in the COST Actions, the real “raison d’être” of COST and, indeed, the entire European scientific community that, through its overwhelming response to the COST Calls for Proposals, confirmed the vitality of the COST Framework; the COST Office established in Brussels by the European Science Foundation (ESF) acting as COST’s implementing agent as well as the COST Secretariat provided, since the very beginning of COST, by the General Secretariat of the Council of the European Union. Gratitude for this success is undoubtedly also due to the members of the European Parliament who confirmed their interest in COST at the COST exhibition held in the Parliament in April 2006, to the European Commission (EC) and last but certainly not least to the Council of the European Union and, in particular, to the members of its Research Working Party which contributed to give strong support to COST.

Following the Decision of the EU Council on FP7 and the appointment of ESF as the implementing agent for COST communicated by the COST CSO, the European Commission and the European Science Foundation launched the grant agreement for ESF to continue to provide and manage the administrative, technical and scientific secretariat of COST under FP7 in June 2007.

The signature of the grant agreement strengthened the working relationship between COST and ESF, two principal networking organisations in Europe that have been interacting at various levels for more than three decades. It built on the previous EC-ESF contract for COST under FP6, signed in 2003, and guaranteed the continuation of COST activities through FP7. The grant agreement sets out a series of work packages which reflect the increase in funding through new and expanded activities and the number of running Actions, the development of new ideas for interdisciplinary science initiatives, a better exploitation of the European “Near Neighbours” policy and a stronger focus on outreach and communications. The negotiation of this grant agreement and the transition from

FP6 to FP7 were two challenging processes. The ESF team's commitment to COST, with its experience of managing such a complex operation, a constructive and efficient cooperation with the EC and with the COST CSO were essential to the successful completion of this important agreement.

In March 2007, the representatives of the 35 COST countries re-elected me as President of the COST CSO for the next triennium during the CSO meeting convened in the European Parliament in Strasbourg. The Italian Ministry of Universities and Research had been encouraged to present my candidature by the many delegations who had expressed the view that a continuity in the COST CSO Presidency was indeed necessary at a delicate moment for COST, had stated an open appreciation for the results obtained by my Presidency and had announced their support indicating that they would be in favour of a re-election of the President-in-office, were he willing to continue. Following my election, I proposed the following main objectives for the period 2007-2010:

- To consolidate and monitor the considerable number of reforms introduced in COST over the past three years.
- To consolidate the relationship and to strengthen the ties with the European Commission (EC) and with the European Science Foundation (ESF) with particular attention to the EC-ESF grant agreement for COST.
- To maintain and increase the role of COST as a unique instrument in the European Research Area and its complementarity with FP7.
- To increase the visibility of COST in the scientific community, in the user community and among politicians and decision-makers presenting COST opportunities and success stories.
 - To strengthen synergies with other intergovernmental networks, in particular with EUREKA, and with standardisation bodies.
- To implement the COST strategy to increase the role of COST as an active partner in the European Neighbourhood Policy towards the scientific communities of the EU's "near neighbours" and as an asset for the EU RTD policy in its relation to the rest of the world.
- To implement the COST Strategy towards increased support for early stage researchers.

COST was present at some of the most important European scientific events: the EC Workshop "Strengthening the coordination of Community and Member States policies and programmes for international S&T cooperation: impediments and opportunities" (Brussels, September 2007); the Conference on "The Future of Science and Technology in Europe" (Lisbon, October 2007); the Science Policy Conference "Is the ERA a first step to GLOREA (Global Research Area)?" (Strasbourg, November 2007) and the "Australian-European ICT Days" (Turin, October 2007) to name a few.

The COST strategy to encourage the scientific communities to participate in COST Actions was pursued in the COST countries, in the European neighbouring countries and in the rest of the world. COST Information Days and COST events were held in

Spain (Sevilla, February 2007; Serbia (Belgrade, March 2007); in Armenia (Yerevan, May 2007), in Russia (Moscow, May 2007); in Italy (L'Aquila, June 2007); in Croatia (Dubrovnik, June 2007); in Bulgaria (Bansko, October 2007); in Tunisia (Tunis, November 2007) and in India (New Delhi, Jaipur and Mumbai, December 2007). Furthermore, the pilot schemes with Australia and New Zealand launched in July 2007 proved to be very effective and increased the participation of researchers from these countries in COST Actions considerably.

The some 400 preliminary proposals submitted by 26 September 2008, the fifth collection date of the COST Open Call, which will result in 30 new COST Actions, were again testimony to the overwhelming response of the European scientific community. COST, the first form of cooperation in Science and Technology launched in Europe some 40 years ago had demonstrated its vivacity again. This result clearly showed that the European scientific community continues to look at COST as a flexible, fast, effective and efficient tool to network and coordinate nationally funded research activities at project level, bringing good scientists together under light strategic guidance and letting them work out their ideas.

The introduction of a continuous COST Open Call for proposals for new Actions, together with a strengthened and consistent use of external peer reviews, is a major reform introduced by the CSO. It is based on a two-stage process, reconciling the advantages of the COST tradition and the need for a highly transparent process of presenting proposals for new Actions, at the same time raising visibility within the research community. The call is continuous, i.e. the scientific community can present a proposal for a new Action at any time and on any subject, in line with the successful COST tradition. The call is open, i.e. the selection process follows the "bottom-up" tradition of COST. Preliminary Proposals of maximum three pages are submitted for an initial selection. Only those deemed to be of sufficient interest, potential intrinsic quality and European added value - in accordance with the criteria established by the CSO - are invited to submit a Full Proposal. This reduces the disadvantages calls generally face, such as the problem of oversubscription (i.e. a large number of new full proposals, frequently not of sufficient quality), a huge workload in processing proposals and the disillusion which may arise within the research community due to the rejection of a large number of full proposals.

In November 2007, the COST CSO agreed on streamlining the procedures for the approval of new COST Actions and decided that COST countries interested in participating in a COST Action confirm their participation in writing to the COST Secretariat without the need to additionally sign the relevant Memorandum of Understanding (MoU). It may be recalled that in 1971 the approval of the participation in the first 7 COST Actions launched that year had to be ratified by the Parliaments of the countries wishing to

participate in the Actions and this certainly added to the time needed to launch new Actions. In 1978, the introduction of the MoU made the procedure much simpler and avoided the need for Parliamentary ratification. The MoU for each Action was a formal document with the famous “red ribbons” to be signed by the representatives of the countries interested in participating in the Action. With the growing number of Actions, more than 200 running every year, this certainly became a rather cumbersome procedure which was regarded by the European scientific community as an unnecessary heritage of the past peculiar to COST and in contrast with its normal flexibility and light management. After 36 years COST finally got rid of the “red ribbons”.

During 2007 the COST CSO approved two important Statements. The first was the Contribution of COST to the consultation on the European Commission Green Paper on “The ERA: New Perspectives”, entitled “The role of COST in the European Research Area”. The second COST Statement related to the Report “Final Review of COST in the Sixth Framework Programme” of the Panel set up by the European Commission for the final review of the contract between the European Commission and the European Science Foundation for COST in FP6 (commonly known as the Monfret Report after the name of the Chair of the Panel). Taking into account the recommendation of the Report, the CSO, while confirming the ESF as the legal entity for COST during FP7, decided to re-examine the legal status and the governance of COST also in view of the COST Ministerial Conference foreseen for the second half of 2009. For this purpose, Professor Raoul Kneucker, Chair of the High Level Panel for the Mid Term Review of the EC-ESF contract for COST during FP6, was appointed as the Rapporteur with the task to present a preliminary report on possible solutions for the legal status and governance of COST to the CSO in autumn 2008. With this decision and with the envisaged COST Ministerial Conference in the second half of 2009, the CSO reacted in an extremely rapid way to the recommendations contained in the Monfret Report.

COST looks with great confidence and optimism at its future and at the Seventh Framework Programme and is confident to be able to continue its role both to reduce the fragmentation of national research efforts in the ERA and to increase the cooperation in research of Europe on a global basis.

Professor Dr Ing Francesco Fedi
President COST Committee of Senior Officials

Introduction and COST mission

COST – European **C**ooperation in the field of **S**cientific and **T**echnical Research – was the first and is the widest European network for the coordination of nationally funded research activities. It is based on an inter-governmental framework for cooperation agreed following a Ministerial Conference in 1971. A commitment to a “wider” Europe was demonstrated by the then six countries belonging to the EEC as this agreement involved from the outset 19 European countries. Starting from a limited number of Scientific Domains, COST has now grown into a system for research collaboration covering 35 European Member States plus one cooperating state, Israel, and is active in 9 Scientific Domains.

The mission of COST is to strengthen Europe in scientific and technical research through the support of European cooperation and interaction between European researchers. It aims to maximise European synergy and added value in non-competitive and pre-normative research.

The funds provided by COST support the coordination costs of the research networks (Actions), while the research is funded nationally. In this way, COST levers approximately EUR 2 billion of research funding through its support, which is less than 1% of this sum, and reaches out to over 30.000 researchers across Europe. COST is primarily funded from a specific part of the EU RTD Framework Programmes.

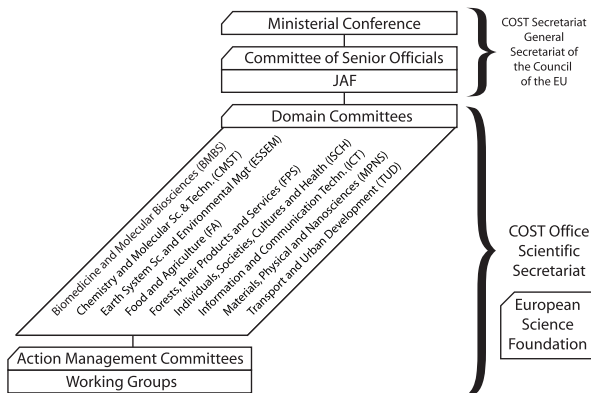
A “Bottom-up” approach (the idea and subject of a COST Action comes from the European scientists themselves), “à la carte” participation (only countries who wish to participate in an Action do so), equality of access (participation is open to all COST countries) and a flexible structure (easy implementation and lean management of the research initiatives) are the main characteristics of COST. As a precursor of advanced multidisciplinary research, COST has a very important role in building the European Research Area (ERA), anticipating and complementing the activities of the Framework Programmes, acting as a “bridge” spanning the scientific communities of the whole Europe, increasing the mobility of researchers across Europe and fostering the establishment of large Framework Programme projects in many key Scientific Domains such as: Biomedicine and Molecular Biosciences; Food and Agriculture; Forests, their Products and Services; Materials, Physical and Nanosciences; Chemistry and Molecular Sciences and Technologies; Earth System Science and Environmental Management; Individuals, Societies, Cultures and Health; Information and Communication Technologies; Transport and Urban Development.

It covers both basic and more applied or technological research and also addresses issues of a pre-normative nature or of societal importance.

The organisation of COST reflects its inter-governmental nature. Key decisions are taken at COST Ministerial Conferences which are

held every five years on average. The Committee of Senior Officials (CSO) is the highest decision-making body and is charged with the oversight and strategic development of COST. The Secretariat of the CSO is provided by the General Secretariat of the Council of the European Union. Each COST Member State appoints up to two representatives to the CSO, one of whom is the COST National Coordinator. The COST Domain Committees (DC) report to the CSO and each is mainly responsible for the quality control of the allocated Actions (assessment, monitoring, evaluation). They also supervise the strategic development of their respective domains. Each COST country may appoint one representative, a senior scientist or expert, to each Domain Committee. The Secretariat to the Domain Committees and to the COST Actions is provided by the COST Office established by the European Science Foundation (ESF) under an agreement between COST and ESF.

COST Governance



The Domain Committees perform quality control duties, which follow published guidelines on assessment, monitoring final evaluation, and dissemination of results. Assessment of new proposals includes peer review (involving external experts), and an overall assessment by the Domain Committee. The Domain Committees also receive information from other organisations (including other Domain Committees, the European Commission, ESF, EU agencies and other relevant bodies).

COST operates a Continuous Open Call for proposals for new Actions using a two stage process. Preliminary proposals (up to 3 pages) are assessed by the relevant Domain Committee or Trans-Domain Proposal Standing Assessment Body (TDP-SAB). Authors of successful preliminary proposals are then invited to submit full proposals which are subject to external peer review and further assessment by the Domain Committee or Trans-Domain Proposal Standing Assessment Body.

Current Actions are monitored by the Domain Committees through the presence of Domain Committee “Rapporteurs” at Action meetings and by annual reports and presentations by Actions to their respective Domain Committees.

Finally, there is a **final evaluation** of completed Actions through an External Evaluation Panel whose report is considered and approved by the Domain Committee.

At the sharp end of COST are the Actions themselves. These Actions usually have a lifetime of 4 years and have an average budget of around EUR 90 000 per annum to support networking activities. Once a proposal has been assessed, it is referred to the CSO for formal approval. Each Action is then opened for COST Member States to join it by accepting a formal Memorandum of Understanding (MoU). Once five acceptances have been received, the Action can be launched. Each Action is under the supervision of a Management Committee (MC), also constituted on the basis of two representatives per participating country.

Normally, Management Committees form working groups addressing specific topics of the Action's work programme, described in the Technical Annex to the Memorandum of Understanding.

The budget of COST Actions covers support for Management Committee and Working Group meetings, specialist workshops and seminars, including large final conferences, publications and dissemination, training schools and research conferences and short-term scientific missions (STSMs) for the support of exchange visits between the laboratories of the Action participants.

Results of COST Actions are of scientific importance in that they produce substantial contributions to the scientific and technical literature and contribute to research training. This contribution to science is widely recognised both within and outside Europe. COST Actions are frequently the precursors for successful projects in the EU Framework Programme, especially networking tools such as Networks of Excellence.

COST Actions contribute to European competitiveness and to standardization bodies and may even generate small companies (SMEs). COST Actions have a societal importance in their contribution to knowledge, to its wider dissemination to policy makers and the public at large and also for tackling problems deriving from pressing societal needs.

Non-COST countries or international organisations that have an interest in COST Actions are welcome to join, provided there is mutual benefit in such collaboration. This participation covers the whole world and provides an additional reinforcement to research networking.

COST in the Framework Programme and the ERA

COST is supported by a specific part of the EU RTD Framework Programmes. This is organised through a Coordination and Support Action grant agreement between the European Commission and the European Science Foundation (ESF), appointed by COST as its legal entity to act as implementing agent on behalf of COST. The ESF provides the administrative, scientific and technical secretariat for COST Domain Committees and Actions through the COST Office. An agreement between COST and the ESF enables the EC-ESF contract to be granted.

COST is an important element in the European Research Area. The agreement between it and the ESF brings together two major research networking structures enabling a closer and synergetic relationship to be fostered. There is an active partnership between the European Commission and COST whose object is to ensure both the complementarity between COST and the Framework Programmes and to secure links with the overall activities of the Commission. COST has also created a close working relationship with EUREKA and is developing its contacts with European standardization bodies.

Instruments for financing of COST Action activities

COST aims to stimulate European cooperation of nationally funded research activities in the field of Scientific and Technical Research. Accordingly, there is no direct research funding by COST and the budget of COST is targeted at the expenses needed to support the cooperation between the various participating organisations' scientific activities within each COST Action.

Two models of support currently apply:

- the COST Grant System (CGS)
- the 'Pay as you go' system

COST Grant System (CGS)

The aim of the COST Grant System is to provide a flexible way of financing COST Action activities in accordance with the rules for the "Financial Instruments" of the COST Vademecum and based on the decisions of the Management Committee.

The annual grant is based on the detailed annual work programme and the budget plan of the Action, and on the budget allocation to the Action as part of the overall Domain funding.

The COST Grant Agreement is a contract between the COST Office and the grant holder selected by the Action's Management Committee, following a request from and negotiations with the Action's Management Committee.

The grant is used by the grant holder to execute the financial and scientific secretarial administration and coordination of the Action, and payments related to the activities planned during the relevant grant period in accordance with the COST financial rules and decisions of the Action's Management Committee. The grant holder is then responsible for the timely reimbursement of eligible costs in accordance with the COST reimbursement rules for the various COST instruments, and is also responsible for the proper execution of the work plan agreed by the Action's Management Committee. The grant holder's scientific, administrative and financial roles are notably the following: financial reporting, scientific and administrative secretariat, coordination, liaison, and support for publication and dissemination activities.

If required, the grant holder may receive a fee of up to 15% of the actual science expenditures to support their scientific coordination.

'Pay as you go' system

In the 'pay as you go' system: the activities are funded directly by the COST Office on an event by event basis, participant per participant.

You will find hereafter a non-exhaustive list of activities financed by COST.

1. Meetings

a. Travel and subsistence

Meetings may be organised by a Management Committee in any COST country, which has accepted the MoU of the Action. They should be open, in general, to the whole scientific community and act as a showcase for the activities of the Action.

Travel and subsistence covers the reimbursement for scientists for their attendance of Management Committee meetings, Working Group meetings, Core Group meetings, workshops, conferences, Domain Committee meetings or synergy meetings with selected research activities.

b. Local Organiser support

Local organiser Support is a financial contribution to the total organisation cost of a meeting (see a. above).

2. Short-term scientific missions (STSM) – Inter-Laboratory Exchange Visits

Missions or exchange visits are aimed at strengthening the existing networks by allowing scientists to visit an institution or laboratory in another COST country to foster collaboration, to learn a new technique or to make measurements using instruments and/or methods not available in their own institution/laboratory. They are particularly intended for young scientists.

3. Training Schools

“Training Schools” within the context of the Action topic are aimed at providing dissemination of the Action activities and intensive training in a new emerging subject in one of the laboratories of the Action with unique equipment or know-how. The participants are basically but not exclusively young researchers from across Europe, but these schools also cover appropriate re-training as part of ‘life-long learning’.

4. General Action Support Grant (GASG)

This grant can be used for the support and development of an Action website as well as for general support of the Action’s MC operation, such as small-scale Action-related ad-hoc activities and support for preparatory events. This grant will be allocated as a fixed grant to the MC chair. He has to report on the expenditure at the MC meeting.

5. Dissemination, Publications

The dissemination of the scientific results of the COST activities is a key value of COST. Therefore, the aim of the dissemination and communication policy is to inform the members of the networks, the scientific community, the potential beneficiaries and policy makers about the outcome of the Actions and their planned programmes and activities.

A series of dissemination channels are available for the COST Actions and Domain Committees and can be funded from the COST Office budget:

Publications are the classical means of disseminating scientific results. Emphasis is placed on publishing:

- In scientific journals as contributions or special issue according to standard procedures for submission of manuscripts.
- As books produced by reputable publishers in the field of the relevant scientific research areas.
- As proceedings of workshops and conferences.
- General information leaflets and brochures.

Electronic media

- For COST, the use of the internet is an important tool for the dissemination of scientific activities, programmes and results.
- The COST Office develops and maintains a central website where all relevant information about the COST activities is available to the general public. This website contains an extensive number of links to other relevant websites.
- In addition each Action will normally have its own website where all the specific Action activities are accessible.

Press releases and news flashes

This is a fast and efficient way to update the scientific community and policy makers about COST activities.

6. Assessment, monitoring and evaluation of COST Actions

The assessment, monitoring and evaluation of COST Actions is the task of the COST Domain Committees ensuring that COST activities have a high standard of scientific and technical quality. While the Domain Committees themselves are composed of competent and respected experts in their domains, they are supplemented by external experts (peer review/assessments).

7. Subsidies

It may occasionally be considered necessary by a Management Committee or Domain Committee to request subsidies to review, co-ordinate, evaluate or summarise the results of its activities,

execute studies, or to prepare a document for use by the broader scientific community. Funds may be requested from the COST Office for such an activity. This also covers strategic meetings and related activities carried out by Domain Committees.

8. COST Workshops and Strategic Initiatives

COST Workshops

The COST Office is entitled to support different kinds of workshops. Among these, there are the usual Action workshops (organised by Actions under their auspices) and Exploratory Workshops.

Exploratory Workshops are organised by the COST Office and normally follow initiatives from the COST Domain Committees, the ESF Standing Committees, the European Commission or the European Parliament. Examples: 'What Role for GM Technology in the Future Competitiveness of European Agri-Food Sector?' (Ljubljana, November 2008), 'The Energy-Water Nexus: Managing the Links between Energy and Water for a Sustainable Future' (A series of events taking place in 2008 and 2009), 'Transport and Environment in Different Contexts' (Ghardaïa, 2009).

COST Strategic Initiatives

Interdisciplinary Science Initiatives have the objective to foster rapid response schemes for trans-Domain activities, to prepare for targeted activities and to be potential breeders of new scientific communities around multidisciplinary topics, which could also spin off proposals for new COST Actions. Example: 'A European Network of Networks: New Perspectives on Landscapes' (A series of events in 2008).

Strategic Workshops are workshops of a particular strategic relevance involving the JAF group in the decision making process. They give COST an opportunity to develop outreach to the scientific community through the organisation of specific events where a COST Action, or several COST Actions can interact with experts drawn from the scientific community at large. Examples are: 'Global Change and Sustainable Development of Mountain Regions' (Innsbruck, April 2008), 'COST Foresight 2030' (A series of events taking place between 2008 and 2010), 'Principles and Development of Bio-Inspired Materials' (Vienna, April 2010). - COST Strategic Workshops will become **COST-ESF Frontiers of Science Workshops** if they are jointly organised and funded both by COST and ESF. Examples: 'Complex Systems and Changes: Water and Life' (Taormina, October 2008).

COST Science Days are events organised to increase the visibility of COST and to present the main results obtained in COST Actions to a wide audience. Example: 'COST Training Day' (Sofia, February 2009). - COST Science Days become **COST-ESF Science Days** if they are jointly organised and funded both by COST and ESF.

COST-ESF High Level Conferences are organised, and jointly sponsored, within the framework and profile of the ESF Research Conferences Scheme. They address new fields of scientific challenges and their scientific organisation is in the hands of committees representing COST Domain Committees and ESF Standing Committees on an equal basis. Examples: 'Natural Products Chemistry, Biology and Medicine' (Acquafredda di Maratea, May 2008), 'Systems Chemistry' (Acquafredda di Maratea, October 2008), 'Natural Products Chemistry, Biology and Medicine II' (Acquafredda di Maratea, August 2009), 'Complex Systems and Changes. Darwin and Evolution: Nature-Culture Interfaces' (Sant Feliu de Guixols, September 2009), 'Systems Chemistry II: Evolution and Systems' (Balatonfüred, October 2009), 'Law and Neuroscience: Our Growing Understanding of the Human Brain and its Impact on our Legal System' (Acquafredda di Maratea, October 2009).

9. Participation of Institutions from non-COST countries

(a) non-COST Countries

COST is open to participation of institutions from non-COST countries in COST Actions following the bottom-up principle and provided it is of mutual benefit, to be approved by the CSO on a case-by-case basis.

In general researchers from Institutions from non-COST countries do not receive economic support from COST.

(b) Near Neighbour policy

There is a notable provision to stimulate the participation of researchers from the non-COST "near neighbour countries": Balkan countries (Albania, Montenegro), Mediterranean countries (Algeria, Egypt, Lebanon, Libya, Morocco, The Palestinian Authority, Syria and Tunisia) and Eastern European countries (Armenia, Azerbaijan, Belarus, Georgia, Moldova, Russia and Ukraine): up to two researchers from each country may be reimbursed for attendance of COST Action meetings.

Moreover, researchers from these countries are eligible to participate in other activities decided at the level of individual Actions (such as meetings, short-term scientific missions, training schools and conferences).

(c) Reciprocal Agreements

In addition, COST set up reciprocal arrangements (up to now with Australia, New Zealand and South Africa). The financial contribution provided by COST for a European scientist travelling to such a country is a fixed grant.

10. Early Stage Researchers

COST follows an overall policy of increasing its support to early stage researchers. The preferred strategic initiative is to use the existing instruments and to apply them in favour of early stage researchers and as means of capacity building. Based on the availability of funds, the support measures described in detail in the COST Document COST 212/07 (see www.cost.esf.org/guidelines) has been implemented by the COST Office or recommended to the Domain Committees, the Actions or the National Coordinators.

The term “Early Stage Researchers” used in this document is defined as any researcher whose career has not yet exceeded 10 years after achievement of a PhD/doctorate (or similar experience), at the time of involvement in the COST Action.

Domains and Action numbering

The COST Domain structure is reflected in the Action numbering which is based on 6 characters. 2 first letters of the Domain acronym – year in 2 digits – running number. (see below)

1. Biomedicine and Molecular Biosciences (BMBS)
ex: BM0901, Bxx*
 2. Chemistry and Molecular Sciences & Technologies (CMST)
ex: CM0901, Dxx*
 3. Earth System Science & Environmental Management (ESSEM)
ex: ES0901, 6xx*, 7xx*
 4. Food and Agriculture (FA)
ex: FA0901, 8xx*, 9xx*
 5. Forests, their Products and Services (FPS)
ex: FP0901, Exx*
 6. Individuals, Societies, Cultures and Health (ISCH)
ex: IS0901, Axx*
 7. Information and Communication Technologies (ICT)
ex: IC0901, 2xx*
 8. Materials, Physical and Nanosciences (MPNS)
ex: MP0901, 5xx*, Pxx*
 9. Transport and Urban Development (TUD)
ex: TU0901, 3xx*, Cxx*
- + Trans-Domain Proposals (TD)
ex: TD0901

** Actions that started before the introduction of the Open Call keep the old numbering system (up to 2006)*

Country codes

COST Member States

Austria: AT	Italy: IT
Belgium: BE	Latvia: LV
Bosnia-Herzegovina: BA	Lithuania: LT
Bulgaria: BG	Luxembourg: LU
Croatia: HR	Malta: MT
Cyprus: CY	Netherlands: NL
Czech Republic: CZ	Norway: NO
Denmark: DK	Poland: PL
Estonia: EE	Portugal: PT
F.Y.R.of Macedonia: MK	Republic of Serbia: RS
Finland: FI	Romania: RO
France: FR	Slovakia: SK
Germany: DE	Slovenia: SI
Greece: GR	Spain: ES
Hungary: HU	Sweden: SE
Iceland: IS	Switzerland: CH
Ireland: IE	Turkey: TR
Israel: IL	United Kingdom: UK

Participating Non-COST countries

Albania: AL	Republic of Korea: KR
Algeria: DZ	Lebanon: LB
Andorra: AD	Malaysia: MY
Argentina: AR	Mexico: MX
Armenia: AM	Republic of Moldova: MD
Australia: AU	Morocco: MA
Azerbaijan: AZ	New Zealand: NZ
Brazil: BR	Palestine: PS
Belarus: BY	Pakistan: PK
Canada: CA	Russia: RU
China: CN	Tunisia: TN
Colombia: CO	Singapore: SG
Cuba: CU	South Africa: ZA
Egypt: EG	Ukraine: UA
Georgia: GE	United Arab Emirates: AE
Hong Kong: HK	United States of America: US
India: IN	Vietnam: VN
Japan: JP	

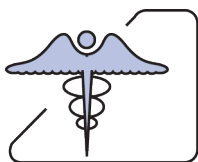
COST Actions

Biomedicine and Molecular Biosciences (BMBS)

E-mail: bmbs@cost.esf.org

Tel: +32 (0)2 533 38 71

Web: www.cost.esf.org/bmbs



The Domain *Biomedicine and Molecular Biosciences* covers all areas of medicine as practiced in Europe and basic, preclinical and clinical medical research developed to materialise the “bench to bedside” concept. Research in biomedicine emphasises acquisition of knowledge of normal functions of the human body and alterations of them in the case of diseases. These functions may be conducted at the molecular and the whole body level, not excluding its integration in the environment (food, water supply, pollutants, forests, urban environment, etc.). The following examples illustrate aspects of actual research in this Domain. The scope of the Domain is not restricted to these activities; it should be noted that networking of cutting edge specific research with a high degree of complexity and multidisciplinary is encouraged.

Molecular Biosciences encompass all areas of genomics, proteomics and metabolomics. They are not limited to research in humans, but may also concern research in plants, viruses, micro-organisms, and animals. Basic and applied biomolecular research is addressed, issues connected with forestry and agriculture included. The BMBS research also includes issues of genome, proteins (structures and functions), lipids, study of the Central Nervous System and neuronal connections, cognitive neuroscience, immune system, cell migration, cell dysfunctions (cancer), cellular mechanisms of diseases, contagious diseases (animals to humans transmissible diseases included), tropical diseases.

Biomedicine and Specific Technologies: some of the related BMBS research areas include advanced imaging and treatment techniques (basic research, diagnosis, treatment procedures), medical devices and new medicines, advanced medical research on biomaterials.

Micro- and Nanomedicine (including nanotechnologies), biomedicine/ molecular bioscience and pharmacology in extreme conditions such as climate change, and outer space conditions.

Research in BMBS is also concerned with some crucial interdisciplinary issues in the fields such as bioinformatics,

biomedical engineering, medical physics and chemistry, mathematical models in medicine. Therefore, new ideas and initiatives are welcome as well as those with high interdisciplinary elements, high degree of innovation and close links and overlaps with other domains.

B24 - Laboratory animal science and welfare

Chair: Prof. Timo NEVALAINEN (FI)

Rapporteur: Prof. Ursula GUNDERT-REMY (DE)

The Action's main objective is to increase the knowledge necessary for both ethically sustainable and scientifically valid use of laboratory animals in research. These objectives reflect cost-benefit thinking, where costs should be minimised, and benefits maximised. The Action serves as an interaction platform and idea generator for scientists and civil servants and paves the way for European research consortia. It aims at the production of research results and collection of technical data based on scientific studies, and ultimately seeks tools for real life implementation. Delivery of the processed data is done through harmonised training of those working with animals and as guidelines and recommendations, which should go beyond regulatory minimum standards. A special aim of the Action, which is currently in its final preparation stage, is the compilation of relevant guidelines and recommendations produced prior to the Action and by the Action into a publication (book), which would allow all interested groups within the field to become familiar with the recommendations in a convenient, but efficient way.

End of Action: 2009

Parties: AT, BE, CH, CZ, DE, DK, EE, ES, FI, FR, GR, HR, HU, IE, IL, IT, LT, MT, NL, NO, PT, SE, TR, UK

B25 - Physiologically based Pharmaco-Toxicokinetics and Dynamics

Chair: Prof. Alan BOOBIS (UK)

Rapporteur: Prof. Jacques BARBE (FR)

The main objective of the Action is to improve the utility and interpretation of scientific information obtained either during pharmaceutical product development or, subsequently, through observations in humans, to predict the safe and effective use of drugs and other chemicals in the Medicine and Health field.

End of Action: 2009

Parties: BE, CH, CZ, DE, DK, ES, FI, FR, GR, IE, IL, IT, MT, NL, NO, PT, RO, RS, SE, SK, TR, UK

Non-COST participation: Health Canada (CA), ECVAM (ISPRA, JRC)

B26 - Obstructive Sleep Apnea

Chair: Prof. Walter McNICHOLAS (IE)

Rapporteur: Prof. Jaroslav VESELY (CZ)

The main objectives are:

- To assess the role of the Obstructive Sleep Apnea Syndrome (OSAS) as a possible cause of increased cardiovascular risk.
- To coordinate studies on pathogenetic mechanisms of increased cardiovascular risk of OSAS (i.e., inflammation, oxidative stress, endothelial dysfunction, metabolic derangements, altered autonomic control associated with exposure to intermittent hypoxia).

End of Action: 2010

Parties: BE, CH, CY, CZ, DE, DK, ES, FI, FR, GR, IE, IL, IS, IT, LT, LV, PL, PT, RS, SE, SK, TR, UK

B27 - Electric Neuronal Oscillations and Cognition (ENOC)

Chair: Prof. Jordan POP-JORDANOV (MK)

Rapporteur: Dr Hans STØDKILDE-JØRGENSEN (DK)

The main objective is to increase the knowledge of the electric neuronal oscillations correlated to memory and attention as the basis for neuronal regulation aimed at enhancing the human performance and health.

End of Action: 2009

Parties: AT, BG, CH, DE, DK, EE, ES, FR, HR, IE, IL, IT, LT, MK, NO, PL, RS, SI, TR, UK

Non-COST participation: University of Quebec (CA), Institute of Neurology and Neurosurgery (CU), The Institute of Physical and Chemical Research - RIKEN (JP), University of Auckland (NZ), Institute of Molecular Biology and Biophysics (RU), Institute of the Human Brain (RU), State Research Institute of Physiology (RU), Faculté des Sciences de Tunis (TN), University of California (US), New York University School of Medicine (US)

B28 - Array Technologies for BSL3 and BSL4 Pathogens

Chair: Dr Patrick BUTAYE (BE)

Rapporteur: Dr Hemma BAUER (AT)

The main objective is to increase knowledge on BSL3 and BSL4 agents in order to support the development of more accurate diagnostics, vaccines and therapeutics, and to better understand epidemiology of these highly pathogenic microorganisms that

potentially can be used as biological weapons.

End of Action: 2010

Parties: AT, BE, BG, CH, CZ, DE, DK, ES, FR, GR, LU, NL, PT, RO, RS, SE, SK, TR, UK

Non-COST participation: Canadian Science Centre for Human and Animal Health (CA)

B29 - Chronic Obstructive Pulmonary Disease (COPD)

Chair: Prof. Jadwiga WEDZICHA (UK)

Rapporteur: Prof. Per TEISBERG (NO)

The main objective of the COST Action B29 is to identify the best definition and characterisation of COPD exacerbations (COPD-Exac) and their role in the natural history of COPD with the key purpose to better understand COPD-related morbidity and mortality.

End of Action: 2010

Parties: BE, DE, DK, ES, FR, IE, IT, NL, NO, PL, SE, UK

B30 - Neural Regeneration and Plasticity (NEREPLAS)

Chair: Prof. Jose M. DELGADO GARCIA (ES)

Rapporteur: Prof. Zoran GRUBIC (SI)

The main objective of the Action is to increase the knowledge on the neuronal processes underlying functional recovery following traumatic, ischemic or degenerative damage of the nervous system, and their relationship with those neural processes involved in motor and cognitive learning.

End of Action: 2010

Parties: AT, BE, CY, CZ, DE, ES, FR, GR, HR, HU, IL, IT, MK, NL, NO, PL, PT, RO, RS, SE, SI, SK, TR, UK

Non-COST participation: Iliia Chavchavadze State University (GE), Bogomoletz Institute of Physiology (UA)

B35 - Lipid Peroxidation Associated Disorders (LPO)

Chair: Prof. Neven ZARKOVIC (HR)

Rapporteur: Prof. Marieta COSTACHE (RO)

The main objective of the Action is to improve understanding, monitoring and control of lipid peroxidation in medicine and related biosciences and technologies. More specifically, the Action aims to: improve methods for detection and quantitation of lipid peroxidation for use in research and subsequent application

(through biotechnology) to clinical science; determine the prevalence of lipid peroxidation products in various inflammatory diseases and its correlation to disease severity or outcome; elucidate the metabolism of important lipid peroxidation products and improve our understanding of their proinflammatory and other biological effects; develop and test novel antioxidants that could have future applications in therapy for inflammatory diseases.

End of Action: 2010

Parties: AT, BE, CY, CZ, DE, DK, ES, FI, FR, GR, HR, HU, IL, IT, LT, LV, NO, PL, PT, RO, RS, SK, TR, UK

Non-COST participation: National Medical University of Lviv (UA)

BM0601 - Advanced Methods For The Estimation Of Human Brain Activity And Connectivity (NEUROMATH)

Chair: Prof. Fabio BABILONI (IT)

Rapporteur: Prof. Sacit KARAMÜRSEL (TR)

The main objective of the Action is to increase the knowledge on the mathematical methods able to estimate the cortical activity and connectivity in the human brain from non invasive neuroelectric and hemodynamic measurements. NEUROMATH will allow scientists to harmonize their computational tools in order to offer a comprehensive approach to the problem of the estimation of brain activity and connectivity for sensory and cognitive behavioural tasks. NEUROMATH also offers to the young neuroscientists, mathematicians, physics, and engineers a comprehensive review of such methods as well as regular training courses and associated didactic material on this topic.

End of Action: 2011

Parties: AT, BE, CH, CY, DE, DK, EE, ES, FI, GR, HR, HU, IE, IT, MK, NO, PL, RO, RS, SE, TR, UK

Non-COST participation: Van der Veer Institute for Parkinson's and Brain Research (NZ)

BM0602 - Adipose Tissue: A Key Target for Prevention of the Metabolic Syndrome

Chair: Prof. Jürgen ECKEL (DE)

Rapporteur: Prof. Per TEISBERG (NO)

Obesity is the major risk factor for the metabolic syndrome, which is an epidemic disease that generates a severe socio-economic burden for the public health systems. Enhanced production of proinflammatory cytokines by adipose tissue may represent a key event in the pathogenesis of this syndrome. The main objective of this Action is to improve our knowledge on the specific role of adipose tissue in the development of the metabolic syndrome. This

approach is based on the hypothesis that adipose tissue functions as a hub between obesity-related exogenous factors (nutrition, life style) and the molecular events that induce manifestation of the metabolic syndrome. Major multidisciplinary research tasks of the network aim to analyse the central regulation of food intake and adipocyte storage function, to identify novel adipokines, to study their impact for inflammation, peripheral insulin resistance and vascular and beta cell dysfunction, and to define the role of adipose tissue in the manifestation of type 2 diabetes.

End of Action: 2011

Parties: AT, BE, BG, CH, CY, CZ, DE, ES, FI, FR, HU, IL, IT, NL, NO, PL, RO, RS, SE, SI, SK, TR, UK

Non-COST participation: University of Queensland (AU), The Hospital for Sick Children (CA), University of Auckland (NZ)

BM0603 - Inflammation in Brain Disease (NEURINFNET)

Chair: Prof. Trevor OWENS (DK)

Rapporteur: Prof. Roland POCHET (BE)

Brain disease imposes a huge burden on the Europe health systems, that increases as the population ages, with increased life expectancy. Neuroinflammation and neurodegeneration are major components of many brain diseases. This COST Action addresses the crossover between these disease pathologies, by integrating research into multiple sclerosis (MS), predominantly a neuroinflammatory disease, and Alzheimer's disease (AD), predominantly neurodegenerative. The basis for the Action is that neurodegeneration and neuroinflammation occur in both AD and MS, leading to the realization that significant advance towards therapies and cure requires intersubject collaboration. This Action creates a network (NEURINFNET) of European experts in neuroinflammation and neurodegeneration with the goal to develop and focus cross-cutting studies of MS and AD, to develop novel reagents and technologies, and to foster a multidisciplinary approach to research into brain disease. The NEURINFNET network establishes workshops, training schools and courses, to have maximal impact on research carried out in member laboratories. Outcomes are integration of research perspectives and technologies, gain of knowledge, and improved prospects for development of therapies. This approach can significantly facilitate progress towards novel therapeutics for MS and AD, and paves the way for major health and economic benefits.

End of Action: 2011

Parties: AT, CH, DE, DK, ES, FR, GR, IL, IT, NL, NO, PL, PT, SE, UK

Non-COST participation: Ilia Chavchavadze State University (GE)

BM0604 - Myelin orphan diseases in health (MYELINET)

Chair: Prof. Odile BOESPFLUG-TANGUY (FR)

Rapporteur: Dr Anu JALANKO (FI)

The objective of the Action is to better understand and fight diseases affecting the CNS nerve-insulating myelin such as inherited leukodystrophies and white matter diseases of the premature. These pathologies are widely studied around Europe. Given the rarity of specific diseases, however, the critical mass to generate scientifically exploitable data is lacking. Therefore this Action is to combine a number of recognized European research groups for a coordinated approach to fight these diseases. Four Working Groups are created: WG1-Functional biology and genomics / post-genomics analysis; WG2-Structural biology, proteomics and NMR analysis for the development of diagnostic tools and drug design; WG3-Prevention and new therapeutic options; WG4-Information and communication. MYELINET is to promote medical, scientific and technical exchange by the creation of a common database; develop teaching, training and exchange programs for students; organise meetings and workshops; debate ethical and societal implications and concerns of research issues; communicate with the public and inform affected families; and interact with experts of related diseases such as multiple sclerosis. A yearly international congress coupled to a more general public information day will be organised. This is to pave the way for a more ambitious Consortium to prepare a European FP7 project.

*End of Action: 2011**Parties: AT, BE, CH, CY, DE, DK, ES, IL, IT, NO, PL, UK***BM0605 - Consciousness: A Transdisciplinary, Integrated Approach**

Chair: Prof. Axel CLEEREMANS (BE)

Rapporteur: Prof. Srecko GAJOVIC (HR)

Consciousness is considered to be one of the most significant scientific problems today. Understanding the mechanisms involved in the conscious states we enjoy when perceiving, feeling, thinking, or acting requires a highly interdisciplinary approach that involves different disciplines (from neuroscience to philosophy; from artificial intelligence to psychology), different methods (behavioural, computational, and brain imaging methods), and different populations (from animals to pathological cases). While a majority of researchers in the domain works in Europe, there is little concerted effort to bring this community together, and the domain's interdisciplinary nature is a genuine challenge for junior scientists. This COST Action therefore aims to create a strong network of active senior and junior scientists so as to contribute to the emergence of a "consciousness community" in the EU. The Action is focused on

improving the understanding of (1) the defining features, (2) the behavioural markers, (3) the computational principles, and (4) the neural mechanisms associated with conscious experience in humans and animals. These objectives are achieved by coordinating research efforts on four central topics: (1) fundamental issues, (2) technologies, (3) experimental paradigms, and (4) clinical, societal and ethical implications.

End of Action: 2011

Parties: BE, BG, CY, DE, DK, EE, ES, FI, FR, HU, IT, MK, NL, NO, PL, RS, UK

BM0606 - Collaborative association studies in breast cancer

Chair: Prof. Peter DEVILEE (NL)

Rapporteur: Prof. Aleksandar DIMOVSKI (MK)

Breast cancer has a strong genetic component, but most genes underlying the disease are unknown. New technologies allow novel susceptibility alleles to be identified, by typing large numbers of single nucleotide polymorphisms (SNPs). To provide reliable risk estimates, it is necessary to type these SNPs in very large epidemiological studies. This Action will bring together groups from at least 15 countries, with combined resources of over 35000 cases and 35000 controls. Studies of 12000 BRCA1 and BRCA2 carriers will also be included, to allow the modifying effect of SNPs in carriers to be evaluated. Combined analyses will provide reliable assessment of the risks associated with SNPs individually and in combination, and the interactions with lifestyle risk factors. These analyses will provide the basis for individual prediction of risk, which will improve genetic counselling and prevention programmes. They will also improve understanding of breast cancer aetiology, and provide potential new targets of cancer therapy. The Action will also assist in the development of infrastructure and expertise in high-throughput genotyping.

End of Action: 2011

Parties: BE, CY, DE, DK, ES, FI, FR, GR, IL, MK, NL, NO, PL, UK

BM0607 - Targeted Radionuclide Therapy (TRNT)

Chair: Prof. Marion DE JONG (NL)

Rapporteur: Prof. Maria BONSIGNORE (IT)

Molecular targeted radionuclide cancer therapy is becoming of increasing importance, especially for disseminated diseases. Systemic chemotherapies often lack selectivity; targeted radionuclide therapy has important advantages as the radioactive cytotoxic unit

of the targeting vector is specifically directed to the cancer, sparing normal tissues. The basis of this COST Action is the great potential of targeted radionuclide therapy using a variety of vectors and radionuclides. This Action brings together the different disciplines involved and provide a reliable and rapid means for developing new (fundamental) knowledge, method standardization and products while promoting transfer of technologies. This Action on cancer therapy using innovative targeting nanomedicines is highly multidisciplinary: nuclear medicine physicians, clinical oncologists, surgeons, physicists, radiobiologists, (in)organic chemists, radiochemists, radiopharmacists, pathologists and scientists from biomics participate in it. They define innovative new targets for cancer therapy, develop lead compounds and new radiolabelled ligands as vectors, perform molecular imaging and biologic testing, develop improved software and protocols for dosimetric calculations and select new vectors for early human use.

End of Action: 2011

Parties: AT, BE, CH, CZ, DE, DK, ES, FI, FR, GR, IT, NL, PL, PT, RO, RS, SE, SI, UK

BM0701 - Antibiotic Transport and Efflux : New Strategies to combat bacterial resistance (ATENS)

Chair: Dr Jean-Marie PAGES (FR)

Rapporteur: Prof. József MOLNÁR (HU)

The main objective of the Action is to create a framework that involves collaboration between experts in the many fields of science necessary for understanding efflux-mediated resistance at the molecular and genetic levels and to translate this knowledge into the development of diagnostic tests and antimicrobials that will, in the future, help control MDR infectious diseases throughout Europe. Multidrug resistant (MDR) bacteria constitute an ever-increasing threat to public health. The principal mechanism of MDR is the active expulsion of drugs by bacterial pumps that expel unrelated compounds. A coordinated European effort is urgently needed for the control of drug efflux mechanisms that mediate resistance against all antibiotic families in bacterial pathogens. The Action will include scientists with competences ranging from clinical bacteriology to chemical synthesis. Its sub-objectives are to determine prevalence and evolution of bacterial drug efflux mechanisms, identify risk factors, decipher genetic regulation of this mechanism, elucidate the functional and structural bases of efflux resistance, and to synthesize and evaluate molecules that obviate efflux-mediated resistance. Four Working Groups are foreseen: Clinical and veterinary bacteriology; Molecular basis of drug efflux; Structural genomic, bioinformatics and molecular modelling; Production of new molecules, chemosensitizers or inhibitory agents. This multi- and interdisciplinary approach will identify new targets and provide a

generation of effective agents against efflux mechanisms in MDR bacterial pathogens.

End of Action: 2012

Parties: BE, CH, DE, DK, ES, FR, HU, IE, IL, IT, LT, PL, PT, TR, UK

BM0702 - Urine and Kidney Proteomics

Chair: Dr Antonia VLAHOU (GR)

Rapporteur: Prof. Barbara CANNON (SE)

The main objective of the Action is to catalyze translational research in kidney diseases via standardization in all aspects of urine and kidney proteomics analysis from specimen collection and databasing up to data processing and analysis. Renal diseases constitute a major health threat in all societies. Proteomics is the large-scale analysis of the proteins of biological samples. Application of proteomics methodologies in the investigation of renal diseases will catalyze the development of optimal diagnostic and prognostic tests. Despite preliminary successful efforts, the interactions between the multidisciplinary teams of scientists working on kidney diseases and proteomics are still limited in Europe. EuroKUP will foster the generation of a strong and growing multi disciplinary network of scientists, focusing on renal and urine proteomics. The Action will focus on the identification of reference clinical centres for major kidney diseases and establishment of uniform clinical databases, standardization and optimization of procedures, integration of data to systems biology approaches and dissemination of information for application to diagnostic/prognostic procedures. Multiple scientific, technological and societal benefits to the European Union are expected, including but not limited to setting the urgently needed standards for clinical proteomics and translational research and improving the clinical situation in chronic renal diseases.

End of Action: 2012

Parties: AT, BE, CH, CY, CZ, DE, DK, ES, FI, FR, GR, IT, MK, NL, NO, PL, SE, UK

Non-COST participation: Baker IDI Heart and Diabetes Institute (AU)

BM0703 - Cancer and Control of Genomic Integrity (CANGENIN)

Chair: Dr Carina HOLMBERG-STILL (FI)

Rapporteur: Dr Mario VALLEJO (ES)

The main objective of the Action is to advance our knowledge on mechanisms that protect healthy cells from transforming into cancer cells. This Action will provide an interaction platform for research

focused on genomic integrity and epigenetics and their dysregulation in cancer. The Action will combine expertise in the fields of DNA damage response, transcriptional control, chromatin organization, and cancer epigenetics, and explore the mechanisms underlying normal and deregulated functions. It will combine multidisciplinary expertise in biochemical, biological and functional genomics approaches and in exploiting animal models. The Action will link experts in basic sciences with approaches in translational cancer research. Due to the highest clinical significance of understanding of the molecular basis of cancer progression, it will be of vital importance for the European researchers to develop strong points of interaction to provide them with a competitive edge, new research models and tools in cancer research.

End of Action: 2012

Parties: CH, DE, DK, EE, ES, FI, GR, HU, IT, LT, MK, NL, NO, PL, RS, TR, UK

BM0704 - Emerging EMF Technologies and Health Risk Management

Chair: Dr Alastair MCKINLAY (UK)

Rapporteur: Prof. Ursula GUNDERT-REMY (DE)

The main objective of the Action is to create a structure in which researchers in the field of EMF and health can share knowledge and information on electromagnetic fields (EMF). In recent years, there has been an unprecedented increase in the use of devices emitting electromagnetic fields (EMF). This impinges on every aspect of day-to-day living throughout Europe, whether in the home, in public places or at work. While the benefits to society of such technologies, for example in mobile and other personal radio-communications, are accepted, significant public and media concern continues to be expressed about increases in EMF exposure of people and potential related adverse effects on health. Particular concerns are focussed on what people often regard as the involuntary aspects of EMF exposure and often on the exposure of children or the unborn child. The key to addressing anticipated public and media concern about potential adverse health effects is foresight in respect of carrying out, coordinating and sharing knowledge of relevant multidisciplinary scientific research. The Action provides researchers with an effective vehicle for sharing multidisciplinary knowledge, encouraging multi-laboratory collaboration and for training of early-stage researchers in EMF health related research. It facilitates identifying how existing technologies change, what entirely new applications and services are introduced, what impact these would have on the levels and spectral nature of EMF exposure of people and what potential health consequences might arise.

End of Action: 2012

Parties: AT, BE, BG, CH, CY, CZ, DE, DK, ES, FI, FR, GR, HR, HU, IT, LV, MK, MT, NL, NO, PL, PT, RO, SE, SI, UK

BM0801 - Translating genomic and epigenetic studies of MDS and AML (EuGESMA)

Chair: Prof. Ken MILLS (UK)

Rapporteur: Prof. Rosa Bjork BARKARDOTTIR (IS)

There is an active research programme across Europe into the molecular mechanisms and mutations in AML (acute myeloid leukaemia) and MDS (myelodysplastic syndrome) which is focused on high level technologies such as mRNA or miRNA expression profiling, genome-wide epigenetic or genotyping. They are aimed at understanding the molecular basis of these diseases, to develop technologies for improving diagnosis, prognosis and a move towards personalised therapeutic choices. This Action will establish a wider European network to promote contacts and exchanges of experience and technology among laboratories involved in basic research and diagnostic services and promote the development of new resources and technological tools providing new insights into basic pathogenesis and improve clinical investigations. The European Genomic and Epigenetic Study on MDS and AML (EuGESMA) Action will establish a permanent network among outstanding groups who actively contribute to the understanding and integration of modern genomics technologies with the aim of translating these into a clinical environment.

End of Action: 2012

Parties: BE, BG, CH, CZ, DE, DK, ES, FI, FR, GR, IT, NO, PL, RS, UK

BM0802 - Life or death of protozoan parasites

Chair: Prof. Susan WELBURN (UK)

Rapporteur: Prof. Pedro MORADAS FERREIRA (PT)

The main objective of the Action is to build an extensive, multi-disciplinary translational network to advance knowledge and understanding of when, why and how protozoan parasites undergo programmed cell death (PCD).

Protozoan parasites play a central role in the field of human and animal health causing devastating diseases such as malaria and sleeping sickness. Given the rapid development of drug resistance in these organisms it is crucial that the development of novel drugs or vaccines is based on a detailed understanding of parasite/host biology and interaction. Programmed cell death (PCD), is a keystone of the life or death decision in cells of multicellular organisms and in their interactions with parasites. Evidence is rapidly growing for an important role of PCD in the life history of a range of protozoans, albeit involving molecular mechanisms and functions that may be unique to these parasites. Several European groups are at the forefront of the rapid growth of research devoted to various aspects of PCD-like processes in a range of protozoan parasites. Networking these teams will create a focus for this work and accelerate the

European impetus. Interactions will lead to greater dissemination of information on PCD mechanisms, markers and evolutionary concepts. Therefore they provide the potential to develop new tools and leading to breakthroughs in the processes involved in PCD, and thus to significant progress in the development of novel treatments.

End of Action: 2012

Parties: BE, CH, DE, DK, ES, FR, GR, IT, NL, PT, UK

BM0803 - A European network of the HLA diversity for histocompatibility, clinical transplantation, epidemiology and population genetics (HLA-NET)

Chair: Prof. Alicia SANCHEZ-MAZAS (CH)

Rapporteur: Prof. Roumen PANKOV (BG)

The main objectives of the Action are to network European research teams working on Human Leukocyte Antigen (HLA) molecular diversity in human populations, to lead to standardization of protocols and procedures for sampling, handling, storing and processing data and to the development of a user-friendly bioinformatics platform accessible to scientists in different fields. The molecular characterization of the HLA polymorphism in human populations represents a crucial step in several disciplines concerned by public health (histocompatibility/transplantation and epidemiology) and also constitutes a main research focus in human molecular evolution (molecular population genetics). While needing similar requirements at the different levels of their analysis (good quality of sampling, high resolution HLA typing, powerful biostatistic analyses adapted to complex HLA data, easy access to specific population databases and understandable computer tools), the investigators working in these different fields are currently limited in their interactions. HLA-NET offers an innovative framework by which those scientists will put their expertise in laboratory work, clinical work, ethical issues, population genetics, biostatistics and/or computer science into contribution to elaborate consensual standards, define common procedures and share high quality data and tools. Highly significant scientific, technological and societal benefits are expected through the Action with immediate applications in donor-recipient matching, case-control studies and population genetics research.

End of Action: 2013

Parties: BE, CH, DE, DK, ES, FI, FR, GR, IT, LV, PT, SI, UK

BM0804 - European Network on Fish Biomedical Models (Acronym: EuFishBioMed) – a community resource to enable effective zebrafish partnering in projects targeting human diseases

Chair: Prof Uwe STRAEHLE (DE)

Rapporteur: Prof. Ilana NATHAN (IL)

The small fresh water fish zebrafish and medaka have become new model organisms for biomedical research. They currently represent the only vertebrate models to derive quantitative data on gene expression, signalling events and cell behaviour in real time in the living animal. Relevant phenotypes in fish mutants easily compare to those of other mammalian disease models and can be analysed in great details and much faster than in mammals.

The main objective of the Action is to promote research on and use of small fish as models for human diseases via the establishment of a communication platform.

End of Action: 2013

Parties: in progress (new Action)

BM0805 - HOX and TALE transcription factors in Development and Disease

Chair: Dr Miguel TORRES (ES)

Rapporteur: Prof. Morten MOLLER (DK)

Currently, HOX and TALE proteins occupy a central position in several areas of biomedical research. Many of the classical questions, such as the basis for their functional specificity, are beginning to yield answers. These gene families have also turned out to be a very useful model for the study of emerging questions such as the impact of epigenetics on the control of gene expression, or the balance between cell proliferation and differentiation, issues that might lie at the origin of several tumours associated with HOX and TALE genes.

The main objective of the Action is to gain knowledge on the role of the HOX/TALE homeodomain regulatory network in development and disease through the joint efforts of different laboratories with complementary expertises in approaches, biological processes, animal models and human diseases.

End of Action: 2013

Parties: in progress (new Action)

BM0806 - Recent advances in histamine receptor H4R research

Chair: Dr Ekaterini TILIGADA (GR)

Rapporteur: Prof. Pavle ANDJUS (RS)

The recently identified histamine H4 receptor (H4R) has attracted much interest because of its function and potential therapeutic exploitation. Principally expressed on haematopoietic cells, it plays a significant role in immune responses and inflammatory processes.

The main objective of this Action is to foster a multidisciplinary approach to H4R research, and to focus on the current state of play pertaining to the basic understanding and the huge therapeutic potential of this important new drug target.

End of Action: 2013

Parties: in progress (new Action)

BM0901 - European systems genetics network for the study of complex genetic human diseases using mouse genetic reference populations (SYSGENET)

Chair: *to be confirmed*

Rapporteur: *to be confirmed*

The main objective of the Action is to contribute to the discovery of gene networks that are involved in the development of complex genetic diseases in human.

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

End of Action: 2013

Parties: in progress (new Action)

BM0902 - Network of experts in the diagnosis of myeloproliferative disorders (MPD)*Chair: to be confirmed**Rapporteur: to be confirmed*

Philadelphia-negative myeloproliferative disorders (MPD) and related diseases are chronic blood diseases which had known little improvement in diagnosis and treatment for decades. In 2005 the discovery in Europe of the V617F mutation of JAK2 in MPD has renewed interest in these diseases. Since 2005, other mutations have been discovered in MPD and related diseases. New diagnosis tools will be designed and novel drugs will soon be tested. The objective of this Action, which regroups the main leaders in the field of MPD research, diagnosis and patient care, is to establish a European Network of experts in MPD and related diseases, MPD-EuroNet. This Action will formalize collaboration between European MPD experts in order to facilitate, optimize and standardize diagnosis and care for MPD patients in Europe. The network will centralize the diagnostic investigation of rare forms of MPD and related diseases.

*End of Action: 2013**Parties: in progress (new Action)***BM0903 - Skin Barrier and Atopic Diseases (SKINBAD)***Chair: to be confirmed**Rapporteur: to be confirmed*

The main objective of the Action is to bundle research expertise on atopic eczema (AE) and to identify key genetic and environmental risk factors.

Atopic eczema (AE) is an inflammatory skin disorder which is characterized by dry and itchy skin and a cutaneous hyperreactivity to environmental triggers. It affects at least 15% of children and 2-10% of adults and often predates the development of allergic airway diseases. Given its substantial prevalence, which has seen an enormous rise especially in industrialized nations, and the lack of cure, there is a pressing need to better understand its pathophysiology. Recent evidence from molecular genetics underscores the importance of the skin barrier genes in addition to genes promoting abnormal immunological pathways. To reveal the mechanisms by which environmental factors pursue the genetic predisposition into disease manifestation, a multi-disciplinary approach is needed with complementary experimental approaches including both in vivo studies and validated animal and in vitro models. This Action will bring together experts engaged

in epidemiology, genetics, clinical research and research on skin barrier and immunology.

End of Action: 2013

Parties: in progress (new Action)

TD0901 - Hypoxia sensing, signalling and adaptation

Chair: to be confirmed

Rapporteur: to be confirmed

Insufficient tissue oxygenation (hypoxia) occurs in a wide range of physiological and pathological conditions, including high altitude, embryonic development, wound healing, anemia, inflammation, cancer, and ischemic diseases such as infarction and stroke. A detailed understanding of the mechanisms of hypoxia sensing, signaling and adaptation is important to exploit this signaling pathway for therapeutic applications.

The main objective of the Action is to promote basic research on hypoxia signalling pathways, accelerating scientific progress on the levels of basic science, technology, pharmacology and translational medicine, with the ultimate goal to exploit hypoxia signalling pathways for clinical application.

End of Action: 2013

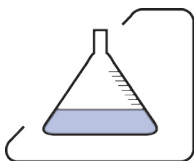
Parties: in progress (new Action)

Chemistry and Molecular Sciences and Technologies (CMST)

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The Domain Chemistry and Molecular Sciences and Technologies has the mission of fostering European expertise in discovering, understanding, producing and manipulating molecular species. These research activities aim to develop experimental, theoretical and analytical

tools to enhance the development of chemical transformations, reactivity and function. The CMST aims to apply such knowledge and innovation to industrial processes and production. The following examples are illustrative of actual research within this Domain, although it is not restricted to these activities alone.

Chemistry for life: a multidisciplinary collaboration between chemists, biologists, clinicians and agronomists in the design and development of new products for pharmacy, medicine, public health, and agriculture, incl. a more efficient and safe food production.

Manipulating molecular matter: learn how to handle, synthesise and manipulate matter at the molecular level, understand and control its reactivity and function, develop new catalysts to control the shape, size and properties of the product molecules; move from single molecule chemistry to supra- and macromolecular chemistry, producing smart materials tailored for specific applications.

Energy production: shifting from oil, natural gas and coal consumption to more efficient ways of using combustible fuels and investigate technologies based on renewable resources, in particular sunlight.

Caring for the planet: continuous improvement of the standards of living by reducing the environmental impact of technology in order to establish a sustainable growth, develop clean technology for innovative production, ensure increasingly accurate means for quality control, mastering ground remediation, hazard control, preserving and maintaining cultural heritage.

Space understanding and exploitation: rationalising processes occurring under extreme conditions in space and interstellar media, understanding processes occurring around spacecrafts, exploiting resources of stars and planets.

New ideas and initiatives are welcome as well as those with high interdisciplinary elements and close links and overlaps with other domains.

D31 - Organising Non-Covalent Chemical Systems with Selected Functions

Chair: Prof. Michael WARD (UK)

Rapporteur: Prof. Nikos KATSAROS (GR)

The main objective of the Action is to develop the knowledge in the extremely promising area of supramolecular synthesis, of organised and/or of self-organised chemical systems in order to master organisational complexity starting from simplicity. The Action is not only concerned with synthetic and structural aspects of supramolecular organisations, but aims at the design, preparation and optimisation of functional chemical systems.

End of Action: 2009

Parties: AT, BE, CH, CZ, DE, DK, ES, FI, FR, GR, HR, HU, IL, IT, LT, NL, NO, PL, PT, SE, SI, UK

D32 - Chemistry in High-Energy Microenvironments (CHEM)

Chair: Prof. David WALTON (UK)

Rapporteur: Dr Ladislav PETRUS (SK)

The main objective of the Action is to build on existing knowledge on chemical and biochemical processes in high-energy localised reaction microenvironments, in order to systematically tune the desired properties of such systems for selective applications in industrial, environmental, synthetic and analytical systems. Sonochemistry and microwave-enhanced chemistry will be employed, singly and in combination with each other or with electrochemistry and/or photochemistry. It is envisaged that multi-disciplinary teams will be formed to develop the specific activities, with the goal to investigate and further develop applications for these methodologies, which all possess various degrees of novelty within chemistry.

End of Action: 2009

Parties: AT, BE, BG, CH, CZ, DE, EE, ES, FI, FR, GR, HU, IE, IL, IT, LT, NL, PL, PT, SK, TR, UK

Non-COST participation: Australian Nuclear Science and Technology Organisation (AU), Kyushu University (JP)

D33 - Nanoscale Electrochemical and Bio-Processes (Corrosion) at Solid-Aqueous Interfaces of Industrial Materials

Chair: Prof. Wolfgang SAND (DE)

Rapporteur: Prof. Vasile PARVULESCU (RO)

The main objective of the Action is to develop the understanding

of biochemical processes at solid-aqueous interfaces leading to a universal approach to all biofouling related issues.

To reach the main objective the following 3 secondary objectives have to be fulfilled:

- 1) Development, adaptation and coupling of surface science methods for an improved analysis of the chemical processes occurring at the interfaces between materials and (micro) organisms,
- 2) Analyses of chemical and biological processes causing adhesion of macromolecules, (microbial) cells, consortia etc to materials surfaces,
- 3) Understanding of the elementary steps leading to biocorrosion, biofouling, biofilms (also in health-related environments or food industry), bioleaching etc in order to inhibit or improve the respective processes.

End of Action: 2009

Parties: AT, BE, CH, CZ, DE, DK, ES, FI, FR, HU, IT, LT, NL, RO, UK

D34 - Molecular Targeting and Drug Design in Neurological and Bacterial Diseases

Chair: Prof. Robert CRICHTON (BE)

Rapporteur: Zbigniew BRZOZKA (PL)

The main objective of the Action is to build on existing knowledge at the chemistry/biology interface, in order to develop new target-oriented molecules and classes of molecules with therapeutic applications in the area of bacterial and neurological diseases. Molecular targeting covers drug design, both on the basis of mechanistic studies and of structural studies of the molecules.

End of Action: 2010

Parties: AT, BE, CH, CZ, DE, ES, FR, GR, IE, IL, IT, LT, LV, NL, NO, PL, PT, SI, SK, UK

D35 - From Molecules to Molecular Devices: Control of Electronic, Photonic, Magnetic and Spintronic Behaviour

Chair: Prof. Antonin VLCEK (UK)

Rapporteur: Prof. Tapani PAKKANEN (FI)

The main objective of the Action is to increase the knowledge and understanding of molecular electronic, photonic, magnetic and spintronic behaviour and to design new active chemical systems and processes that could find use in molecular devices.

The collaborative research will be centred around the following three general areas:

1. Design and synthesis of molecular building blocks and their organisation into molecular systems with new photonic, electronic, magnetic and spintronic behaviour.
2. Search for and investigations of photonic, electronic, magnetic and spintronic properties and processes ranging from a single-molecule level to understanding of environmental effects, molecular cooperativity and build-up of organised molecular nano- and micro-size systems. Physical, mechanistic, time- and space- dependent studies will proceed from a fundamental level to property-evaluation for possible device applications.
3. Methodology development: quantum-chemical methods to simulate environmental effects and dynamical processes, time- and space- resolved methods, laser control in condensed phase, property-evaluation procedures.

End of Action: 2010

Parties: AT, BE, CH, CZ, DE, DK, EE, ES, FI, FR, GR, HU, IE, IT, LT, NL, PL, PT, RO, SE, SK, UK

Non-COST participation: Moscow State University - Department of Chemistry (RU)

D36 - Molecular structure-performance relationships at the surface of functional materials

Chair: Dr Miguel BANARES (ES)

Rapporteur: Prof. Vasile PARVULESCU (RO)

The main objective of the Action is to increase the fundamental knowledge and understanding of the chemistry occurring at surfaces and interfaces and the factors that tune it. An interdisciplinary, combined effort is the approach. A fundamental approach is advocated, even for industrially oriented research projects. This requires precisely defined problems at all levels and an interdisciplinary approach i.e. synthesis and activation of the materials; measurement of the surface properties; understanding surface properties at the atomic, molecular or cluster level and theoretical understanding of these properties in relation to chemical composition and the structure of the surface. As a consequence, the secondary objective is to gain advanced knowledge for modelling/predicting of the structure/composition reactivity/surface properties relationships of the materials, by means of characterisation of the bulk and surface properties under real operation conditions and for preparing materials with tuneable properties.

End of Action: 2011

Parties: AT, BE, BG, CH, CZ, DE, DK, ES, FI, FR, GR, HU, IE, IT, LV, NL, NO, PL, PT, RO, SE, SI, UK

D37 - Grid Computing in Chemistry (GRIDCHEM)

Chair: Prof. Hans Peter LUETHI (CH)

Rapporteur: Prof. Santiago LAGO-ARANDA (ES)

The main objective of the Action is to facilitate the creation and use of distributed computing infrastructures ('Grids') in chemistry with the goal of bringing computer modeling and simulation in chemistry to new frontiers in complexity and to a new regime of time-to-solution.

*End of Action: 2010**Parties: AT, BG, CH, CZ, DE, DK, ES, FR, GR, HR, HU, IL, IT, LT, NL, NO, PL, SE, UK***D38 - Metal-Based Systems for Molecular Imaging Applications**

Chair: Dr Eva JAKAB TOTH (FR)

Rapporteur: Prof. Jan REEDIJK (NL)

The main objective of the Action is the development of metal-based imaging probes for cellular and molecular imaging applications, based on MRI, PET, SPECT and optical imaging that will facilitate early diagnosis, assessment of disease progression and treatment evaluation.

*End of Action: 2011**Parties: BE, CH, CY, CZ, DE, ES, FI, FR, GR, HU, IT, NL, PL, PT, UK***D39 - Metallo-Drug Design and Action**

Chair: Prof. Michael HANNON (UK)

Rapporteur: Dr Darinka CHRISTOVA (BG)

The main objective of the Action is to increase knowledge and understanding of the design and mechanisms of action of metallo-drugs, and to use this enhanced knowledge in combination with modern genomic research to develop new classes of metallo-drugs with truly novel mechanisms of action and novel spectra of biomedical activity.

*End of Action: 2011**Parties: AT, BE, CH, CZ, DE, DK, ES, FR, GR, HU, IE, IL, IT, NL, NO, PL, PT, RO, SE, SI, TR, UK**Non-COST participation: Mintek (ZA)*

D40 - Innovative Catalysis: New Processes and Selectivities

Chair: Prof. Simon WOODWARD (UK)

Rapporteur: Prof. Dieter SCHINZER (DE)

The main objective of the Action is to allow the containment of new innovative C-H, C-O, C-C and C-Heteroatom bond forming processes, using metal-ligand approaches for the synthesis of organic compounds of biological, pharmacological and organic nanotechnological utility.

End of Action: 2011

Parties: AT, BE, CH, DE, DK, ES, FI, FR, GR, HU, IE, IT, LT, MT, NL, PL, PT, RO, SE, SI, SK, TR, UK

D41 - Inorganic Oxides: Surfaces and Interfaces

Chair: Prof. Gianfranco PACCHIONI (IT)

Rapporteur: Prof. Vasile PARVULESCU (RO)

The Action wants to increase our knowledge and understanding of the properties of oxide surfaces and interfaces at an atomistic level and to develop means of predicting and controlling their structures and functions at the nanometre scale.

End of Action: 2010

Parties: AT, BE, CH, CZ, DE, DK, EE, ES, FI, FR, GR, IT, LT, PL, PT, RO, SE, UK

Non-COST participation: University of Adelaide (AU)

D42 - Chemical Interactions between Cultural Artefacts and Indoor Environment (EnviArt)

Chair: Dr John HAVERMANS (NL)

Rapporteur: Prof. Antonio LAGANA (IT)

The Action aims at exploring chemical interactions between cultural artefacts and typical indoor environmental conditions through field studies and laboratory experiments and to translate the results into preventive conservation practice.

End of Action: 2010

Parties: AT, BE, CH, CZ, DE, DK, EE, ES, FI, FR, GR, IE, IL, IT, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, UK

Non-COST participation: The Conservation Center, Institute of Fine Arts – New York University (US)

D43 - Colloid and Interface Chemistry for Nanotechnology

Chair: Prof. Peter KRALCHEVSKY (BG)

Rapporteur: Dr Denis NEIBECKER (FR)

The main objective of the Action is to fabricate functional nanostructured materials and nanoscale devices for analytical, biomedical, and life science applications.

End of Action: 2011

Parties: AT, BG, CH, CY, CZ, DE, ES, FI, FR, GR, HR, HU, IE, IL, IT, LT, LV, NL, NO, PL, PT, RO, RS, SE, SI, SK, TR, UK

Non-COST participation: University of South Australia (AU), Egyptian Petroleum Research Institute (EG), Al-Quds University (PS), Institute of Biocolloid Chemistry (UA)

CM0601 - Electron Controlled Chemical Lithography (ECCL)

Chair: Prof. Oddur INGOLFSSON (IS)

Rapporteur: Prof. Zbigniew BRZOZKA (PL)

The ability to understand, manipulate and control chemical reactions at the molecular level is one of the great challenges of modern research. Since chemical processes are dominant in most areas of science and technology, the ability to control their pathways provides exciting new opportunities that may be exploited by both the research and technological communities. Such 'single molecule engineering' requires selective bond cleavage in target molecules to allow subsequent management of the local site chemistry. In electron beam experiments it is well established that low energy electrons offer this selectivity with high efficiency, a selectivity that is controllable by simply 'tuning' the electron energy. Recently, low energy electrons derived from the tip of a scanning tunnelling microscope have also been used to control bond rupture and subsequent linkage of individual molecules to the substrate. This Action aims at an interdisciplinary European programme to combine state-of-the-art in electron induced chemistry and surface science with these recent advances in scanning tunnel microscopy to pioneer a new field of 'Electron Controlled Chemical Lithography', with the prospect of designer synthesis down to the nanoscale and electron controlled manipulation of surface properties with spatial resolution ranging from the millimetre down to the nanometre scale.

End of Action: 2011

Parties: AT, BE, CH, CZ, DE, DK, ES, FR, IS, NL, PL, PT, RS, SK, TR, UK

CM0602 - Inhibitors of angiogenesis: design, synthesis and biological exploitation (ANGIOKEM)

Chair: Prof. Daniele PASSARELLA (IT)

Rapporteur: Prof. Dieter SCHINZER (DE)

Excessive or insufficient angiogenesis (new blood vessel formation) is connected with many human diseases, cancer included. For effective disease intervention, interdisciplinary approach in the research is necessary. This COST Action focuses on networking of interdisciplinary oriented chemistry and biology researchers who are actively involved in rationale designing and development of small organic compounds with anti-angiogenic properties. Exchanges of information and presentations of experiences and skills from chemical and biological research will be performed for effective introduction, exploitation and improvement of modern methods for development of new angiogenic inhibitors. Meetings, short-term scientific missions, workshops, training schools and conference will ensure the expansion of effective cooperation in the development of new drug candidates.

End of Action: 2011

Parties: BE, CH, CY, CZ, DE, DK, ES, FR, GR, HR, IE, IL, IT, NO, PL, RS, SE, SI, SK, TR, UK

CM0603 - Free Radicals in Chemical Biology (CHEMBIORADICAL)

Chair: Prof. Chrysostomos CHATGILIALOGLU (IT)

Rapporteur: Prof. Neven ZARKOVIC (HR)

The main objective of the Action is to promote a chemical biology approach for the investigation of free radical pathways. Chemical reactivity and molecular libraries are the start of a multidisciplinary research context 'from small molecules to large systems', culminating in the biological complexity. The Action aims at improving communication and exchange among neighbouring scientific fields, such as chemistry with several domains of life sciences, specifically addressing the real barrier consisting of specialist language and tools. Four working groups address the formation, reactivity and fate of free radicals involving bio-molecules, such as unsaturated lipids, aromatic-, cyclic- and sulphur-containing amino acid residues, sugar and base moieties of nucleic acids. Tasks concern the role of free radicals in normal cell metabolism and in damages, defining structural and functional modifications, in the framework of physiologically and pathologically related processes relevant to human quality of life and health.

End of Action: 2011

Parties: AT, BE, CH, CY, CZ, DE, DK, ES, FI, FR, GR, HR, HU, IL, IT, LT, PL, RS, SE, TR, UK

CM0701 - Cascade Chemoenzymatic Processes – New Synergies Between Chemistry and Biochemistry

Chair: Dr Sergio RIVA (IT)

Rapporteur: Prof. Dieter SCHINZER (DE)

The main objective of the Action is to increase the innovative potential of biocatalysis by promoting the multistep catalytic concept, thus bringing this methodology closer to the application sphere. The integration of biocatalysis into chemical processes is one of the three pillars (the “Industrial Biotechnology” pillar) of the European Platform on “Sustainable Chemistry”. This methodology also belongs to the fundamental strategies of “Green Chemistry”. Therefore, this Action aims to enhance the synthetic potential of biocatalysis by coupling biotransformations one to another and integrating them with chemical steps to increase the product purity and yields close to quantitative values. A multidisciplinary approach is required to achieve this goal, involving precursor synthesis, enzyme screening, heterologous protein expression, enzyme mutagenesis, biocatalyst (co)-immobilization, bioreactor design and chiral product analysis. CASCAT will consist of four Working Groups applying the multi-step approach to the synthesis/modification and transfer of glycosyl donors/acceptors, the deracemization of amino acids by multiple hydrolase systems, the synthesis of valuable amides and carboxylic acids from cheap chemicals (e.g. aldehydes) via combined action of enzymes involved in nitrile metabolism and entry or follow-up (chemo)enzymatic steps, the development of novel paths to biologically relevant chiral compounds using multienzyme-carboligation reactions or in situ cofactor regeneration. This research will focus on the production of bioactive target molecules (e.g., non-natural amino-acids, glycoconjugates and mimetics, flavonoids, steroids) and chiral precursors of enantiopure pharmaceuticals.

End of Action: 2012

Parties: AT, BE, CH, CZ, DE, DK, ES, FI, FR, IT, LT, NL, NO, RO, SE, UK

Non-COST participation: CSIR Biosciences (ZA)

CM0702 - Chemistry with Ultrashort Pulses and Free-Electron Lasers: Looking for Control Strategies Through “Exact” Computations

Chair: Prof. Fernando MARTÍN (ES)

Rapporteur: Prof. Venceslav KAUCIC (SI)

The main objective of the Action is to establish an interdisciplinary European programme to develop new computational tools and to combine them with state-of-the-art quantum-chemistry methods to investigate the new chemistry that arises when molecules and, in particular, chemical reactions are exposed to ultrashort xuv and x-ray laser pulses. The advent of xuv and x-ray ultrashort pulses produced

by free-electron lasers and high harmonic generation has opened up the way to a new chemistry at the femto and attosecond time scales. Processes such as ionisation and dissociation can now be monitored in real time, which can be used to develop novel control strategies of chemical reactions. Nevertheless, experiments in this field are difficult to interpret due to the many electronic and nuclear degrees of freedom involved. The implementation of nearly exact theoretical methods in supercomputers has made it possible to guide experimental research for simple molecules. Such methods lie outside the traditional quantum chemistry realm since, e.g., they must accurately reproduce the time evolution of the electronic and nuclear motion, including both excited and continuum states. Therefore, the necessary extension to complex systems, like many-electron atoms, molecules and nanoparticles, requires the joint efforts of the leading European groups included in this Action.

End of Action: 2012

Parties: AT, BE, CH, DE, DK, ES, FR, GR, HR, HU, IE, IT, NO, PL, RO, SE, UK

CM0703 - Systems Chemistry

Chair: Guenter VON KIEDROWSKI (DE)

Rapporteur: Dr Denis NEIBECKER (FR)

The main objective of the Action is to investigate autocatalytic reaction systems within supramolecular, prebiotic, and other fields of chemistry and to develop methods for their integration into dynamic supersystems. Systems chemistry is the joint effort of prebiotic and supramolecular chemistry assisted by computer science from theoretical chemistry, biology, and complex systems research to tackle dynamic supersystem integration including at least one autocatalytic subsystem. It is the bottom-up pendant of systems biology towards synthetic biology. The origin of life is seen as a major stimulus to organize research but the field is open for chemistries of limited prebiotic plausibility. Subsystems may be classified as genetic, metabolic, or compartment-building. Pairwise integration into higher organized supersystems is expected to yield the knowledge enabling later the triple integration into minimal chemical cells. The integration approach will necessarily link to the question of asymmetric autocatalysis and chiral symmetry breaking, while the key challenge is to find the roots of Darwinian evolvability in chemical systems. 5 workgroups will define a trigonal bipyramid, where the axis theory to asymmetry is surrounded by 3 areas of integration.

End of Action: 2012

Parties: AT, BE, CH, DE, DK, ES, FR, HU, IL, IT, NL, PL, UK

CM0801 - New drugs for neglected diseases

Chair: Prof. Leopold FLOHE (DE)

Rapporteur: Prof. Vasile PARVULESCU (RO)

The Action will pave the way for the development of novel drugs to treat neglected diseases such as African sleeping sickness, Chagas disease and Leishmaniasis. Related approaches of molecular genetics, biochemistry, medicinal chemistry, crystallography and bioinformatics will be coordinated and complemented with industrial experience. Established genomes are used to identify drug targets essential to the parasites but absent or different in the host, since inhibitors thereof hold promise as safe and efficacious therapeutics. Validated drug targets will serve as tools in drug discovery processes using complementary strategies: i) high-throughput screening of natural product and other compound libraries and ii) *in silico* screening of virtual libraries to identify novel leads; iii) chemical synthesis and optimization of identified leads; and iv) structure-based inhibitor design based on established structures or molecular models. The potential therapeutic profile of novel compounds active *in vitro* will be worked out by techniques of high prognostic value in respect to drug safety. The most promising compounds will be tested in established infection models for all the diseases to choose the most attractive candidates for preclinical and clinical development. The Action members will cover all expertises required for the multidisciplinary early drug discovery phase.

*End of Action: 2012**Parties: BE, BG, CH, DE, ES, FI, FR, GR, IL, IT, NO, PL, PT, SE, SI, UK***CM0802 - European Phosphorus Sciences Network (PhoSciNet)**

Chair: Prof. Evamarie HEY-HAWKINS (DE)

Rapporteur: Prof. Bekir CETINKAYA (TR)

The objective of this Action is to provide a knowledge platform to advance applications in materials science, catalysis, and bioscience-related fields by embedding the advantageous properties of (organo)phosphorus components. Especially important classes of phosphorus-based compounds to be investigated are polymers, organometallic heterocycles, precursors for nanomaterials, chemically robust P-C cages, novel low-cost catalyst ligands, and designed (organo)phosphorus reagents. Within the Action, a European Sciences Network (PhoSciNet) will be established to bring together researchers from European countries, candidate countries, and transformation states for the exchange of knowledge and techniques in these modern, rapidly evolving fields in which building-block methodologies and structure-reactivity correlations are key components. This will be accomplished by annual European

Phosphorus Workshops (EuroPhos), intensive exchanges of young researchers, and an internet platform for monitoring and streamlining of innovations in the phosphorus sciences. Industrial partners will be involved in PhoSciNet to ensure rapid and effective technology transfer. The network will facilitate Europe's continued global leadership in the increasingly fierce competition with Asian, American, and other non-European activities in the many new strategic areas related to phosphorus chemistry such as the developing of novel phosphorus-embedded materials, catalysts, and bioorganic compounds.

End of Action: 2012

Parties: AT, BE, BG, CH, DE, ES, FI, FR, HU, IT, NL, PL, UK

Non-COST participation: IOPC - Kazan Scientific Center (RU)

CM0803 - Functional peptidomimetic foldamers: from unnatural amino acids to self-assembling nanomaterials

Chair: Prof. Ferenc FULOP (HU)

Rapporteur: Prof. Abraham PAROLA (IL)

Among the non-natural polymers with the propensity to form well-defined secondary structures, the peptidomimetic foldamers are attracting increasing attention. These compounds have found various biomedical applications and their self-assembling systems can form nanostructured materials.

The main objective of the Action is to develop peptidomimetic foldamers into a technology platform in drug discovery and biomedical applications. The goal is to relay the ideas, pharmacophore models and requirements among the potential biomedical applications (e.g., inhibition of protein-protein interactions, self-assembling nanostructured drug delivery systems, functional biomimetic materials, etc.), to the laboratories involved in foldamer design and synthesis, and the researchers who are continuously extending the pool of homologated amino acids. This parallel top-down and bottom-up information handling is expected to boost the application oriented foldamer research in Europe.

End of Action: 2013

Parties: in progress (new Action)

CM0804 - Chemical Biology with Natural Products

Chair: Prof. Martin E. MAIER (DE)

Rapporteur: Prof. Pat GUIRY (IE)

The field of chemical biology has emerged since many biological questions can only be addressed using small molecules that interact with biological systems in a defined manner. In this regard natural products are unique tools to probe the functions of important proteins.

The main objective of the Action is to advance the use of natural products as tools for chemical biology. Applying modern techniques and advancing them, natural products will prove to be instrumental in discovering target proteins and biological pathways that are of relevance to diseases. This in turn, should facilitate and speed up subsequent drug discovery efforts in the pharmaceutical industry.

*End of Action: 2013**Parties: in progress (new Action)***CM0805 - The Chemical Cosmos: Understanding Chemistry in Astronomical Environments**

Chair: Prof. Nigel MASON (UK)

Rapporteur: Dr Bratislav MARINKOVIC (RS)

Understanding the chemical evolution of the universe requires a detailed knowledge of the complex chemistry occurring in both the present and past history of the universe. Such astrochemistry is distinct from that occurring in terrestrial and industrial environments and requires a multidisciplinary approach, bringing together researchers from astronomy, quantum physics/chemistry, surface science, condensed matter physics, nanotechnology, low temperature physics as well as physical chemistry, chemical physics and aerosol/particulate science.

The main objective of this Action is to study chemical processes relevant to the physical conditions encountered in the interstellar medium, and on the surface and in the atmospheres of planetary bodies. The Action aims to provide new insights into the dynamics of the chemical reactions leading to molecular synthesis under such conditions and reveal how these are influenced by the ambient temperature and pressure. Special attention will also be given to the study of the novel surface chemistry prevalent on interstellar medium dust grains and planetary surfaces. The Action also aims to combine such laboratory data with complementary chemical models to allow a fuller interpretation of observational data.

*End of Action: 2013**Parties: in progress (new Action)*

TD0802 - Dendrimers in Biomedical Applications

Chair: Dr Barbara KLAJNERT (PL)

Rapporteur: Dr Denis NEIBECKER (FR)

Dendrimers are a relatively new group of polymers of considerable interest to biomedical researchers because they may be manipulated during synthesis to introduce desired properties. New medical applications of these nanostructures have appeared. However, there is still a substantial gap in understanding how dendrimers act and, within Europe, the pace of translating research from bench to bedside is not satisfactory. The main objective of the Action is to improve existing therapies and find new drugs based on dendrimers by creating a multidisciplinary European Research Network that will share expertise and experience in the biomedical applications of dendrimers, leading to more rapid development of novel therapeutics and improving European competitiveness in this emerging field.

*End of Action: 2013**Parties: in progress (new Action)***CM0901 - Detailed chemical kinetic models for cleaner combustion**Chair: *to be confirmed*Rapporteur: *to be confirmed*

The main objective of the Action is to develop cleaner and more efficient combustion processes through the design and implementation of better defined and more accurate detailed chemical kinetic models.

This will be achieved by working on the theory and computation of elementary reactions, on detailed kinetic modelling in a variety of combustion environments, on experimental measurements in reactors, rapid compression machines, shock tubes and burners and on the assemblage, as well, of technologically advanced industrial devices.

*End of Action: 2013**Parties: in progress (new Action)***CM0902 - Molecular machineries for ion translocation across biomembranes**Chair: *to be confirmed*Rapporteur: *to be confirmed*

The main objective of the Action is to improve the understanding of proton and metal ion translocation across bio-membranes and the

fate of such chemicals following their uptake by bridging neighbouring scientific fields and fostering applicative outcomes.

End of Action: 2013

Parties: in progress (new Action)

CM0903 - Utilisation of Biomass for Sustainable Fuels & Chemicals (UBIOCHEM)

Chair: to be confirmed

Rapporteur: to be confirmed

The main objective of the Action is to generate a synergistic approach for utilisation of biomass for sustainable fuels & chemicals through cooperation between scientists from different member states and different areas and disciplines.

Special emphasis will be placed on the utilisation of lignocellulose biomass, algae and non-edible crops, which does not compete with food. It will involve the use of green catalytic methodologies (homogeneous, heterogeneous, enzymatic and photocatalysis) and novel reaction media.

End of Action: 2013

Parties: in progress (new Action)

TD0903 - Understanding and manipulating enzymatic and proteomic processes in biomineralization - towards new biomimetic strategies, the creation of tailored nano-scale architectures and environmental monitoring

Chair: to be confirmed

Rapporteur: to be confirmed

The main objective of the Action is to promote research on the biomineralisation processes of selected land, freshwater and marine species for both environmental biomonitoring and as a source of new biomimetic strategies and materials.

The work will focus on monitoring the embryonic development of selected marine organisms, on biochemical and crystallographic control mechanisms of the mineralization pathways in the embryonal and adult organisms, characterisation of specialised metabolic pathways in marine, freshwater, land and subterranean molluscs and to use these organisms in the biomonitoring of riverine and marine environments. In vivo manipulation of organisms at the biological level to create new inorganic materials will be carried out with the parallel development of strategies for new biomimetic routes to novel materials.

End of Action: 2013

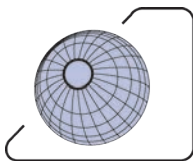
Parties: in progress (new Action)

Earth System Science and Environmental Management (ESSEM)

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The Domain of *Earth System Science and Environmental Management* encompasses the rapidly growing science and technology agendas relating to better understanding, observing, modelling and predicting the Earth system and thereby improved management of environmental conditions. A

key aspect is to assess natural and human-induced trends, hazards and impacts on Earth system functioning and the natural resource base. This will imply improving our monitoring, analysis and warning capacities in these areas to enable effective operational forecasts and assessments of critical processes, hazards and management options at a variety of spatial and temporal scales.

The Earth System Science (ESS) aspects address the interactions within and between the major Earth compartments of the atmosphere, hydrosphere, lithosphere and biosphere, and include influences of the Sun and the near-space environment. The core of ESS is to enhance our capacity and tools to understand, observe and model these interactions within and between these various compartments, as well as their interactions with human activities. The Environmental Management aspect complements this by using the enhanced understanding in ESS to enable improved decision support in relation to environmental conditions, especially in the context of risk management. ESSEM will thus enlarge the scope of the former 'Environment' and 'Meteorology' Domains by now including stronger emphases on science and technology related to observing, modelling and predicting Earth System changes and severe hazards, by integrating various monitoring techniques and networks, and by improving natural resource management for minimising environmental degradation.

The following examples illustrate aspects of potential research and development in this Domain. The scope of the Domain is not restricted to these activities.

Modelling and observing of Earth systems: Based on improving our understanding of physical and biogeochemical principles through new and integrated observing and modelling capacities, this will enable predicting global and regional environmental changes.

Prediction and mitigation of hydro-meteorological and other hazards: This will require developing advanced modelling and warning systems integrated with upgraded in-situ, remote sensing and satellite technologies and observing networks.

The **Environmental Management** aspects will include strong emphasis on science and technology related to managing natural resources and minimising environmental degradation.

Strong interactions with international initiatives, programmes or organisations would be welcome. ESSEM is likely to have strong links with other COST Domains addressing issues where there is a strong interaction between human activities, the Earth system and environmental conditions.

636 - Xenobiotics in the Urban Water Cycle

Chair: Prof. Anna LEDIN (DK)

Rapporteur: Prof. Maris KLAUVINS (LV)

There are more than 100.000 xenobiotics on the market in the European Union. Many different compounds including both inorganic elements such as heavy metals and metalloids and organic compounds such as pesticides, surfactants, preservatives, solvents, fragrances, flavours, and pharmaceuticals as well as endocrine disrupters are covered by this term. Approximately 70,000 of them may be potentially hazardous for humans or ecosystems. The main objective is to assess the role of xenobiotics in the urban water cycle and to set up strategies for minimising their impact on humans and ecosystems.

End of Action: 2009

Parties: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GR, HR, IE, IL, IT, LT, LU, LV, MK, NL, NO, PL, PT, RO, RS, SE, SI, TR, UK

637 - Metals and related substances in drinking water

Chair: Dr Colin HAYES (UK)

Rapporteur: Mr Helge KLEMSDAL (NO)

The main objective of the Action is to stimulate better control of metals and related substances in drinking water and to minimise environmental impacts.

End of Action: 2010

Parties: AT, BE, BG, CH, CY, CZ, DE, DK, ES, FI, FR, GR, HU, IE, IL, IT, LT, LV, NL, PL, PT, RO, SE, TR, UK

638 - Investigating and managing the impacts of marine sand and gravel extraction and use

Chair: Ms Victoria COLE (UK)

Rapporteur: Prof. Stanislaw MASSEL (PL)

The Action aims at bringing together and adding value to the disparate national and European research initiatives to create a unified, clear position to feed into European marine policy. This Action will erase the 'grey' areas which exist in marine research and policy and work to disseminate collaborated European research results to assist future national and marine policy objectives.

End of Action: 2010

Parties: BE, DK, ES, FI, FR, GR, IE, IT, NL, PL, UK

639 - Greenhouse gas budget of soils under changing climate and land use (BurnOut)

Chair: Dr Robert JANDL (AT)

Rapporteur: Dr Emil FULAJTAR (SK)

The Action focuses on an improved understanding of the management of greenhouse gas emissions from European soils under different forms of land use and in particular disturbance regimes.

End of Action: 2010

Parties: AT, BA, BE, BG, CH, CZ, DE, DK, EE, ES, FI, GR, HU, IE, IL, IT, LT, NL, NO, PT, RO, SE, SI, SK, TR, UK

Non-COST participation: Agrophysical Research Institute (RU)

725 - Establishing a European Phenological Data Platform for Climatological Applications

Chair: Dr Elisabeth KOCH (AT)

Rapporteur: Dr Zoltan DUNKEL (HU)

Plant development is driven mainly by weather and other environmental factors.

Phenological phases reflect among other things the environmental characteristics of the climate in the region where they occur. Consequently, long series of phenological observations may be used for the detection of climate variability or climate change.

The main objective of the Action is to establish a European reference data set of phenological observations that can be used for climatological purposes, especially climate monitoring, and

detection of changes.

End of Action: 2009

Parties: AT, BE, BG, CH, CZ, DE, DK, EE, ES, FI, FR, GR, HU, IE, IT, LT, LU, LV, NL, NO, PL, PT, RO, SE, SI, SK, UK

726 - Long term changes and climatology of UV radiation over Europe

Chair: Dr Zenobia LITYNSKA (PL)

Rapporteur: Prof. Michal MAREK (CZ)

Since UV solar radiation plays an important role in many processes in the biosphere, including humans and may be very harmful if UV exposure exceeds “safe” limits, the knowledge of biologically effective UV radiation doses and their geographical distribution and climatology in Europe is crucial for Europe’s population, which is the main end user of the Action.

The main objective of the Action is to advance the understanding of UV radiation distribution under various meteorological conditions in Europe in order to determine UV radiation climatology and assess UV changes over Europe.

End of Action: 2009

Parties: AT, BE, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GR, HU, IT, NL, NO, PL, PT, RO, SE, SK, UK

Non-COST participation: Moscow State University (RU), World Radiation Data Center (RU)

727 - Measuring and forecasting atmospheric icing structures

Chair: Dr Alain HEIMO (CH)

Rapporteur: Prof. Staytcho KOLEV (BG)

The word icing is used to describe the process of ice or snow growth on a structure exposed to the atmosphere. The potential for icing of structures is an important design parameter in many sectors, e.g., building industry, maritime and aviation activities, and it has recently become a relevant issue also in activities related to wind energy production. Furthermore, human activities are increasingly extending to cold climate regions affected by icing problems.

The main objective of the Action is to develop our understanding of icing (especially in-cloud icing) events and their distribution over Europe as well as to improve our potential to observe, monitor and forecast them.

End of Action: 2009

Parties: AT, BG, CH, CZ, DE, ES, FI, HU, NO, SE, SK, UK

Non-COST participation: Kaganawa Institute of Technology (JP)

728 - Enhancing meso-scale meteorological modelling capabilities for air pollution and dispersion applications

Chair: Mr Ranjeet SOKHI (UK)

Rapporteur: Dr Vidmantas ULEVICIUS (LT)

The main objective of the Action is to develop advanced conceptual and computational frameworks to enhance significantly European capabilities in mesoscale meteorological modelling for air pollution and dispersion applications.

End of Action: 2009

Parties: AT, BE, BG, CH, CY, DE, DK, EE, ES, FI, FR, GR, HU, IT, LT, NL, NO, PL, PT, RO, SE, TR, UK

Non-COST participation: Voeikov Main Geophysical Observatory (RU), WMO

729 - Assessing and Managing Nitrogen Fluxes in the Atmosphere-Biosphere System in Europe

Chair: Dr Jan Willem ERISMAN (NL)

Rapporteur: Dr Ipek ERZI (TR)

The main objective of the Action is to advance the understanding and quantification of atmosphere-biosphere nitrogen fluxes in Europe in relation to the main economic sectors. The Action will build a scientific basis for strategies to reduce the environmental impacts of nitrogen.

End of Action: 2010

Parties: BE, CH, CZ, DE, DK, FI, FR, GR, HU, IT, LU, NL, NO, PL, PT, SE, UK

730 - Towards a Universal Thermal Climate Index UTCI for Assessing the Thermal Environment of the Human Being

Chair: Prof. Gerhard JENDRITZKY (DE)

Rapporteur: Mr Stelios PASHIARDIS (CY)

One of the fundamental needs of each human being is to balance their individual heat budget. The main objective of the Action is to develop, and make easily available, a physiologically relevant assessment model of the thermal environment in order to significantly enhance applications related to human health and well-being.

End of Action: 2009

Parties: AT, BG, CH, CY, DE, DK, ES, FI, FR, GR, HU, IL, IT, PL, PT, RO, SE, SI, UK

Non-COST participation: Macquarie University (AU), University of Auckland (NZ)

731 - Propagation of Uncertainty in Advanced Meteorological Forecast Systems

Chair: Dr Andrea ROSSA (IT)

Rapporteur: Dr Mathias ROTACH (CH)

The main objective of the Action is to address issues associated with the quality and uncertainty of meteorological observations from remote sensing and other potentially valuable instrumentation. It will also consider their impacts on hydro-meteorological outputs from advanced forecasting systems.

End of Action: 2010

Parties: BE, CH, CY, CZ, DE, DK, ES, FI, FR, GR, HU, IE, IT, LU, NL, NO, PL, PT, SE, UK

Non-COST participation: Centre for Australian Weather and Climate Research (AU)

732 - Quality Assurance and Improvement of Microscale Meteorological Models

Chair: Prof. Michael SCHATZMANN (DE)

Rapporteur: Mr Dick BLAAUBOER (NL)

The main objective of the Action is to improve and assure the quality of micro-scale meteorological models that are applied for predicting flow and transport processes in urban or industrial environments.

End of Action: 2009

Parties: AT, BE, BG, CH, CY, CZ, DE, DK, ES, FI, FR, GR, HU, IT, NL, PL, PT, RO, SE, SK, UK

733 - Harmonisation and Applications of Weather Types Classifications for European Regions

Chair: Mr Ole Einar TVEITO (NO)

Rapporteur: Dr Teresa ABRANTES (PT)

The main objective of the Action is to achieve a general numerical method for assessing, comparing and classifying typical weather situations in the European regions.

End of Action: 2010

Parties: AT, BE, BG, CH, CY, CZ, DE, EE, ES, FI, FR, GR, HU, IE, IT, LU, LV, NO, PL, PT, RO, SI, UK

734 - Impacts of Climate Change and Variability on European Agriculture (CLIVAGRI)

Chair: Prof. Simone ORLANDINI (IT)

Rapporteur: Prof. Giampiero MARACCHI (IT)

The main objective of the Action is the evaluation of possible impacts from climate change and variability on agriculture and the assessment of critical thresholds for various European areas.

End of Action: 2010

Parties: AT, BE, BG, CH, CY, CZ, DE, DK, ES, FI, FR, GR, HR, HU, IE, IT, LU, NL, NO, PL, PT, RO, RS, SE, SI, SK, TR, UK

Non-COST participation: Lincoln University (NZ), University of Nebraska (US)

735 - Tools for assessing global air-sea fluxes of climate and air pollution relevant gases

Chair: Prof. Peter LISS (UK)

Rapporteur: Dr Jean-Louis GAUMET (FR)

The action aims at developing the tools for, and the production of, best estimates of global air-sea fluxes of compounds relevant to climate and air pollution.

End of Action: 2010

Parties: BE, CH, CY, DE, DK, ES, FI, FR, GR, HU, IE, IT, NO, PL, SE, TR, UK

ES0601 - Advances in homogenisation methods of climate series: an integrated approach (HOME)

Chair: Dr Olivier MESTRE (FR)

Rapporteur: Dr John SWEENEY (IE)

Long instrumental climate records are the basis of climate research. However, these series are usually affected by inhomogeneities (artificial shifts), due to changes in the measurement conditions (relocations, instrumentation and others). As the artificial shifts often have the same magnitude as the climate signal, such as long-term variations, trends or cycles, a direct analysis of the raw data series can lead to wrong conclusions about climate change. In order to deal with this crucial problem many statistical homogenisation procedures have been developed for detection and correction of these inhomogeneities. At present only a limited number of publications intercompare some common methods and their impact on the climate record. The large number of different methods could be seen as a weakness in the science and is a challenge for the climatological community to address. There is therefore a need

for a coordinated European initiative in order to produce standard methods designed to facilitate such comparisons and promote the most efficient methods of homogenisation. The Action's main objective is to achieve a general method for homogenising climate and environmental datasets. The method will be derived from the most adapted statistical procedures for detection and correction of varying parameters at different space and time scales.

End of Action: 2011

Parties: AT, BE, BG, CH, CY, CZ, DE, ES, FI, FR, GR, HR, HU, IE, IT, LV, NL, NO, PL, PT, RO, RS, SE, SI, SK, UK

Non-COST participation: Andorran Research Institute (AD), Australian Bureau of Meteorology (AU)

ES0602 - Towards a European Network on Chemical Weather Forecasting and Information Systems (ENCWF)

Chair: Prof. Jaakko KUKKONEN (FI)

Rapporteur: Prof. Nicolas MOUSSIOPOULOS (GR)

Air quality is a key element for the well-being and quality of life of European citizens. It is regulated by EU legislation, which requires monitoring and assessment of air pollution (using modelling tools where there is no observational data), informing the public on air quality, forecasting the potential exceedances, implementation of short term action plans and air quality management to attain specific limit and target values. As air pollution crosses national borders, it would be cost-effective and beneficial for citizens and society and decision-makers that national chemical weather forecast and information systems would be networked and seamless across Europe. This Action will provide a forum for harmonizing, standardising and benchmarking approaches and practices in data exchange and multi-model capabilities for air quality forecast and (near) real-time information systems in Europe. It will examine existing and work out new solutions for integrating the development efforts at national and international levels. This Action will not develop or create the whole system, but rather support and complement ongoing initiatives (e.g., in the framework of GMES - Global Monitoring for Environment and Security) towards the same goals. In particular, it will serve as a platform for the information exchange between the meteorological services, environmental agencies, and international initiatives.

End of Action: 2011

Parties: AT, BE, BG, DE, DK, EE, ES, FI, FR, HU, IL, IT, NL, NO, PL, PT, SE, SI, UK

ES0603 - Assessment of production, release, distribution and health impact of allergenic pollen in Europe (EUPOL)

Chair: Dr Mikhail SOFIEV (FI)

Rapporteur: Dr Joakim LANGNER (SE)

Diseases due to aeroallergens are among major causes of a growing rate of morbidity and demand for healthcare. The overall prevalence of seasonal allergic rhinitis in Europe is about 15% and increasing. Adequate protective and pre-emptive measures require both the reliable assessment of production and release of various pollen species, and the forecasting of their atmospheric dispersion. The World Health Organization has therefore recommended new studies in the area. The pollen-related research is currently conducted within several scientific disciplines, countries and targeted activities; however, their coordination could be substantially improved. Several poorly understood complex biological, meteorological and climatic factors can significantly affect the timing and strength of pollen seasons. Their proper investigation requires an integrated approach. The proposed concerted Action will establish a multi-disciplinary forum for (i) the critical review of existing information and its use in current assessment systems, and finding out the gaps of knowledge; (ii) the improved co-ordination of on-going research; (iii) the development of a strategy and an action plan that aim to bridge the gaps of knowledge; (iv) strengthening the dialogue with end users. Specific research directions will be: Pollen Production and Release; Pollen Transport, Transformation and Interaction; Applications and collaboration with End Users.

End of Action: 2011

Parties: AT, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GR, HR, HU, IE, IL, IT, LT, LV, NL, NO, PL, PT, RS, SE, SI, UK

Non-COST participation: Moscow State University

ES0604 - Atmospheric Water Vapour in the Climate System (WaVaCS)

Chair: Dr Federico FIERLI (IT)

Rapporteur: Dr Niels LARSEN (DK)

The proposed Action brings together leading European scientists to address the issue of atmospheric water vapour and its impact on climate. This Action is needed to integrate research carried out in different areas, including: atmospheric monitoring, data analysis and modelling. It brings together expertise that is both unique and timely. In order to make significant progress in the field of water vapour and climate, it is necessary to integrate knowledge acquired from research based on different methodologies. To achieve this, the Action is structured into 4 working groups which together aim to increase knowledge on observations, theory, and data assimilation

in the context of water vapour and climate. The objective is to offer to the scientific community and the broader Earth Observation community an integrative approach to understanding the processes controlling the atmospheric water vapour distribution, in particular those elements linking water vapour and climate. Beneficiaries of this Action include the meteorological services, space agencies, environmental agencies and policy makers. The specific task of this Action is to promote knowledge dissemination activities at various levels through scientific missions, thematic training schools, support toward conference participation, and special issues in world-class scientific journals.

End of Action: 2011

Parties: BE, BG, CH, CZ, DE, DK, ES, FI, FR, GR, IT, NO, PL, SE, UK

ES0701 - Improved Constraints on Models of Glacial Isostatic Adjustment

Chair: Dr Matt KING (UK)

Rapporteur: Prof. Rein VAIKMAE (EE)

The main objective of the Action is to place improved constraints on models of glacial isostatic adjustment through the development of state-of-the-art surface velocity measurements with the consequent production of new ice mass change estimates for the major ice sheets. This Action addresses the current uncertainty in polar ice mass contributions to present-day global sea level rise. The focus is ice mass change signals derived from the Gravity Recovery and Climate Experiment (GRACE) satellite mission (2002-present). The ice mass change is derived from gravity-signals, which are contaminated by glacial isostatic adjustment (GIA). However, the GIA signal in the GRACE results currently exceeds the expected Antarctic ice mass balance signal. GIA models are data poor in polar-regions and new constraints from precise and geographically widespread surface velocity measurements are needed. Whilst surface velocity estimates have been derived in many of the key regions their accuracy and precision is presently too low. Recent advances (GIA modelling and geodetic observations) indicate that a collaborative approach at this point in time would lead to a significant improvement in GIA model accuracy. Further, additional data in key locations (Antarctic and Greenland) will be added during the International Polar Year (2007-9). These data will be available to the remodeling effort. In this Action leading geodesists and geophysicists from Europe will focus together, to provide improved constraints on GIA models and, hence, on contemporary ice mass balance estimates for Antarctica, Greenland and the smaller ice caps.

End of Action: 2012

Parties: AT, BE, CH, DE, DK, EE, ES, FI, FR, GR, IS, IT, LU, NL, NO, PT, SE, UK

Non-COST participation: University of Tasmania (AU)

ES0702 - European Ground-Based Observations of Essential Variables for Climate and Operational Meteorology (EG-CLIMET)

Chair: Prof. Antony ILLINGWORTH (UK)

Rapporteur: Mr Manuel PALOMARES (ES)

The main objective of the Action is the specification, development and demonstration of cost-effective ground-based integrated profiling systems suitable for future networks providing essential atmospheric observations for both climate and weather. Climate and weather observations are essential for the development of climate change policies and weather services securing the safety and quality of life of the public. Atmospheric observing systems for GEOSS/GMES in Europe will be integrated to satisfy requirements for climate, environment and security. This Action will coordinate deployment and further development of integrated ground-based remote sensing systems to provide key atmospheric variables such as clouds, winds, temperature and humidity. These systems observe at high time resolution providing observations of atmospheric processes relevant to climate and weather but will need to be cost-effective. Long term deployments (“testbeds”) of observing systems will be used to judge their effectiveness and cost-efficiency so design recommendations for the future European integrated observing network can be delivered. Development in data assimilation techniques will allow the observations to be fully exploited in numerical models. The observing infrastructure will also be used to evaluate and improve climate and weather forecast models, and to validate other observing systems, including satellite and aircraft.

End of Action: 2012

Parties: CH, DE, ES, FI, FR, HU, IE, IT, NL, NO, PL, PT, SE, UK

ES0801 - The ocean chemistry of bioactive trace elements and paleoclimate proxies

Chair: Prof. Gideon HENDERSON (UK)

Rapporteur: Dr Zorica SVIRCEV (RS)

The cycling of key trace elements in the ocean is critical to the functioning of ocean ecosystems, to the carbon cycle, to contamination of the ocean, and to assessment of past climate change. This Action seeks to maximize the benefit from research on the marine chemistry of trace elements conducted in a large number of countries. National research cruises will use new analytical and modelling techniques to dramatically improve understanding of ocean trace-element cycles. This Action will unite these national efforts with Working Groups focused on: i) maximizing the research achieved on nationally-funded cruises through international collaboration; ii) intercalibration and standardisation of analytical measurements across the European research area; and, iii) data management

and the production of global data products for a wide range of end-users. A fourth Working Group will co-ordinate significant training and outreach activities, through which the Action will generate an international community of young scientists who understand trace-element cycles sufficiently well to contribute to a wide range of future interdisciplinary studies. This Action will liaise closely with international programmes with similar interests, particularly the GEOTRACES programme, and will allow realisation of cross-national goals of that programme within the European research area.

End of Action: 2012

Parties: BE, CH, DE, ES, FI, FR, IS, NL, NO, SE, UK

Non-COST participation: University of Tasmania (AU)

ES0802 - Unmanned aerial systems (UAS) in atmospheric research

Chair: Prof. Joachim REUDER (NO)

Rapporteur: Dr Dirk VAN SPEYBROECK (BE)

Unmanned aerial systems (UAS) will be of large and increasing importance for environmental monitoring in the future, e.g. under the aspects of climate change and sustainable development. The Action will coordinate ongoing and conceive future research on the development and application of UAS as a cost-efficient, trans-boundary method for the monitoring of the atmospheric boundary layer and the underlying surface of the Earth. These systems will help to close the recent observational gap between established ground based and satellite based measurements, and will provide relevant atmospheric data both with high temporal and spatial resolution and unique data coverage in space and time. This will distinctly increase the understanding of the atmospheric boundary layer and related surface-atmosphere exchange processes which is crucial for future improvements in numerical weather prediction and climate simulation. First prototypes of UAS systems of different size, complexity and equipped with different instrumentation, have successfully proven their functionality. Based on this, the Action will promote the conception and further development of prototypes for a fleet of UAS of different size, instrumentation, and operation range with respect to various specific observational requirements. Finally this interdisciplinary approach will establish a forum on the European level for the coordination of the relevant scientific, technical and legal aspects connected to a safe and permanent operation of UAS for routine environmental monitoring purposes.

End of Action: 2012

Parties: BE, CH, CY, DE, DK, ES, FI, FR, IE, IL, IS, NO, PL, UK

ES0803 - Developing space weather products and services in Europe

Chair: Dr Anna BELEHAKI (GR)

Rapporteur: Dr Zoltan DUNKEL (HU)

Space Weather originates mainly in solar activity and affects the interplanetary space and planetary magnetospheres, ionospheres and atmospheres. It can affect ground and space technological systems as well as humans in space. Extreme space weather conditions have economical consequences and may threaten safety and security of the technological infrastructures. In the US, important progress in modelling and predicting Space Weather effects has been made through the launch of large-scale research projects and the implementation of national prediction systems. Although Europe has much scientific expertise on the physics and effects of Space Weather, its optimal use suffers from a lack of coordination between the national research programmes. This COST Action has the primary goal to form an interdisciplinary network between European scientists dealing with different issues of Geospace, as well as warning system developers and operators, to:

- Foster the ties between European Geospace research and space technology establishments,
- Assess the European potential in advanced Space Weather observational and modelling techniques and in reliable products and services,
- Define the needs of a broad range of users and,
- Determine and recommend the specifications for new products and services that best meet the user's requirements.

End of Action: 2012

Parties: AT, BE, BG, CH, CY, CZ, DE, ES, FI, FR, GR, IE, IT, NO, PL, RO, RS, SE, SI, UK

Non-COST participation: Yerevan Physics Institute (AM), ISTP - Siberian Branch of Russian Academy of Sciences (RU)

ES0804 - Advancing the integrated monitoring of trace gas exchange between biosphere and atmosphere

Chair: Prof. Timo VESALA (FI)

Rapporteur: Dr Ulrike PECHINGER (AT)

The global environment is a complex system with numerous intricately linked processes. The land surface-atmosphere interface plays a vital role in the functioning of the Earth System by controlling transfers of energy, momentum and matter. Thus, land atmosphere interactions are important factors controlling and affecting the Earth climate system. To increase and evaluate our understanding of the critical controlling processes, interactions and feedbacks between biosphere and atmosphere, long-term integrated interdisciplinary monitoring efforts are necessary.

This Action creates a platform for analysis, harmonisation, and synthesis, assessment of future needs and further development of a European integrated monitoring program for comprehensive trace gas flux observations. The existing national and European flux monitoring communities work separately; networking by this Action creates added value and is invaluable to advance the continuity, scope and quality of flux monitoring. This Action advances the applicability of produced data in climate and Earth system modelling research, as well as in more operational short to medium term forecasting of weather and air quality. Current methodologies, operability, dissemination, and coordination will also be addressed in this Action. Development of common methodologies, data management systems and protocols will increase the reliability, value and cost-efficiency of European flux observations.

End of Action: 2013

Parties: CH, DE, DK, ES, FI, FR, GR, IE, IT, LT, LU, NO, PL, SE, UK

ES0805 - The Terrestrial Biosphere in the Earth System

Chair: to be confirmed

Rapporteur: Mr Dick BLAAUBOER (NL)

The Earth system modelling community started recently to include terrestrial biospheric dynamics on an equal level with atmosphere and ocean dynamics into their models. At the same time, the remote sensing community is improving the monitoring of ecosystem conditions and trends with very high spatial and temporal resolution. Biologists are revising classical theories by analyzing huge datasets of plant trait data collected during the last decade. The ample amount of recently acquired information about the functioning of the terrestrial biosphere and an ever-increasing spatial resolution of Earth system models call for a new level of integration between modellers, developers of ecological theory and data gathering communities. The main objective of the Action is a cross-disciplinary assessment of our current understanding of the terrestrial biosphere from an Earth system perspective to improve the reliability of future Earth system projections in coupled climate-biosphere simulations.

End of Action: 2013

Parties: in progress (new Action)

ES0806 - Stable Isotopes in Biosphere-Atmosphere-Earth System Research (SIBAE)

Chair: Prof. Nina BUCHMANN (CH)

Rapporteur: *to be confirmed*

Predicting impacts of global change on the Earth system requires detailed understanding of interactions between biota and biogeochemical processes in different environments and management regimes. The main objective of the Action is to use stable isotopes on carbon, nitrogen, oxygen and water cycles as a critical research tool in Biosphere-Atmosphere-Earth System research across scales and disciplines to: 1) synthesize isolated experiments in Europe to identify innovative process- and system-oriented research areas; 2) assess current state-of-the-art models to improve process representation and to better link experimental and modelling communities; 3) benchmark and advance innovative cutting-edge technologies; (4) create a training/teaching network across Europe.

End of Action: 2013

Parties: in progress (new Action)

TD0803 - Detecting evolutionary hot spots of antibiotic resistances in Europe (DARE)

Chair: Prof. Marc DE LOOSE (BE)

Rapporteur: *to be confirmed*

It is well known that bacterial resistances to antibiotics are increasing and pose a serious threat to the public health, especially in hospitals. Currently, it is largely unknown to what extent the environment serves as a reservoir for the evolution of new antibiotic resistances. The main objective of this Action is to identify and characterize environmental hot spots for antimicrobial resistance emergence and spreading of antibiotics and antibiotic resistance patterns, aiming at the development of measures to control antibiotic resistance evolution.

End of Action: 2013

Parties: in progress (new Action)

ES0901 - European procedures for flood frequency estimation (FloodFreq)

Chair: *to be confirmed*

Rapporteur: *to be confirmed*

The main objective is to undertake a pan-European comparison

and evaluation of methods for flood frequency estimation under the various climatologic and geographic conditions found in Europe, and different levels of data availability.

A scientific framework for assessing the ability of these methods to predict the impact of environmental change (climate change, land-use and river engineering works) on future flood frequency characteristics (flood occurrence and magnitude) will be developed and tested.

End of Action: 2013

Parties: in progress (new Action)

ES0902 - Permafrost and gas hydrate related methane release in the Arctic and impact on climate change - European cooperation for long-term monitoring (PERGAMON)

Chair: to be confirmed

Rapporteur: to be confirmed

The Arctic is a key area in our anthropogenically-warming world as massive releases of methane currently locked up in permafrost and gas hydrates, both on land and in marine sediments, could increase atmospheric concentrations of this greenhouse gas much faster than predicted. The vast Arctic continental shelf, wetlands and Tundra might become major emitters of methane in the future. At present, there are a handful of unconnected projects involving research on methane seepage in this area. The exchange of information about these ongoing and also planned activities with respect to gas hydrate destabilization and permafrost thawing is minimal within the EU and almost non-existent at an international level.

The main objective is to quantify the methane input from marine and terrestrial sources into the atmosphere in the Arctic region, and ultimately to evaluate the impact of Arctic methane seepage on global climate.

End of Action: 2013

Parties: in progress (new Action)

ES0903 - Spectral sampling tools for vegetation Biophysical Parameters and Flux measurements in Europe

Chair: to be confirmed

Rapporteur: to be confirmed

Flux towers remain a primary tool for understanding ecosystem carbon fluxes within the FLUXNET and CarboEurope IP networks. In the last years, important EU initiatives have been started (such

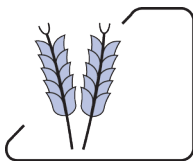
as EUFAR, IMECC, ICOS and COST Action ES0804) to coordinate a common dataset for characterizing the carbon balance of Europe. The main objective of the Action is to develop common protocols and new instruments within a larger European network for optical measurements, bringing together scientists and industries in order to increase the reliability, value and cost-efficiency of the existing spectral observations within the European flux network. The Action will focus entirely on the optical sampling strategies, which can be considered a fundamental tool in monitoring Biophysical Parameters (BP) and which act as a “bridge” between the flux tower and the remote sensing community.

End of Action: 2013

Parties: in progress (new Action)

Food and Agriculture (FA)

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The Domain *Food and Agriculture* covers all aspects of research in the field of agricultural and food sciences in its widest sense. This naturally encompasses a very wide number of subjects, and relates to a large number of areas of human activity. The primary aim of the Domain is to encourage networking of research in any field linked to these activities as well as the related demands and needs. The following examples illustrate aspects of actual research in this Domain. It is emphasized that they are examples, not a complete catalogue. The Domain actively seeks innovative and interesting proposals even if they may not at first sight fit neatly into a traditional category of research in food and agriculture.

The Biological Functions of Organisms: to advance understanding of the functions of organisms relevant to agriculture, food and nutrition, the domain will welcome proposals where fundamental science is an essential component of the topic. This will include biological science, animal science, veterinary science, plant science, microbiological science, soil science, genetics and breeding, agricultural system science or any other fundamental discipline related to food, agriculture & fisheries. Biotechnology - the use of the most recent techniques and applications that spring from their use - is also addressed.

Human Nutrition and the Food Chain covers the entire food chain leading to non-processed, semi-processed and processed foods and encompasses food and feed quality, food safety, functional foods, nutritional and consumer issues. It includes all the processes and techniques used in food technology that are needed to bring food to the consumer's fork.

Agriculture as a Human Activity: the domain addresses socio-economic aspects of food and agriculture and other relevant concerns, such as the relationships between agriculture, rural economy and rural development. Societal issues concerned with animal health (disease prevention in animals and people) and animal welfare are also included.

Agriculture and Environment: this relationship is also addressed by the domain. It includes issues such as sustainability, natural resources and conservation, biodiversity and genetic resources, biosafety, bioremediation, and bioenergy. Proposals may also

address changes in European agriculture under the influence of major issues such as reform of the Common Agricultural Policy, global warming, world trade patterns and energy scarcity.

Since food and agriculture involve so many scientific disciplines, it is anticipated that successful proposals will vary widely in nature from closely focussed topics of a fundamental nature using the most innovative and up-to-date techniques (such as tools for genomics, proteomics and metabolomics) to multidisciplinary projects having a more holistic approach (such as new farming systems for the production of quality food).

858 - Viticulture: Biotic and abiotic stress - grapevine defence mechanism and grape development

Chair: Prof. Serge DELROT (FR)

Rapporteur: Prof. Anna PRETOVA (SK)

The main objective of the Action is to increase the knowledge of the biological phenomena involved during the key stages of grape ripening, defence against fungal diseases and resistance to drought, thus allowing significant improvement of viticultural practices during vine development and berry ripening.

This Action creates an organized network which will generate and organise basic data on vine genomics and vine ecophysiology, comparable to that developed on crops of similar importance (wheat, rice, maize). This network will associate "know how" and expertise from a wide body of researchers including grapevine growers, agronomists, plant physiologists, biochemists, molecular biologists and geneticists.

End of Action: 2009

Parties: AT, BG, CH, CY, CZ, DE, ES, FR, GR, HU, IL, IT, LU, PL, PT, RS, SE, SI

Non-COST participation: CSIRO Plant Industry (AU), Lincoln University (NZ)

859 - Phytotechnologies to promote sustainable land use management and improve food chain safety

Chair: Dr Jean-Paul SCHWITZGUÉBEL (CH)

Rapporteur: Dr David COATES (UK)

The main objective of the Action is to provide a sound understanding of the absorption/exclusion, translocation, storage or detoxification mechanisms of essential or toxic mineral elements, as well as organic contaminants, and to prepare the best use of plants for sustainable

land use management and improve food safety.

End of Action: 2009

Parties: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GR, HU, IE, IL, IT, LT, LU, NL, NO, PL, PT, RO, SE, SI, SK, TR, UK

Non-COST participation: University of Melbourne (AU), Université Badji Mokhtar de Annaba (DZ), University of Hyderabad (IN), Hiroshima University (JP), Institute of Physicochem and Biological Problems in Soil Science (RU), Institute of Agroecology and Biotechnology (UA), National Agricultural University (UA), Brookhaven National Laboratory (US), National University of HoChiMinh city (VN)

861 - European network for pig genomics

Chair: Prof. Bertram BRENIG (DE)

Rapporteur: Prof. Antonella BALDI (IT)

This Action aims to increase the knowledge of the organisation, expression and regulation of the genes involved in pig development, health, reproduction, and product quality.

End of Action: 2009

Parties: BE, CH, CZ, DE, DK, ES, FR, GR, HU, IT, NL, NO, PL, PT, SI, UK

862 - Bacterial toxins for insect control

Chair: Dr Neil CRICKMORE (UK)

Rapporteur: Dr Ozlem EKICI (TR)

The main objective of the Action is to increase the availability of new and improved bacterial antagonists and their toxins for use in biological control of insects in conventional and organic agriculture that will create economic value to the biocontrol industry and the growers.

End of Action: 2010

Parties: BE, BG, CH, CY, CZ, DE, DK, ES, FR, GR, IL, IT, LV, MK, NL, PL, SK, TR, UK

Non-COST participation: Centre of Biotechnology of Sfax (TN)

863 - Euroberry research: from genomics to sustainable production, quality & health

Chair: Prof. Bruno MEZZETTI (IT)

Rapporteur: Dr Jean-Francois HAUSMAN (LU)

Berry production is an economically significant part of agriculture in most European countries. The main objective of the Action is to

improve the quality and production of berries to benefit the health of the consumers and maintain profitable European production using sustainable systems.

End of Action: 2010

Parties: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GR, HR, HU, IE, IL, IT, LT, LV, MK, NL, NO, PL, PT, RO, RS, SE, SI, SK, TR, UK

Non-COST participation: The Horticulture and Food Research Institute (NZ)

864 - Combining traditional and advanced strategies for plant protection in pome fruit growing

Chair: Prof. Karl STICH (AT)

Rapporteur: Dr Rebecca KOKKINOFTA (CY)

The main objective of the Action is to increase the knowledge on the plant-biology involved in pome fruit health by establishing a network of scientists dealing with pome fruit growing and by creating an interface between basic and applied science for disease and pest management. The research topics will focus on plant-pathogen-interactions, germplasm-resources and breeding, production methods, and biotechnological approaches.

End of Action: 2011

Parties: AT, BE, BG, CH, CZ, DE, DK, ES, FI, FR, HU, IL, IT, LU, LV, NL, NO, PL, SE, SI, TR, UK

865 - Bioencapsulation multiscale interaction analysis

Chair: Prof. Denis PONCELET (FR)

Rapporteur: Prof. Anna PRETOVA (SK)

The main objective of the Action is to improve the knowledge on bioencapsulation in developing reliable, economical and safe industrial encapsulation processes and applications. The Action will emphasize the need to consider and integrate the multiscale and interactive dimension of the processes, to identify gaps in the knowledge and propose concerted actions, to develop characterisation and analytical tools, to provide method standardisation and to make all the resulting information easily available to the scientific and industrial community involved in Bioencapsulation.

End of Action: 2010

Parties: AT, BE, CH, CZ, DE, DK, ES, FI, FR, GR, IE, IL, IT, LT, LU, MT, NL, NO, PL, PT, RS, SI, SK, UK

866 - Green care in agriculture

Chair: Dr Deirdre O'CONNOR (IE)

Rapporteur: Dr Anita SILMBROD (AT)

The main objective of the Action is to increase the scientific knowledge on the best practices for implementing green care in agriculture with the aim of improving human mental and physical health and the quality of life.

End of Action: 2010

Parties: AT, BE, CH, CZ, DE, DK, FI, GR, IE, IS, IT, MT, NL, NO, PL, SE, SI, TR, UK

867 - Welfare of fish in european aquaculture

Chair: Prof. Anders KIESSLING (NO)

Rapporteur: Prof. Nikos KATSAROS (GR)

The main objective of the Action is to improve the knowledge on welfare of fish and formulate a set of guidelines embodying a common and scientifically sound understanding of the concept of welfare in farmed fish and to construct a range of targeted operational welfare indicator protocols to be used in the industry.

End of Action: 2011

Parties: BE, CY, CZ, DK, ES, FI, FR, GR, HU, IE, IL, IS, IT, NL, NO, PL, SE, TR, UK

Non-COST participation: University of Tasmania (AU), University of Auckland (NZ)

868 - Biotechnical functionalisation of renewable polymeric materials

Chair: Prof. Georg GÜBITZ (AT)

Rapporteur: Dr Jean-Paul SCHWITZGUEBEL (CH)

The main objective of the Action is to generate a synergistic approach for utilisation and upgrading of different biomaterials; to assess the potential of enzymes for surface functionalisation as well as the production of recombinant biopolymers with special functions and together with advanced and sustainable clean processing technologies generate new added-value polymer products with a broad application range.

End of Action: 2010

Parties: AT, BE, BG, CH, CZ, DE, DK, ES, FI, FR, GR, HU, IT, LT, LV, NL, PL, PT, RO, SE, SI, SK, TR, UK

Non-COST participation: Lomonosov Moscow State University (RU)

869 - Mitigation options for nutrient reduction in surface water and groundwaters

Chair: Dr Wim CHARDON (NL)

Rapporteur: Prof. Wieslaw OLESZEK (PL)

The main objective of the Action is to undertake a scientific evaluation of the suitability and cost-effectiveness of different options for reducing nutrient loss to surface and groundwaters at the river basin scale, including their limitations in terms of applicability under different climatic, ecological and geographical conditions.

End of Action: 2011

Parties: AT, BE, BG, CH, CZ, DE, DK, EE, ES, FI, FR, GR, HU, IE, IL, IT, LT, LU, LV, NL, NO, PL, PT, RO, SE, SI, SK, UK

Non-COST participation: National Institute for Water and Atmospheric Research (NZ), New Zealand Pastoral Agricultural Research Institute (NZ)

870 - From production to application of arbuscular mycorrhizal fungi in agricultural systems: a multidisciplinary approach

Chair: Dr Jacqueline BAAR (NL)

Rapporteur: Dr Zdenek OPATRYN (CZ)

The Action takes a multidisciplinary approach to increase the knowledge needed for implementation of arbuscular mycorrhizal fungi in agricultural systems, in order to reduce agricultural inputs and reduce losses to the environment.

End of Action: 2011

Parties: AT, BE, CH, CZ, DE, DK, ES, FI, FR, GR, HU, IE, IL, IT, NL, NO, PL, PT, SI, SK, TR, UK

Non-COST participation: United Nations Protected Area

871 - Cryopreservation of crop species in Europe

Chair: Dr Bart PANIS (BE)

Rapporteur: Dr Charles SPILLANE (IE)

The Action wants to improve and apply technologically advanced techniques for plant genetic resources conservation of crops that are grown and/or conserved in Europe with the main emphasis on long-term conservation through cryopreservation.

End of Action: 2010

Parties: BE, BG, CH, CZ, DE, DK, ES, FI, FR, GR, IT, LU, NL, PL, PT, RS, SK, UK

Non-COST participation: Institute for Crop & Food Research (NZ), Vavilov Research Institute of Plant Industry (RU), Faculté des Sciences de Sfax (TN)

872 - Exploiting genomics to understand plant-nematode interactions

Chair: Dr John JONES (UK)

Rapporteur: Dr Zdenek OPATRYN (CZ)

The main objective of the Action is to develop a coordinated approach to exploitation of genomics information that is appearing for plant parasitic nematodes and host crops.

End of Action: 2010

Parties: AT, BE, CH, DE, ES, FR, GR, IE, IL, IT, NL, NO, PL, PT, SE, SI, TR, UK

Non-COST participation: State Agricultural Biotechnology Centre (AU), Wollongong University (AU), Agricultural Research Centre (EG), Institute of Plant Protection (UA)

873 - Bacterial diseases of stone fruits and nuts

Chair: Dr Brion DUFFY (CH)

Rapporteur: Dr David COATES (UK)

The Action aims at developing strategies to prevent biological invasion and spread of bacterial diseases of stone fruits and nuts that will be used for the design of integrated approaches for plant health management.

End of Action: 2011

Parties: AT, BE, BG, CH, CZ, DE, DK, ES, FR, GR, HU, IL, IT, LT, LV, NL, PL, PT, RO, RS, SI, TR, UK

Non-COST participation: University of Tasmania (AU), American University of Beirut (LB), HortResearch Ruakura Research Centre (NZ)

924 - Enhancement and Preservation of Quality and Health Promoting Components in Fresh Fruits and Vegetables

Chair: Prof. Bart NICOLAI (BE)

Rapporteur: Dr José PUEYO (ES)

Fresh fruits and vegetables have both an important nutrition-health and an economic value. According to the new dietary guidelines, fresh fruit and vegetables are at the fundament of the nutritional pyramid and are, within our global food package, the best carriers of bio-active substances such as vitamins, minerals, dietary fibres, phenolic antioxidants, glucosinolates and other bioactive components.

The main objective of this Action is to enhance and preserve fruit quality, safety and the amount of nutritional and functional components

in fresh fruits and vegetables in an integrated approach from orchard to consumer with special attention to organic growing.

End of Action: 2009

Parties: AT, BE, BG, CH, CY, CZ, DE, ES, FI, FR, GR, HU, IL, IT, LT, NL, NO, PL, PT, SI, TR, UK

927 - Thermally processed foods: possible health implications

Chair: Prof. Vincenzo FOGLIANO (IT)

Rapporteur: Dr Nikos KATSAROS (GR)

Processing is essential for producing foods which are microbiologically safe, have increased nutritional quality and reduced levels of potentially toxic compounds. In many food items, such as baked or roasted products, thermal treatment is indispensable for determining the specific nutritional and sensory properties, in particular texture, flavour and colour. Thermal treatment may induce the formation of health-promoting components, such as antioxidants and antimicrobial agents, which have not been studied in detail so far. Processing may also lead to the formation of heat-induced contaminants, such as mutagenic heterocyclic amines and acrylamide, particularly in fried potatoes.

The main objective of the Action is the production of healthier heat-treated foods and to improve knowledge of the beneficial and detrimental properties of newly formed compounds.

End of Action: 2009

Parties: AT, BE, BG, CH, CY, CZ, DE, DK, ES, FI, FR, GR, HR, HU, IE, IL, IT, LT, NL, NO, PL, PT, RO, SE, SI, SK, TR, UK

Non-COST participation: James Cook University (AU)

928 - Control and exploitation of enzymes for added-value food products

Chair: Prof. Johanna BUCHERT (FI)

Rapporteur: Dr Viktor NEDOVIC (RS)

The main objective of the Action is to develop tailored bioprocessing technologies for especially cereal, berry, fruit and vegetable and proteinaceous (dairy, meat, fish) food raw materials in order to obtain higher quality food products.

End of Action: 2010

Parties: AT, BE, BG, DE, DK, EE, ES, FI, FR, GR, IE, IS, IT, LT, NL, NO, PL, PT, RO, RS, SI, SK, TR, UK

Non-COST participation: University of Queensland (AU)

929 - A European network for environmental and food virology

Chair: Dr Nigel COOK (UK)

Rapporteur: Dr Marianna SCHAUZU (DE)

The Action wants to construct a network of expert European scientists, who will cooperate to promote the study of, and to tackle the issues associated with, food- and environmentally transmitted pathogenic viruses.

End of Action: 2010

Parties: BE, CH, CY, CZ, DE, DK, ES, FI, FR, GR, HU, IL, IT, LU, NL, NO, PL, PT, RS, SE, SI, TR, UK

Non-COST participation: Health Canada (CA), National Research Center (EG), Institute of Environmental Science & Research (NZ), Centers for Disease Control and Prevention (US), University of Pretoria (ZA)

FA0601 - Fish reproduction and fisheries

Chair: Dr Francisco SABORIDO REY (ES)

Rapporteur: Mrs Ragni OFSTAD (NO)

Most of the European marine fish resources are overexploited. Despite the technical measures implemented, many depleted stocks have failed to recover. There is increasing awareness that the traditional indicators of stock viability are inadequate because the capacity of the population to annually produce viable eggs and larvae is extremely important for stock viability and recovery. In addition, egg production is also influenced by ambient environmental conditions, the exact effects of which are still not quantified. Currently there are a number of research projects specifically examining the linkages between fish reproductive success and the subsequent population dynamics. In addition to these projects there is a need for increased cooperation between researchers, standardisation and cross calibration of the different protocols being used, enhanced exchange of ideas, demonstration of the latest advances and the creation of a common research platform that can provide fisheries managers with realistic tools for fish stock recovery. The main objective of the Action is to establish a network of researchers to co-operate on the improvement of knowledge on fish reproduction in relation to fisheries and the enhancement of the current assessment methodology in order to promote sustainable exploitation of marine fish resources.

End of Action: 2011

Parties: BE, DE, DK, EE, ES, GR, HR, IE, IT, NL, NO, PT, UK

Non-COST participation: Fisheries and Oceans Canada (CA), Ilia Chavchavadze State University (GE), Polar Research Institute of Marine Fisheries and Oceanography (RU)

FA0602 - Bioactive food components, mitochondrial function and health

Chair: Dr Jaap KEIJER (NL)

Rapporteur: Prof. Peter RASPOR (SI)

Good functional mitochondria are essential for a healthy organism and dysfunction leads to disease. The performance of mitochondria can be influenced by diet and dietary components. This provides opportunities for the improvement of human health and represents development opportunities for the food industry and science. Despite its importance world-wide, research in this area is extremely limited. This COST action will set up a structure to bring the mitochondrial research community and the nutrition research community together and build an integrated European research community aimed at understanding the interdependency between bioactive food components and mitochondrial function. Better understanding of this interaction may lead to important economic and social benefits by improving health, boosting industrial innovation and sustaining European competitiveness in this field.

End of Action: 2011

Parties: AT, BE, BG, CZ, DE, DK, ES, FR, GR, HU, IE, IT, LT, NL, NO, PL, PT, RO, RS, SE, TR, UK

FA0603 - Plant proteomics in Europe (EUPP)

Chair: Dr Jenny RENAUT (LU)

Rapporteur: Dr Jean-Paul SCHWITZGUEBEL (CH)

Plants, as all other living organisms depend on proteins to perform most of their vital functions. The name protein comes from the Greek πρῶτα (“prota”), meaning “of primary importance”. Proteins are the functional molecules that drive metabolic and regulatory pathways in a cell. Proteomics, i.e. the large-scale analysis of proteins in biological systems at a certain time point, aims to identify all proteins present and to characterize their qualitative and quantitative modifications, for example in response to environmental changes. Proteomics is a relatively recent technology currently undergoing fast development and growth, logically complementing the genomic and transcriptomic studies as well as the other emerging field of metabolomics. Although protocols have been developed to perform proteomic analysis in the human, animal and microbial domains of life, the plant kingdom still awaits a systematic approach for proteome analysis. This proposal aims to build up expertise in plant proteomics through an integrated network of European scientists. Tools for proteome analysis in fundamental and applied plant research areas will be developed and shared, to generate fundamental information about plant metabolism, investigate responses to environmental constraints and assess food quality. This proposal will also increase public understanding for new technologies, critical for further development

by the industry.

End of Action: 2011

Parties: BE, BG, CH, CZ, DE, DK, EE, ES, FI, FR, GR, IE, IT, LU, NL, NO, PL, PT, RS, SE, SI, SK, UK

FA0604 - Triticeae genomics for the advancement of essential European crops (TritiGen)

Chair: Prof. Alan SCHULMAN (FI)

Rapporteur: Dr Elena MARINOVA (BG)

Europe faces the challenge of delivering safe, high-quality, and health-promoting food and feed as well as bio-products in an economical, environmentally sensitive, and sustainable manner across environments that face climatic change and increasing abiotic and biotic stresses. Triticeae cereals (wheat, barley, rye) are essential in human and domestic animal nutrition and are arguably the most important crops for European agriculture. Existing germplasm resources and current breeding methods alone are insufficient for understanding the mechanisms underlying important traits and for catalysing a quantum leap in yield, sustainability and quality improvement. Major advances in crops will require a broad suite of direct genomics approaches, built on relevant data from model plants (rice, *Brachypodium*). Such a strategy is massively complex and can only be carried out efficiently at the international level. The four Working Groups will arrange workshops, Short Term Scientific Missions, a website, and joint databases and publications.

End of Action: 2011

Parties: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GR, HR, HU, IL, IS, IT, LT, LV, NL, NO, PL, PT, RS, SE, SK, TR, UK

Non-COST participation: Institute of Molecular Biology and Biological Physics (GE), All-Russia Research Institute of Agricultural Biotechnology (RU), Institute of Cytology and Genetics (RU), South Plan Biotechnology Center (UA)

FA0605 - Signaling control of stress tolerance and production of stress protective compounds in plants

Chair: Prof. Antonio TIBURCIO (ES)

Rapporteur: Dr Ozlem EKICI (TR)

Unravelling signalling steps and metabolic pathways controlling abiotic stress tolerance of plants, provides essential tools for coping with the accumulating negative effects of climate changes in breeding, agriculture and environmental protection. Improvement of efficacy of plant stress tolerance is essential for successful combating salinization, frost damage and desertification in European and also in other non-COST participating countries. Drought, salt and

cold tolerance traits of crops are controlled by biological regulatory mechanisms governing the production of highly effective stress-protecting metabolites, including polyamines and proline. The major goal of this Action is to stimulate cutting-edge collaborative research towards understanding the regulatory mechanisms of abiotic stress signalling pathways leading to the production of major stress-protective plant compounds. By stimulating scientific exchange among molecular geneticists, biochemists, plant physiologists and breeders, the network program aims at the identification of key regulators of plant abiotic stress responses and their essential stress-protective end-targets.

End of Action: 2011

Parties: AT, BE, BG, CH, CZ, DE, DK, EE, ES, FI, FR, GR, HR, HU, IL, IT, LU, NL, NO, PL, PT, SK, TR, UK

Non-COST participation: Universidad Nacional de Cordoba (AR), Universidad Nacional de San Martín (AR), Tohoku University (JP)

FA0701 - Arthropod Symbiosis: From Fundamental Studies to Pest and Disease Management

Chair: Prof. Kostas BOURTZIS (GR)

Rapporteur: Professor Anna PRETOVÁ (SK)

Pest and disease management poses significant challenges for the medical and agricultural communities. In addition, public concern over pesticide use and more stringent environmental regulations creates the need for new technologies. Bacterial symbiosis is prevalent in arthropods that can be devastating pests and efficient disease vectors. One new approach to control arthropod pest populations or to reduce vector competence is by symbiont-based control strategies (SCS) that are environmentally friendly and may replace chemical control methods. Research on symbiosis is an interdisciplinary subject requiring methods and protocols from various fields. It is therefore essential to coordinate the actions of EU groups working on symbiosis. To achieve this goal, the Action will bring together all European leading teams in this field. The network will cooperate in the form of five working groups: Arthropod Symbiont Diversity, Arthropod-Symbiont Metagenomes, Host-Symbiont Interactions, Symbiont-Based Control Strategies and Ethical, Regulatory and Commercial Aspects of SCS. The initiative will be managed in a way that will insure maximum interactions and its successful implementation will put the EU at the forefront of both basic and applied research in the area of arthropod symbiosis.

End of Action: 2012

Parties: AT, CH, CZ, DE, DK, ES, FR, GR, HU, IE, IL, IT, NL, NO, PL, PT, RS, SE, SI, UK

Non-COST participation: The University of Queensland (AU), Kyungpook National University (KR), Institute of Cytology and Genetics (RU), Université de Tunis El Manar (TN), University of California (US)

FA0702 - Maternal Interaction with Gametes and Embryos

Chair: Dr Alireza FAZELI (UK)

Rapporteur: Prof. Antonella BALDI (IT)

The main objective of the Action is to establish a network of European researchers working on different aspects of maternal interaction with gametes and embryo in different species to advance towards creation of a so called "Interactome" map of cell-to-cell interactions as well as endo- and paracrine interactions between gametes, embryos and female reproductive tract during different stages of reproductive cycle and pregnancy at health and under disturbed maternal nutrition and metabolism. Mechanisms of interactions of gametes or embryos with their maternal environment are important biological filters limiting reproductive success, both in livestock and the human. Although several aspects of the gamete/embryo-maternal interactome have been studied, there is so far no systematic analysis of this biological module. Such an ambitious task can obviously not be fulfilled by an individual laboratory or discipline. Thus the Action aims at joining laboratories from European member states with excellent expertise in the fields of reproductive biology and biotechnology with state-of-the-art technology and methods in transcriptomics, proteomics, metabolomics and systems biology. The Action intends to promote capacity-building of young researchers in this growing field by providing opportunities for further development and education via providing focused, inter-disciplinary workshops, an inter-disciplinary training school and the creation of working groups for different lines of research among the components of the consortium. This novel approach will further strengthen the already leading position of Europe in the field of reproductive biology and animal production. Knowledge of the gametes/embryo-maternal interactome will facilitate novel approaches for improving the efficiency and safety of assisted reproduction techniques. Further novel molecular markers of fertility will help to improve the fertility of livestock population by genomic selection and thus provide unique competitive advantages to the European animal breeding industry.

End of Action: 2012

Parties: AT, BE, CH, DE, DK, EE, ES, FR, GR, HU, IL, IT, LT, NL, PL, PT, SE, SI, SK, UK

Non-COST participation: University of Sydney (AU), Invermay Agricultural Centre (NZ)

FA0801 - Critical success factors for fish larval production in European Aquaculture: a multidisciplinary network (LARVANET)

Chair: Dr Amos TANDLER (IL)

Rapporteur: Prof. Anders KIESSLING (NO)

Sustainable growth of the European aquaculture industry requires

an improved knowledge basis that allows a predictable supply of high quality juvenile fish for the grow-out phase and up to the consumers' standards. Relatively low survival rates and sub-optimal quality are largely attributed to uncontrolled problems during larval rearing, and lack of tools for early prediction of larval phenotype and quality.

There are over 100 universities, colleges and research institutions in Europe involved in aquaculture, as well as an equal number of research institutions. Currently the European aquaculture industry produces about 1.3 million tonnes of fish, equal to one third of the EU fishery value. The aim of this Action is to contribute to the scientific knowledge basis as to support a sustainable development of aquaculture. This requires identifying critical success factors and gaps in knowledge in order to overcome the present limiting predictable mass supply of quality juveniles. The multidisciplinary network of researchers and producers intends to achieve this through integration of knowledge obtained in national and European research projects and practical experience. This Action will contribute to a better understanding of fish larval physiology, identify quality and performance predictors for larval-juvenile production and enhance a rapid development of improved production protocols and hatchery management procedures.

End of Action: 2012

Parties: BE, CH, CZ, DE, DK, ES, FR, GR, IT, NO, PL, PT, RO, SE, UK

FA0802 - Feed for health

Chair: Dr Luciano PINOTTI (IT)

Rapporteur: Prof. Avo KARUS (EE)

As in human nutrition, concepts in animal nutrition are changing. Optimal nutrition is now considered fundamental whereas in the past adequate nutrition was considered sufficient. Optimal nutrition implies that feeds must be considered not only in terms of their nutritional properties but also in terms of their ability to promote health and protect against disease. The health of the animal is fundamental in determining the quality, safety and wholesomeness of foods of animal origin for human consumption.

This Action will focus on the role of animal nutrition in improving animal health; the role of animal nutrition in designing functional foods for humans; and the development of the concepts of feed safety, feed quality and feed functionality, as counterparts of these ideas as they are currently applied foods for humans. The main task of the network will be to promote the acquisition and facilitate the dissemination of knowledge in these areas and encourage cooperation between various groups working in the area.

End of Action: 2012

Parties: BE, BG, CH, CZ, DE, DK, EE, ES, FI, FR, GR, IE, IT, LT, MK, NL, NO, PL, RO, SI, TR, UK

FA0803 - Prevention of honeybee Colony Losses (COLOSS)

Chair: Dr Peter NEUMANN (CH)

Rapporteur: Dr David COATES (UK)

In Europe, China and the USA, beekeepers are being regularly confronted with severe inexplicable and sudden colony losses (Euro 400 million per year, excluding pollination value), with colonies exhibiting diverse symptoms (CCD = Colony Collapse Disorder). This major pollinator decline may lead to even more serious economic and ecological consequences than already experienced (severe pollination deficits in major crops) because beekeepers and veterinary authorities are unaware of the underlying factors and cannot implement effective mitigating measures. Efforts by individual countries to reveal the drivers of colony losses are doomed due to the high number of interacting factors. COLOSS will identify the factors at the individual honeybee and colony levels causing severe colony losses and investigate synergistic effects between them. This will enable the development and dissemination of emergency measures and sustainable management strategies to prevent large scale losses. For this purpose, leading scientists, beekeepers and industry will collaborate with complementary approaches, thereby providing the crucial R&D link for the success of this Action. This worldwide integrated approach will mitigate the detrimental impact of honeybee colony losses for beekeepers, agriculture and natural biodiversity.

End of Action: 2012

Parties: AT, BE, BG, CH, DE, DK, ES, FI, FR, GR, HR, HU, IT, MK, NL, NO, PL, PT, RS, SE, SI, UK

FA0804 - Molecular farming: plants as a production platform for high value proteins

Chair: Dr Kirsi-Marja OKSMAN-CALDENTY (FI)

Rapporteur: Prof. Henrique GUEDES-PINTO (PT)

Proof-of-principle for Molecular Farming (MF) has been established over the last 15 years through sustained efforts of a growing number of European research groups. This work has been supported by the strategic decision of the EU to fund several initiatives through FPs 4-6 resulting in an impressive volume of generated knowledge. The aim of the Action is to leverage fruits of earlier EU, national and industrial investments in Molecular Farming to reach the next level, i.e. to move from R&D to applications, to develop product-oriented platforms, to enable new classes of products, to lower the costs and ultimately to commercialize the products. This Action will create new opportunities for European agriculture, horticulture and related technology sectors as the plants dedicated to Molecular

Farming constitute new high-value crops. The Action brings the key players together and will increase European momentum, capacity and infrastructure. It will also expand activities to countries that have not thus far been able to participate, including developing countries. The concrete outcome will be a sustainable European Molecular Farming community with a clear vision, and links and input into scientific, regulatory, biosafety, intellectual property (IP), dissemination and public engagement activities.

End of Action: 2012

Parties: AT, BE, BG, CH, CZ, DE, DK, EE, ES, FI, FR, GR, IL, IS, IT, LT, NL, NO, PL, PT, SI, UK

FA0805 - Goat-parasite interactions: from knowledge to control (CAPARA)

Chair: Dr Smaragda SOTIRAKI (GR)

Rapporteur: Prof. Vlatko ILIESKI (MK)

Goat production is an example of a sustainable production fully integrated within the local rural development. One of the main threats on the outdoor breeding of goats is parasitism. For years, it has been considered that the data obtained on parasite infections in sheep can be directly transferred to goats. Several recent studies in different disciplines have underlined the existence of significant specificities in the goat-parasite interactions.

The main objective of the Action is to advance our knowledge on various aspects of goats' parasitology and health management towards a better understanding of the different components explaining the specificities of goat-parasite interactions as well as to develop sustainable strategies to control parasitic diseases in goats.

End of Action: 2013

Parties: in progress (new Action)

FA0806 - Plant virus control employing RNA-based vaccines: A novel non-transgenic strategy

Chair: Prof. Andreas VOLOUDAKIS (GR)

Rapporteur: Prof. Dov PRUSKY (IL)

The currently applied virus control methods are limited in number, efficacy and environmental suitability. Thus new methods are urgently called forth. A very promising and exciting approach is the exploitation of a natural, endogenous mechanism in plants providing virus resistance known as RNA silencing. This is a sequence-specific process leading to viral mRNA degradation, triggered by the presence of short interfering RNAs (siRNAs), an outcome of the degradation of double-stranded RNA (homologous

to virus sequences). Since current EU decisions restrict transgenic plant usage, non-transgenic approaches exploiting the silencing mechanism for plant virus control are needed.

The main objective of the Action is to develop suitable, efficient and cost-effective methods for reactive and proactive responses to viral diseases of plants for a sustainable agriculture.

End of Action: 2013

Parties: in progress (new Action)

FA0807 - Integrated Management of Phytoplasma Epidemics in Different Crop Systems

Chair: Prof. Assunta BERTACCINI (IT)

Rapporteur: Dr Ozlem EKICI (TR)

Phytoplasmas are insect-transmitted plant pathogenic prokaryotes causing serious diseases in important crops such as grapevine, vegetables, corn, sugar beet, oil-seed crops and fruit trees throughout Europe. Recent advances in phytoplasma genomics have generated an impetus for research into control and management of these diseases.

The main objective of the Action is to promote information exchange in order to design integrated phytoplasma management strategies for the sustainable production of high-quality plant products and to reduce pesticide use resulting in less residues in fresh market products fruit, vegetables and grapevine.

End of Action: 2013

Parties: in progress (new Action)

TD0801 - Statistical challenges on the 1000€ genome sequences in plants

Chair: Dr Marco BINK (NL)

Rapporteur: Dr Laufey STEINGRIMSDOTTIR (IS)

New sequencing technologies either currently available or under development will eventually enable eukaryotic genomes to be sequenced for less than 1000 euros. This technology-push will have a major impact on plant genomics and biological research and lead to a dramatic expansion in both the availability of sequence data and the range of sequence based applications. New innovative techniques are required to unlock the information contained in the sequence data and to apply the acquired knowledge for plant science and crop improvement. The wide variety and often unique characteristics of plant genomes pose additional challenges and opportunities.

The need for and the dissemination of efficient strategies for handling

and analyzing high throughput sequence data in plants requires cooperation at the international level to develop new approaches & analytical tools and share best practice.

The main objective of the Action is to use and/or develop, through coordinated international efforts, efficient statistical and bioinformatics tools and strategies in order to produce, assemble, analyze, and integrate high-throughput genomic sequence data, aiming at a better understanding of biological systems in plants.

End of Action: 2013

Parties: in progress (new Action)

FA0901 - Putting Halophytes to Work: From Genes to Ecosystems

Chair: to be confirmed

Rapporteur: to be confirmed

The growing human population presents a huge challenge to world agriculture. As more than 40% of the Earth is arid or semi-arid and most of the planet's water is saline, we advocate the sustainable use of these under-exploited resources for human benefit. Halophytes have evolved in saline habitats and are an untapped source of food, fibre and bioenergy. Deepening our understanding of halophytes and saline ecosystems will help combat salinisation, soil erosion, loss of biodiversity and bioproductivity.

The main objective of the Action is to collate existing knowledge of halophytes from gene function to ecosystems that will impact on conservation and management of saline environments and agricultural productions.

The Action will tackle the problems of salt-affected agricultural land and support the timely development of a saline agriculture using brackish water as a replacement or a supplement for diminishing freshwater.

End of Action: 2013

Parties: in progress (new Action)

FA0902 - Understanding and combating porcine reproductive and respiratory syndrome in Europe

Chair: to be confirmed

Rapporteur: to be confirmed

Twenty years after its emergence, porcine reproductive and respiratory syndrome (PRRS) is still having major impacts on pig health and welfare. The etiologic agent is the PRRS virus. PRRS remains a challenge to the sustainability of pig production, especially

with the emergence of new highly pathogenic PRRSV strains. To date, European PRRS research programs have been fragmented.

The main objective of the Action is to improve knowledge on porcine reproductive and respiratory syndrome (PRRS) in Europe in order to identify effective strategies to combat it.

The objectives are also to generate specific outcomes such as the identification of key challenges and propose potential solutions to problems to increase progress and facilitate the use of new technologies in animal health. With a specific emphasis on genetics and genomics this Action will improve understanding of, and hence better control, of PRRS.

The strategies derived from this Action will benefit animal health, producers, public health and allied organizations that have a stake in animal agriculture systems. The recommendations will be widely disseminated and serve as a roadmap for training and future initiatives.

End of Action: 2013

Parties: in progress (new Action)

FA0903 - Harnessing plant reproduction for crop improvement

Chair: to be confirmed

Rapporteur: to be confirmed

Although most desirable crop traits are polygenic, no plant breeding tools exist, which allow the efficient fixation of multigenic traits over successive generations. Among several reproductive system-related strategies for fixation of desirable agronomic traits, one of the best choices is apomixis (i.e. clonal seed production) that would enable the instantaneous fixation of the complete genome of the best plants. For instance, apomixis technology would allow the fixation of heterosis in F1 hybrids. Moreover, when coupled with male-sterility systems, apomictic reproduction (with no need for male contribution) could help in addressing issues related to transgene escape from GM crops to organic or conventional crops, and thereby allow for better coexistence systems in Europe.

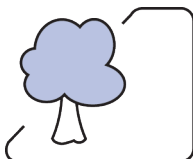
The main objective of the Action is to understand the mechanisms of sexual/apomictic plant reproduction and to facilitate the use of this increased knowledge in the development of new approaches in biotechnology, agriculture and food industry through improved crops.

End of Action: 2013

Parties: in progress (new Action)

Forests, their Products and Services (FPS)

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The Domain *Forests, their Products and Services* is concerned with complex and unique processes which form the basis for present and potential capacity to provide resources to satisfy human needs as well as environmental values. The FPS Domain has the mission to promote research along

the whole forest-wood-chain by providing a platform for the effective coordination of nationally funded research activities in the areas of forestry, wood technology and pulp & paper.

The following examples illustrate aspects of actual research in this Domain. The scope of the Domain is not, however, restricted only to these activities.

Forestry Research supports activities aiming at meeting the social, economic, ecological, cultural, health-bringing and spiritual needs of present and future generations. In the light of the current international forest dialogue the DC FPS offers a forum for encouraging a scientific debate on ensuring a sustainable provision of forest products and services, such as wood and wood products, water, bio-energy, rural development, recreation and public health, habitats for wildlife, landscape diversity, carbon sinks and reservoirs.

Forests and Environment research activities are fostered focusing on the protection of forests against harmful effects of pollution, including air-borne pollution, fires, pests and diseases, in order to maintain their full multiple values. In this context adequate importance is attached to the provision of timely, reliable and accurate information on forests and forest ecosystems as they are essential for public understanding and knowledge-based decision-making.

Wood Technology sector aims at an increase of knowledge necessary for a broader use of timber, a sustainable, energy efficient and renewable resource. With the objective to enhance the competitiveness of timber, DC FPS supports research activities focusing on the improvement of wood properties, the performance of timber and its indoor and outdoor usability.

Pulp and Paper sector promotes research contributing to an increase in knowledge of the physical, chemical and biological characteristics of the pulps and the resulting products. High priority is placed on optimising the level of utilization of the resources and

to improve both the sustainability of pulp and paper making and the competitiveness of paper products.

At a cross-sector level the DC FPS addresses issues as life-cycle analysis, tourism, energy production and recycling being of great importance for the achievement of a sustainable development. Therefore, new ideas and initiatives are welcome as well as those with high interdisciplinary elements and close links and overlaps with other domains.

E45 - European forest externalities (EUROFOREX)

Chair: Prof. Pere RIERA (ES)

Rapporteur: Prof. Kiril SOTIROVSKI (MK)

The main objective of the Action is to produce research protocols for investing work to improve the quality standards in valuing the externalities produced by different types of forest in Europe. The main expected benefits are the achievement of an improved and consistent quality level in forest valuation exercises undertaken in Europe, the improvement and spreading of the practice of benefit transfer, and thereby increase the use of forest externality values as a tool for the valuation of forest nature as a European resource, to provide end-users with reliable monetary estimations of forest externalities and to provide the research environment with a future research agenda.

End of Action: 2010

Parties: AT, BE, CH, DE, DK, ES, FI, FR, IE, IL, IT, NL, NO, PL, PT, RO, SE, SI, SK, UK

Non-COST participation: University of Waikato (NZ), National Institute for Research on Rural Engineering, Water and Forests (TN)

E47: European Network for Vegetation Management: towards environmental Sustainability

Chair: Dr Nick McCARTHY (IE)

Rapporteur: Dr George PATTICHIS (CY)

The main objective of the Action is to gradually reduce dependence on herbicides in Europe's forests by developing alternatives that are based on sound forest management principles, recognize society's need for the sustainable production, and employ methods that are environmentally sound, socially acceptable, and economically viable. The key benefit of the Action would be to establish a European forum for the management of forest vegetation, where co-operation between the main players in the forest industry in Europe together with the scientific institutions would give leadership and create

networks in this field providing data and information for national forest services and the public.

End of Action: 2009

Parties: BE, BG, CZ, DE, DK, ES, FI, FR, GR, IE, IS, IT, LT, NO, RO, RS, SE, SK, UK

E48: The Limits of Paper Recyclability

Chair: Mr Jan-Erik LEVLIN (FI)

Rapporteur: Prof. Arnis TREIMANIS (LV)

The main objective of the Action is to develop scenarios describing the future use of recovered paper within the European paper industry in order to provide a better background for focused research activities in the field as well as to facilitate investment decisions. The benefits of the Action will be a sound base for targeted research, provision of necessary arguments in the discussion with governmental organizations, guidelines for the design of recycle-friendly paper products, guidelines for more effective, tailor-made collection strategies for used paper and a background for investment decisions.

End of Action: 2009

Parties: BG, CZ, DE, ES, FI, FR, GR, HR, HU, IE, IT, LV, NL, PL, RO, SE, SI, UK

E49: Processes and Performance of Wood-based Panels

Chair: Dr Mark Anthony IRLE (FR)

Rapporteur: Dr Frédéric PICHELIN (CH)

The main objective of this COST Action is the scientific-based advance of wood-based panels and their production processes towards higher technical, economic and environmental standards. Such improvement is essential for the sector to meet future demands and competition with other materials and markets. The Action is covering fundamental research on wood-based panels production and product performance and is also concentrating on technology and information transfer.

End of Action: 2009

Parties: AT, BE, BG, CH, DE, DK, ES, FI, FR, GR, HU, LV, MK, NO, PL, PT, RO, RS, SE, SI, SK, TR, UK

E50: Cell wall macromolecules and reaction wood (CEMARE)

Chair: Prof. J.R. BARNETT (UK)

Rapporteur: Ms Eva ESPING (SE)

The main objective of the Action is to achieve a better understanding of the structure and biosynthesis of wood macromolecules like lignin, hemicelluloses and cellulose and their impact on wall assembly and wood properties, including reaction wood, for the development of new products based on wood.

End of Action: 2009

Parties: AT, BE, CH, DE, DK, FI, FR, IT, LU, LV, NL, NO, PL, SE, SI, TR, UK

Non-COST participation: Horticulture and Forestry Science (AU), University of Auckland (NZ)

E51: Integrating Innovation and Development Policies for the Forest Sector

Chair: Dr Ewald RAMETSTEINER (AT)

Rapporteur: Dr Paavo KAIMRE (EE)

The main objective of this Action is to develop knowledge that enables integration of innovation and development policies for a more effective and sustainable development of the forest sector.

End of Action: 2010

Parties: AT, BG, CH, CY, CZ, DE, DK, EE, FI, FR, HR, IT, LT, NO, PL, PT, RO, SE, SK, UK

Non-COST participation: State Agricultural University (MD)

E52: Evaluation of Beech Genetic Resources for Sustainable Forestry

Chair: Dr Georg VON WÜHLISCH (DE)

Rapporteur: Prof. Frits MOHREN (NL)

The main objective of this COST Action is to make predictions of the future distribution range of beech forest ecosystems under the assumption of certain scenarios of climate change based on the analysis of the reaction pattern of European Beech populations of defined origin (progenies of natural beech stands) under changed climate situations in sets of pan European field trials.

End of Action: 2010

Parties: AT, BE, BG, CH, CZ, DE, DK, ES, FR, GR, HR, HU, IE, IT, NL, PL, RO, RS, SE, SI, SK, UK

Non-COST participation: Ukrainian State University of Forestry and Wood Technology (UA)

E53: Quality control for wood and wood products

Chair: Prof. Robert KLIGER (SE)

Rapporteur: Prof. Petar TODOROVIC (RS)

The main objective of the Action is to improve methods of quality control in processing of round wood and timber to ensure that timber products and components meet the requirements of the users.

*End of Action: 2010**Parties: AT, BE, BG, CH, DE, DK, ES, FI, FR, GR, HR, HU, IE, IT, LT, LV, NL, NO, PL, PT, RS, SE, SI, SK, UK***E54: Characterisation of the fine structure and properties of papermaking fibres using new technologies**

Chair: Prof. Arnis TREIMANIS (LV)

Rapporteur: Dr Bruno ANDERSONS (LV)

The Action aims at generating new knowledge on the micro- and nanostructure of papermaking fibres and properties required for the efficient and sustainable use of fibres in traditional, advanced and future products.

*End of Action: 2010**Parties: AT, BG, CH, DE, ES, FI, FR, HU, IE, IL, IT, LV, NL, NO, PT, RO, SE, SI, UK***E55: Modelling of the performance of timber structures**

Chair: Prof. Jochen KÖHLER (CH)

Rapporteur: Ms Eva ESPING (SE)

The main objective of the Action is to provide the basic framework and knowledge required for the efficient and sustainable use of timber as a structural and building material.

*End of Action: 2010**Parties: AT, BE, CH, DE, DK, ES, FI, FR, HR, IE, IT, LT, NL, NO, PT, SE, SI, UK**Non-COST participation: University of Technology - Sydney (AU), University of Auckland (NZ)*

FP0601 - Forest Management and the Water Cycle (FORMAN)

Chair: Prof. Michael BREDEMEIER (DE)

Rapporteur: Prof. Pedro BERLINER (IL)

The Action aims at the enhancement of knowledge on forest–water interactions in Europe, and the elaboration of science-based guidelines for the improvement of the management of forests predominantly designated for the production and storage of water. Forest–water interactions comprise the water resource aspect and also the problem of potential hazard to the human population. Along river systems and in their larger floodplains, peak flow rates may entail devastating floods. It is speculated that the frequency and intensity of such floods are currently increasing owing to global climatic change and a concomitant amplification of extreme weather situations. Water regulation contributing to flood control, and water supply by forest soils and aquifers are among the most prominent forest ecosystem services. However, these are potentially at risk under a changing climate and changing management practices. The state of knowledge concerning actual risk is still very limited. This COST Action will pull together the enormous potential of forest- and water-related research in Europe in an integrated interdisciplinary approach. Thus, it will contribute to overcoming the currently existing fragmentation.

End of Action: 2011

Parties: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GR, HR, IL, IS, IT, LT, NO, PL, PT, SE, SI, SK, TR, UK

Non-COST participation: State Agricultural University (MD)

FP0602 - Biotechnology for lignocellulose biorefineries (BIOBIO)

Chair: Prof. Liisa VIIKARI (FI)

Rapporteur: Dr Frédéric PICHELIN (CH)

This Action aims at developing innovative biosciences and technologies required to build and implement advanced lignocellulose biorefineries. The primary objective is to develop environmentally sound and cost-effective biotechnical tools and production technologies to be exploited in the production of fibres, chemicals and bioenergy. European industry and R&D already have a strong position within white biotechnology. This Action will strengthen the position of Europe in the areas of white biotechnology and lignocellulose-based biorefineries. The Action is covering the following three areas: 1) development of new biotechnical tools; enzymes and micro-organisms, 2) application of enzymatic tools and processing methods to improve the competitiveness of renewable fibre products and 3) production of second generation biofuels,

bio-based polymers and chemicals. The Action is cooperating closely with the European forestry-agro sector and industry. The participating experts are active in a broad range of related scientific fields (enzymology, genetics, biochemical engineering, polymer chemistry, fibre technologies). The Action will contribute to the further development and implementation of biorefineries, thereby assisting the member countries to achieve the targets set by the European Commission for sustainable energy supply and bio-based economy.

End of Action: 2011

Parties: AT, BE, BG, CH, CZ, DE, DK, ES, FI, FR, GR, HU, IE, IL, IT, NL, NO, PT, SE, SK, TR, UK

Non-COST participation: SCION (NZ)

FP0603 - Forest models for research and decision support in sustainable forest management

Chair: Prof. Margarida TOME (PT)

Rapporteur: Prof. Giuseppe SCARASCIA-MUGNOZZA (IT)

Forest growth models are important tools within research to investigate and understand key ecosystem processes and to support forest management decisions. Sustainable forest management requires detailed information on tree growth and forest dynamics, including structural development, biodiversity indicators, and effects of disturbances. This is reflected in increasing emphasis, throughout Europe, on more detailed, versatile forest growth models which are able to forecast forest growth, account for changes in growing conditions, address risks and society needs and explicitly address forest management and its role within sustainable development. The main objective of the Action is to promote the developing of methodologies to improve forest models to support the sustainable management of forests. The Action will enhance the quality and consistency of forest growth models to simulate the responses of forests to alternative managerial and climate scenarios. The Action will also demonstrate variations in regional concepts as they have evolved depending on the background of the model developers and society needs. This will be beneficial for the advancement of forest science in Europe, and will improve sustainable forest management practices.

End of Action: 2011

Parties: AT, BE, BG, CH, CZ, DE, DK, EE, ES, FI, FR, GR, HR, IE, IT, LT, NL, NO, PT, RS, SI, SK, UK

Non-COST participation: State Agricultural University (MD), SCION (NZ)

FP0701 - Post-Fire Forest Management in Southern Europe

Chair: Dr Francisco MOREIRA (PT)

Rapporteur: Prof. Francisco CASTRO REGO (PT)

Every year about 45000 fires occur in Europe, burning half a million hectares of land. Post-fire forest management deals with the restoration of burned areas and with the opportunity for establishing more resilient forests and landscapes. The main objective of this Action is the development and dissemination of scientifically based decision criteria for post-fire forest management from stand to landscape level planning. Secondly, the Action aims at transferring this scientific knowledge into management practices. Thirdly, it will support efforts to communicate these practices to the end-users. Although focused on Southern Europe, the outcomes of this Action will be of great value for central and northern European countries as well, as the effect of climate change, in particular fire hazards are affecting a steadily increasing area of forests.

End of Action: 2012

Parties: BG, CH, CY, DE, ES, FR, GR, IT, LT, MK, PL, PT, RO, SI, TR, UK

Non-COST participation: Joint Research Center (JRC), National Institute for Research on Rural Engineering, Water and Forests (TN)

FP0702 - Net-Acoustics for Timber based Lightweight Buildings and Elements

Chair: Mr Michel VILLOT (FR)

Rapporteur: Mr Marc VAN LEEMPUT (BE)

The main objective of the Action is to improve the acoustic behaviour of timber based lightweight buildings as well as to develop effective prediction models and measurement schemes. In recent years an increasing interest in timber based lightweight components and buildings (TBLB) can be observed. The acoustic behaviour of TBLBs is predominately determined by the natural frequencies of resonance and the low mass of building materials used in this construction method. Thus, the acoustic measurement procedures and characterizations of timber based components as well as the prediction of the acoustic performance in situ are research areas that require further activities. This Action will aim at advancing the relevant technical knowledge and will contribute to the development of guidelines for TBLBs focusing on an improvement of their performance regarding acoustics and low frequency vibration behaviour.

End of Action: 2012

Parties: AT, BE, CH, DE, DK, ES, FI, FR, IE, NL, NO, SE, SI, UK

Non-COST participation: Royal Melbourne Institute of Technology (AU)

FP0703 - Expected Climate Change and Options for European Silviculture (ECHOES)

Chair: Dr Jean-Luc PEYRON (FR)

Rapporteur: Mr Jean-Michel CARNUS (FR)

The main objective of the Action is to mobilise and integrate the existing scientific knowledge for European forest policymakers and managers who have to make decisions on adaptation to and mitigation of climate change, as the predicted changes are of major concern for forestry. Many scientific activities initiated in that field have not yet led to clear and tested strategies for action as they are of a too global character for European forestry or their scopes have been too limited to actually contribute to the further development of sustainable forest management. ECHOES will support European decision makers and forest managers in elaborating strategies aiming at the reduction of forest losses, an increase of forest gains, and an adoption of mitigation and adaptation measures. It also aims at suggesting improvements for monitoring systems and identifying research priorities. In order to reach these goals, the Action will foster holistic and cross-sectoral approaches taking in particular into consideration the broad range of products and services provided by forest ecosystems.

End of Action: 2012

Parties: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GR, HR, HU, IE, IT, LT, NL, NO, PL, RS, SE, SI, SK, UK

Non-COST participation: European Forest Institute

FP0801 - Established and Emerging Phytophthora: Increasing Threats to Woodland and Forest Ecosystems in Europe

Chair: Dr Stephen WOODWARD (UK)

Rapporteur: Prof. Kiril SOTIROVSKI (MK)

With the rapidly growing international trade in plants and ongoing impacts of climate change, activities of plant pathogens in the genus *Phytophthora* are increasing, threatening the biodiversity and sustainability of European forest ecosystems. This Action unites scientists and disease control experts working on *Phytophthora* in forest ecosystems with the overall aim of increasing understanding of the biology and ecology of *Phytophthora* species with potential to cause damage to European forestry; this knowledge will be used in the development of effective control and management protocols

for the problems caused. This knowledge will be promoted in an effort to increase knowledge and awareness of the problem by disseminating information to end-users and authorities in the forestry sector, and to the general public. In four interrelated working groups the ways in which Phytophthora species spread into and within Europe; examine methods to detect host resistance; disseminate state-of-the-art rapid molecular diagnostics, and seek sustainable techniques for management and control of the diseases. Project outcomes will include understanding of threats to forest ecosystems by Phytophthora, increased abilities rapidly to detect the pathogens, and sustainable management solutions to the diseases caused by these destructive organisms.

End of Action: 2012

Parties: AT, BE, BG, CH, DE, DK, ES, FI, FR, GR, IT, NL, PL, PT, RO, RS, SK, TR, UK

Non-COST participation: Murdoch University (AU), Institute of Plant Protection (BY), SCION (NZ), University of Sousse (TN)

FP0802 - Experimental and Computational Micro-Characterisation Techniques in Wood Mechanics

Chair: Dr Karin HOFSTETTER (AT)

Rapporteur: Dr Martin GREIMEL (AT)

The emerging techniques in the fields of physics, chemistry, materials and computer science bear an enormous potential for the investigation of wood materials. Their appropriate application will boost the state-of-the-art in wood mechanics. Highly sophisticated imaging techniques in combination with increasing computer processing power and memory capacities allow studying materials at always smaller length scales. This Action aims at exploiting the emerging experimental and computational techniques for improving the knowledge of microstructural features of wood and their relevance for the macroscopic material behaviour. Particular attention will be paid to the effects of moisture, load, temperature, and time on the mechanical behaviour. The increased knowledge of the hygro-thermo-mechanical behaviour of wood will result in a better predictability of the material properties and their changes over time and, thus, enhance the reliability of the material. Together with the improved characterisation techniques, the better knowledge base will create new possibilities for the development and engineering design of innovative wood-based products in the future, starting off at the scale of the wood cell wall or its constituents. Stimulating the use of wood as a renewable and CO₂ neutral raw material will contribute to a sustainable development in Europe.

End of Action: 2012

Parties: AT, CH, DE, DK, ES, FI, FR, HU, IT, LT, NL, NO, PL, RS, SE, UK

Non-COST participation: IREQ (CA), SCION (NZ)

FP0803 - Belowground carbon turnover in European forests

Chair: Dr Ivano BRUNNER (CH)

Rapporteur: Dr Petar ZHELEV (BG)

The importance of belowground carbon (C) turnover in the functioning of forest ecosystems is often underestimated. While inputs and outputs of C in the aboveground part of forest ecosystems can be measured relatively easily and continuously, little is known about the mechanisms and processes of belowground C allocation. These include processes affecting the turnover rates of fine roots, mycorrhizal fungi, and soil organic matter.

The main objective of the Action is to improve and to coordinate the methods and the knowledge to measure and calculate belowground C turnover rates, and to implement the obtained values in improved biogeochemical models to develop sustainable belowground C management strategies for European forest ecosystems to ensure a maximum of resilience under adverse or gradually changing environmental conditions.

End of Action: 2013

Parties: in progress (new Action)

FP0804 - Forest Management Decision Support Systems (FORSYS)

Chair: Prof. Ola ERIKSSON (SE)

Rapporteur: Dr Gulzade KAHVECI (TR)

Forests serve a multitude of purposes and address many different, often conflicting, goals to satisfy the needs of forest owners, forest industry, and society at large. This poses considerable challenges to forest managers. The need for enhanced forest decision support systems (DSSs) is evident in several EU documents related to the future role of European forests. Forest DSSs allow the forest manager to use advanced decision support tools, such as expert and knowledge based systems, multi-criteria techniques as well as communication and visualization tools. European experience with developing and applying forest DSSs for forest management provides a solid foundation for technological innovation and collaboration between research partners.

The main objective of the Action is to develop a procedural framework, information standards and guidelines for the development, testing and evaluation as well as the application of Decision Support Systems for forest management problems in multifunctional forestry.

End of Action: 2013

Parties: in progress (new Action)

FP0901 - Analytical Techniques for Biorefineries*Chair: to be confirmed**Rapporteur: to be confirmed*

Trees, annual and perennial plants, recycled fibres, and lignocellulosic side streams from forest and agroindustry are renewable resources for the development of natural materials, biochemicals, and bioenergy. The chemical complexity of plant materials, the feed material of Biorefineries, renders the analyses of the feed constituents, processes, and valorised products challenging.

The main objective of the Action is to develop new and evaluate existing analytical methods related to forest-based and agroindustrial Biorefineries. Thus, the Action covers the analytical methods for the Biorefinery feed material and for processed biochemicals, biomaterials, and process residues. Especially analytical pretreatments will be evaluated. Critical steps are the representativeness of the sampling and samples, the extraction, fractionation, and sample storage methods applied. New methods will be applied and evaluated for their relevance. Other emphasised areas will be development of analytical on-line applications, hyphenated techniques, and applying statistical multicomponent analyses to sort out the relevant data from the main data stream. The European forest-based, bioenergy-based and agroindustrial industries will benefit from the Action in receiving relevant information on their developments of sustainable and environmentally benign solutions for novel utilisation of renewable resources. The development of analytical tools will lead to cost effective and sustainable processes and products.

*End of Action: 2013**Parties: in progress (new Action)***FP0902 - Development and harmonisation of new operational research and assessment procedures for sustainable forest biomass supply***Chair: to be confirmed**Rapporteur: to be confirmed*

The main objective is to harmonise forest energy terminology and methodologies of forest operations research and biomass availability calculations thereby building the scientific capacity within forest energy research and supporting the technology transfer of the forest biomass procurement chain and sustainable forest management. At present the use of forest biomass for energy is an increasingly important topic particularly in light of the debate on climate change. Forest biomass offers the largest potential as a renewable fuel. In order to ensure the reliable and sustainable supply of forest fuel new

technological solutions to procure forest biomass are needed.

By harmonising research methodologies in forest biomass operations research it is anticipated that more solid conclusions can be drawn from research results since the Action enables more comparable repetitions of the same studies across Europe. Furthermore, research results will be more comparable and the generalisation of research results will be improved.

The Action will provide an original synthesis of multidisciplinary research efforts and an innovative European wide reference for forest biomass for energy terminology, sampling methods, standard measurements, and research methodologies. This synthesis will promote the increase in the use of forest biomass for energy as laid out in the EU strategies. Through the possibilities of the networking concept, the most suitable research methods can be identified, harmonised and standardised throughout the EU. The Action contributes to provide a more solid basis for the decision making on national and EU levels on biomass supply.

End of Action: 2013

Parties: in progress (new Action)

FP0903 - Climate Change and Forest Mitigation and Adaptation in a Polluted Environment

Chair: to be confirmed

Rapporteur: to be confirmed

Forests are expected to face significant pressures from climate change and air pollution. The COST Strategic Workshop “Forest Ecosystems in a Changing Environment: Identifying Future Monitoring and Research Needs”, held in Istanbul in 2008, recommended more integration between approaches and themes in order to assess the risks for European forests.

The main objective is to increase understanding of state and potential of forest mitigation and adaptation to climate change in a polluted environment, and to reconcile process-oriented research, long-term monitoring and applied modelling at comprehensive forest research sites

Present forest monitoring in Europe is carried out at Level I and II plots by the ICP Forests programme on behalf of the Convention on Long-range Transboundary Air Pollution. Supersites of Level III were proposed in Istanbul, with the main aim of integrating soil, plant and atmospheric sciences and monitoring, and providing policy-oriented modelling with scientifically sound indicators of pollution and climate-related risks.

End of Action: 2013

Parties: in progress (new Action)

Individuals, Societies, Cultures and Health (ISCH)

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The Domain *Individuals, Societies, Cultures and Health* will support the development of knowledge and insights for citizens, democratic debate and decision-making in the public, private and voluntary spheres.

The following examples illustrate aspects of potential research topics in this Domain. The scope of the Domain is not restricted to these activities.

The development and behaviour of individuals and groups: Mind, cognition and complexity; Language development; Learning; Creativity; Socialisation; Identities and Attitudes; Gender; Vulnerability and resilience; Decision-making and risk-taking, etc.

Social, Economic, Political, Cultural, Historical and Technological Structures and Processes, and how these persist and/or change: Economic development; Governance and citizenship; Social cohesion; Poverty and inequality; Health and wellbeing; Public safety and security; Human impacts on the environment; War and conflict; International and inter-group relations; Risk and regulation; Institutional and organisational frameworks; management; Health systems and policies; Families and parenting; Inter-generational relations; Education and skills development; Labour markets; Work and Leisure; Welfare regimes; Demographic change and migration etc.

Cultural Diversity and a Common European Future: Languages, literatures, music and art; Regional/national histories and European history; Media and communication; Values continuity and change; People and landscapes/cityscapes; Locational and spatial variation; Cultural heritage; Cultures of food and drink; Philosophies of humans, nature, science and society; Everyday cultures, etc.

Inter-disciplinary topics linking social science/humanities perspectives with the natural, medical and engineering sciences are particularly welcomed by this Domain, provided that the social science/humanities aspect is predominant.

A28 - Human Rights, Peace and Security in EU Foreign Policy

Chair: Prof. Cees FLINTERMAN (NL)

Rapporteur: Mr Michael SCHUSTER (DE)

The main objective of the Action is to increase and deepen knowledge on the functioning of national and international instruments devised to pursue human rights, peace and security objectives in order to recommend modifications of the foreign policy of the European Union. An international network will be created consisting of European human rights institutes, several of which co-operate as the Association of Human Rights Institutes (AHRI), established in 2000. Some AHRI-institutes are leading research centres in the field of human rights studies, nationally and internationally. Their multidisciplinary study of human rights issues from juridical, social-scientific as well as normative and historical perspectives, adds value to the quality and completeness of the implementation of this Action.

End of Action: 2009

Parties: AT, BE, BG, CY, DE, DK, ES, FI, IE, IS, NL, NO, PT, RO, RS, SE, UK

A30 - East of West: Setting a New Central and Eastern European Media Research Agenda

Chair: Dr Miklos SÜKÖSD (HU)

Rapporteur: Ms Leopoldina FORTUNATI (IT)

The main objective of the Action is to increase the knowledge concerning media production, media reception and use, and the political implications of the transformation of the media landscape in the Eastern and Central European context. The Action will re-examine the usefulness of Western European and American communication research, media studies and normative theoretical traditions and develop empirically based novel conceptualisation.

End of Action: 2009

Parties: BA, BE, BG, CZ, DE, EE, ES, FI, FR, GR, HR, HU, IE, IL, IT, LT, NL, NO, PL, PT, RO, RS, SE, SK, UK

Non-COST participation: Public Association "Our home - Chisinau" (MD), Mohyla Academy (UA)

A31 - Stability and adaptation of classification systems in a cross-cultural perspective

Chair: Dr Thekla WIEBUSCH (DE)

Rapporteur: Prof. Anne Marie BÜLOW-MØLLER (DK)

The main objective of this Action is to gain a deeper understanding of human categorisation as it is reflected in different types of classification systems. More specifically, increased knowledge should be achieved concerning the following aspects of classification systems: Types of classification systems and their main distinctive features, universal as well as culture/context dependent features of classification systems, domain specificity and internal domain structure, the comparative development of classification systems, the interrelation between stabilization and adaptative potential, and the relation between individual level and cultural level categories.

End of Action: 2010

Parties: AT, DE, DK, ES, FR, GR, HU, IL, NL, NO, PL, RO, UK

Non-COST participation: City University of Hong Kong (HK)

A32 - Open Scholarly Communities on the Web

Chair: Prof. Hans Walter GABLER (DE)

Rapporteur: Dr Constantinos PHELLAS (CY)

The overall aim of the Action is to create a research and publication infrastructure on the Web and an advanced e-learning system for the humanities. The research infrastructure enables a de-localized community of specialists to work in a cooperative and cumulative manner and to publish the results of their work on the Internet. The e-learning system unites research and education, and envisages not only knowledge transfer, but also the development and enhancement of critical thinking skills and of autonomous production of scientific contributions among graduate students and young researchers.

End of Action: 2010

Parties: BE, BG, CY, DE, DK, FI, FR, IE, IL, IT, NO, RO, RS, SE, UK

Non-COST participation: Networked Infrastructure for Nineteenth-century Electronic Scholarship (US)

A33 - Cross-Linguistically Robust Stages of Children's Linguistic Performance

Chair: Dr Ulrich SAUERLAND (DE)

Rapporteur: Prof. Alain PEYRAUBE (FR)

The main objective of the Action is to discover methods that can

be used for diagnosing language problems in children of school-entry (age 5 to 6) in all European languages. The main objective is structured into two milestones that are accomplished after two and after four years respectively. After two years, a first report will provide an overview of test methods and experimental procedures that will be used in the coordinated research on children around the age of school-entry. Finally, a second report will contain a set of studies on cross-linguistic acquisition with comparable methods. Recommendations will be made concerning linguistic properties along with suitable test methods that can be used to develop cross-linguistic tests for language problems and language impairment in children.

End of Action: 2010

Parties: AT, BG, CY, DE, DK, EE, ES, FI, FR, GR, HR, IL, IT, LT, MT, NL, NO, PL, PT, RS, SK, UK

A34 - Gender and Well-Being: Interactions between Works, Family and Public Policies

Chair: Prof. Cristina BORDERIAS (ES)

Rapporteur: Dr Laura ALIPRANTI (GR)

The main objective of this Action is to provide new insights into fundamental questions regarding the sustainability of living conditions in the EU and into its systems of provision and distribution of the necessary resources. In doing so, it aims to contribute to the ongoing debate about the need for welfare reform in Europe today. The Action will discuss relevant methodologies and concepts, compare practices of living and the perceptions of the quality of life, and assess social indicators and measures of the contribution to well-being by women in the family, the market and the state.

End of Action: 2009

Parties: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GR, HR, HU, IT, MT, NL, NO, PL, PT, RO, SE, UK

A35 - Programme for the Study of European Rural Societies (PROGRESSORE)

Chair: Prof. Gérard BÉAUR (FR)

Rapporteur: Dr Daniela KOLEVA (BG)

The main objective of the Action is to provide the necessary keys to understand the changes experienced by present-day European rural societies in the light of their historical experience. Therefore the Action will establish guidelines for the management of rural space in the coming years. It intends to produce the basic data needed for the better understanding of current changes in the rural world

and to define the choices available to decision-makers. The Action also intends to provide the historical knowledge which will allow us to re-think the future of European peasantries.

End of Action: 2009

Parties: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GR, HU, IE, IT, NL, NO, PL, PT, SE, UK

A36 - Tributary Empires Compared: Romans, Mughals and Ottomans in the pre-industrial world from antiquity till the transition to modernity

Chair: Dr Peter Fibiger BANG (DK)

Rapporteur: Dr Jana GASPARIKOVA (SK)

The main objective of the Action is to produce a better understanding of classical tributary empires and the problems relating to segmented, loosely integrated and partly overlapping forms of power and authority through the establishment of a European network for the comparative study of the Roman, Ottoman, Mughal and related empires. The network contributes to our understanding of forms of social power and state organisation which lie outside the national state, and to current debates on the character of empire and imperialism.

End of Action: 2009

Parties: AT, CY, DE, DK, FI, FR, GR, IT, NL, NO, PL, RO, SE, TR, UK

IS0601 - Comparative Research into Current Trends in Public Sector Organization (CRIPO)

Chair: Prof. Geert BOUCKAERT (BE)

Rapporteur: Ms Janike HARSHEIM (NO)

New trends changing the structuring and functioning of the public sector are observed. Specialization within large bureaucracies results in the establishment of autonomous “agencies”, urging stricter coordination of policy sectors and governmental levels, and new ways of contract-based result control. Although governments are adapting to these trends at an increasing pace, there remains lack of scientific proof of the beneficial effects of these trends for the performance of the public sector. Most research efforts suffer from a lack of internationally comparative data, longitudinal data, and ill-concerted research methods. This Action resolves these drawbacks by bringing together scholars on a European platform for comparative and longitudinal research, which will lead to empirical, theoretical and methodological advancements in the field. Also, results that are grounded in scientific research will inspire policy-relevant recommendations to guide decision-makers in their policies

on the organization of the public sector.

End of Action: 2011

Parties: AT, BE, CH, DE, DK, EE, ES, FI, FR, HU, IE, IL, IT, LT, NL, NO, PL, PT, RO, SE, SK, UK

IS0602 - International Law in Domestic Courts (ILDC)

Chair: Prof. Andre NOLLKAEMPER (NL)

Rapporteur: Mr Michael SCHUSTER (DE)

The ILDC Action aims to provide access to domestic case law concerning international law and to enhance understanding of its relevance for domestic and international law. A proper understanding of international law requires knowledge of the role of domestic jurisdictions. Until now, access to domestic case law has been limited. Many cases are unpublished, few translated into English, and even if they are available, their effects may not be fully understood without explanations about the underlying domestic legal system. ILDC will create a network of reporters and researchers who will analyse domestic cases and conduct research on the internationalisation of law and its development in domestic jurisdictions.

ILDC aims to:

- Make available judgments of domestic courts on matters of international law, where necessary to translate these judgments and to explain the domestic legal frameworks that produced them;
- Feature in-depth commentaries written by a network of legal experts;
- Inform and educate stakeholders about the domestic application of international law;
- Analyse the larger consequences for international law;
- Disseminate information to a wider audience.

End of Action: 2011

Parties: AT, BE, CH, CY, DE, DK, FI, HR, IE, IL, IS, IT, NL, NO, UK

Non-COST participation: Xi'an Jiaotong University (CN), American University (US), George Washington University (US), University of Pretoria (ZA)

IS0603 - Health and Social Care for Migrants and Ethnic Minorities in Europe (HOME)

Chair: Prof. David INGLEBY (NL)

Rapporteur: Dr Constantinos PHELLAS (CY)

The recent increase in the numbers of migrants in Europe has generated a growing volume of research on their state of health and the need to adapt care services to their needs. Scientific progress

in this field, however, is held up by a lack of interdisciplinary and international collaboration. Moreover, the addition of a cross-national perspective can yield new insights into the causes of ill-health and can further the exchange of good practices. In Southern, Central and Eastern European Countries, work on migration and health is in particular need of strengthening and encouragement. This Action will bring together an international group of experts to consolidate and review work carried out so far, identify blind spots and persistent problems, and recommend ways forward. Its three Working Groups will be concerned with social and policy factors, migrants' state of health, and improvements in service delivery. The Action will produce 'state of the art' reports on the most urgent themes and will organise workshops, conferences, joint publications and training activities to discuss and disseminate its findings.

End of Action: 2011

Parties: AT, BE, BG, CH, CY, CZ, DE, DK, ES, FI, FR, GR, HU, IE, IL, IT, LT, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, UK

IS0604 - Science and Technology Research In a Knowledge-based Economy (STRIKE)

Chair: Prof. Reinhilde VEUGELERS (BE)

Rapporteur: Dr Alfredas CHMIELIAUSKAS (LT)

Based on the understanding that investment in research, development and innovation is a major driver of long-term economic performance, policy-makers in Europe have an urgent need for evidence-based policy recommendations that promote appropriate strategies for the governance, incentives and conduct of scientific research and of the knowledge transfer between public and private entities. The main objective of the Action is to improve our understanding of the process of scientific and technological development and of the transfer of scientific and technological developments to markets and into economic development. A critical mass of established and young researchers will be brought together to shed light on these issues and to develop policy recommendations. Furthermore, the Action will improve the collection, harmonization and provision of micro data and will thereby make a lasting contribution to science and technology research. The research is organized into four Working Groups: science, technology and knowledge creation; diffusion of science and technology; intellectual property rights; development of markets.

End of Action: 2011

Parties: BE, BG, CH, CY, DE, DK, ES, FI, FR, GR, HR, HU, IL, IT, MK, NL, NO, PL, PT, SI, SK, TR, UK

IS0605 - A Telecommunications Economics COST Network (ECONTEL)

Chair: Prof. Burkhard STILLER (CH)

Rapporteur: Mr Frantisek TURNOVEC (CZ)

The goal of ECONTEL is to develop a strategic research and training network linking key individuals and organizations in order to enhance Europe's competence in the field of telecommunications economics, to support related R&D-initiatives, and to provide guidelines and recommendations to European players (end-users, enterprises, operators, regulators, policy makers, content providers) concerning the provision to citizens and enterprises of new converged broadband and wireless content delivery networks. ECONTEL coordinates the development of research methodologies and tools from engineering, media and business research. Regulatory issues helping or hindering the adoption of economically efficient services are identified. ECONTEL mobilizes the "critical mass" and diversity of economists, business research experts, engineers, and scientists working in communications and content economics.

End of Action: 2011

Parties: AT, BE, CH, CY, DE, DK, ES, FI, FR, GR, HU, IE, IT, NL, NO, PL, PT, SE, SI, UK

Non-COST participation: National Information Learning Centre (GE), International Telecommunications Union

IS0701 - Comparative Analysis of Enterprise Data: Industry Dynamics, Firm Performance, and Worker Outcomes

Chair: Prof. John EARLE (HU)

Rapporteur: Mr. Agust INGTHORSSON (IS)

The main objective of the Action is to enhance international collaboration to produce cross-country comparative research using improved data to study the firm-level sources of economic growth and the consequences of the growth process for workers. This Action will establish a network bringing together leading researchers from across Europe to work with national statistical agencies and to collaborate on new comparative research using large firm-level databases. The research exploits these unusual data to analyse the roles of industry dynamics and firm performance in economic growth and the tradeoff between improved performance and social costs for employees. One important subtopic is the measurement of competitive pressures and estimation of their relationship with economic policies and with firm-level productivity. A second concerns the many new insights made possible from recent data that combines firm- and employee-level information. The Action addresses the urgent need for comparative research on these topics, which have so far been studied almost exclusively at the national

level. Comparing industry dynamics and productivity growth across European economies and some non-European comparators, with their variety of regulations and institutions, promises to shed light on ways in which policies can encourage smooth reallocation and economic growth while minimizing social costs.

End of Action: 2012

Parties: AT, BE, BG, CH, CZ, DE, DK, ES, FI, FR, HU, IT, LV, NL, NO, RO, SK, UK

IS0702 - The Role of the EU in UN Human Rights Reform

Chair: Prof. Manfred NOWAK (AT)

Rapporteur: Mr Berry J. BONENKAMP (NL)

The main objective of the Action is to increase and consolidate knowledge of the ongoing process of institutional, structural, and procedural reforms of the United Nations human rights system, so as to recommend standpoints for the European Union in this process working towards strengthening the protection of human rights world-wide. The United Nations is involved in the promotion of human rights in a number of areas, particularly through the Office of the High Commissioner on Human Rights and the newly established Human Rights Council. The European Union has great interest in the outcome of the reforms underway in both these central institutions. These include the building up of a totally new institution of universal periodic review and the ambitious reform of the human rights treaty bodies system. However, the new political power balance in the Council and the existing dangers to a fundamental reform of the treaty body system pose far-reaching challenges to the role of and contribution by the EU. This Action deals with a concrete and topical issue of great importance for EU internal and external policy in an important area. It is moreover an Action with an innovative central component: strengthen the treaty body system with the establishment of a world court of human rights.

End of Action: 2013

Parties: AT, BE, DK, ES, FI, IE, NL, NO, UK

IS0703 - The European Research Network on Learning to Write Effectively (ERN-LWE)

Chair: Dr Denis ALAMARGOT (FR)

Rapporteur: Dr Laura ALIPRANTI (GR)

The main objective of the Action is to improve our understanding of how written production is mastered and how this learning process can be made more effective for each and every European citizen, especially children at school and adults in the workplace. It is

mainly through writing that knowledge is created and shared across boundaries of culture. A key objective is to improve our understanding of how written production is mastered and how this learning process can be made more effective for each and every European citizen, especially children at school and adults in the workplace. Given the diversity of educational systems and languages, it is important to build a common multidisciplinary research programme, sharing theoretical, methodological and educational resources. This research programme needs to focus on four complementary areas: “Early acquisition of writing skills”, “Improvements in written communication”, “Design of written documents” and “Technological advances in writing tools”. By bringing together European research teams that are already working on the topic of writing - or are intending to do so -, the Action will support the building of an active and open network sustained by regular scientific events, research meetings and junior researchers’ training. This research network will provide a means of disseminating recommendations throughout European society (schools, universities, workplace) in order to help professionals and citizens write, learn to write and teach writing more effectively within their particular cultural context, as well to communicate across cultural boundaries through writing.

End of Action: 2012

Parties: BE, BG, CH, CY, DE, ES, FI, FR, GR, IS, IT, MK, NL, NO, PT, SE, UK

IS0704 - An Interoperable Supranational Infrastructure for Digital Editions (Interedition)

Chair: Mr Joris VAN ZUNDERT (NL)

Rapporteur: Prof. Svend Erik LARSEN (DK)

The main objective of the Action is to produce a ‘roadmap’ or ‘manual’ conceptualizing the development of a technical infrastructure for collaborative digital preparing, editing, publishing, analyzing and visualizing of literary research materials. There is a great need for international cooperation in the development of tools for scholarly digital editing and analysis of literary material. Research groups from individual institutes exchange research results through conferences and journals and report on their methodological advances, but these results and advances often cannot be scientifically verified or tested because the used hardware and software is not available to or easy to use by other researchers. A shared technical infrastructure for the preparation, editing, publishing, analysis and visualization of literary material does not exist. This Action aims to form an international Management Committee of researchers that have a thorough experience in electronic editing and digital text analysis for scholarly purposes in a national context. A series of meetings will be called for researchers in the field of literary research and information technology to meet on the topic of a shared supranational networked infrastructure for digital scholarly editing and analysis.

The Action will deliver a roadmap for the implementation of such an infrastructure.

End of Action: 2012

Parties: BE, DE, DK, FI, FR, IE, IL, IT, MK, NL, NO, UK

IS0801 - Cyberbullying: coping with negative and enhancing positive uses of new technologies, in relationships in educational settings

Chair: Prof. Peter SMITH (UK)

Rapporteur: Prof. Lea ROJOLA (FI)

Cyberbullying refers to bullying and harassment of others by means of new electronic technologies, primarily mobile phones and the internet. There has been much research and action on traditional forms of bullying in schools, with some success, but cyberbullying has arisen and increased in the last few years. Researchers, pupils, parents, teachers, unions, and local, regional and national authorities, are all in various ways starting to grapple with the issues involved in cyberbullying, in consultation with mobile phone companies and internet service providers. There are also positive uses of new technologies for relationships in schools; for example, using a school intranet for peer support services.

This Action aims at sharing expertise on cyberbullying in educational settings, and coping with negative and enhancing positive uses of new technologies. This will be done across a wide range of countries, through Working Groups, three Workshops, a final Conference, and exchange of personnel, especially early career researchers; and involving all the stakeholders listed above.

End of Action: 2012

Parties: AT, BE, BG, CH, DE, DK, ES, FI, GR, IE, IL, IS, IT, LT, LU, LV, NL, NO, PL, PT, SE, TR, UK

Non-COST participation: Flinders University (AU), Vinnytsia State Pedagogical University (UA)

IS0802 - The Transformation of Global Environmental Governance: Risks and Opportunities (TGEg)

Chair: Dr Philipp PATTBURG (NL)

Rapporteur: Prof. Branko BUGARSKI (RS)

Governance for sustainability is one of the great current challenges for political decision-makers, in Europe and beyond. The vital question for European societies is to design effective, stable and legitimate governance systems at local, national and international levels that can ensure a co-evolution of nature and human societies under the overarching goal of sustainable development. This is the starting

point of this Action on Transformation of Global Environmental Governance. The Action addresses the current transformation of global environmental governance that can be described as (i) increasing trans-nationalisation, that is, the growing relevance of public and private actors beyond national governments; (ii) increasing supra- and trans-governmentalisation, that is, growing relevance of transnational and supranational institutions; and (iii) increasing fragmentation, that is, increasing segmentation of the policy process through additional layers of decision-making and parallel regulatory systems. However, these transformations are not sufficiently understood. This Action is designed to address this situation as it focuses on the causes and consequences of the transformation of global environmental governance as well as on its effectiveness, legitimacy and robustness. This Action will also increase the ability of policy-makers, business representatives and civil society to understand and influence current environmental governance.

End of Action: 2012

Parties: AT, BE, BG, CH, DE, FR, GR, LT, NL, NO, SE, SK, UK

IS0803 - Remaking eastern borders in Europe: a network exploring social, moral and material relocations of Europe's eastern peripheries

Chair: Prof. Sarah GREEN (UK)

Rapporteur: Prof. Janos LASZLO (HU)

The main objective of the Action is to develop a new multi-disciplinary approach to study the process of remaking borders in the eastern periphery of Europe, combining research on everyday social, moral and material aspects of this, and bringing together expertise in both empirical and conceptual research from across the whole region.

The significance of the eastern borders of Europe is currently changing. Through a focus on the informal, everyday aspects of this, the Action draws together existing knowledge and develops new understandings of the combined social, moral and material elements of how these borders are experienced and thought about. Its aim is to develop a new approach for studying changes in the Eastern periphery of Europe, through:

- (a) exploring the process through which borders themselves become visible and meaningful (or disappear), rather than take borders for granted and then study their effects;
- (b) a simultaneous focus on what borders separate and what they bring together;
- (c) a focus on remaking borders, which means studying understandings of possible futures as well as the past;
- (d) a focus on money, gender and sexuality, which in both empirical and conceptual terms brings together material, political, social and moral aspects of border-making and allows the study of border

transgressions.

Unusually, this Action draws together researchers focusing on the North-East (Baltics and environs) to the South-East (Balkans and environs); and it also combines empirical with conceptual specialists to tackle the complexities of what happens in everyday, informal terms around border regions during periods of transformation.

End of Action: 2013

Parties: AT, BG, CY, CZ, DE, DK, FI, FR, GR, HR, IT, LT, LU, LV, MK, NL, NO, SE, SI, UK

Non-COST participation: Higher School of Economics, St. Petersburg branch (RU)

IS0804 - Language Impairment in a Multilingual Society: Linguistic Patterns and the Road to Assessment

Chair: Dr Sharon ARMON-LOTEM (IL)

Rapporteur: Prof. Alain PEYRAUBE (FR)

European expansion and European integration have led to increased linguistic diversity in Europe and to dramatic increases in the number of children being raised in multilingual settings. This drives the need for coordinated research and policies which reflect bilingual situations when planning assessment, treatment and placement of migrant children with Specific Language Impairment (SLI) in appropriate educational frameworks. These needs are best served by studying SLI in bilingual contexts.

The main objective of the Action is to profile bilingual Specific Language Impairment (SLI) by establishing a network to coordinate research on linguistic and cognitive abilities of bilingual children with SLI across different migrant communities.

End of Action: 2013

Parties: in progress (new Action)

IS0805 - New Challenges of Peacekeeping and the European Union's Role in Multilateral Crisis Management

Chair: Mr Xavier ZEEBROEK (BE)

Rapporteur: Prof. Göran COLLSTE (SE)

Considering the growing importance of multilateral peacekeeping missions in the world, this Action aims at stimulating exchange of views and new research on a European vision for peace operations. More practically, the purpose of the Action is to stimulate exchanges among researchers on why, how, when and with whom the EU should envisage common peacekeeping and peace building missions. Consequently, the Action will also contribute to strengthening the

concept of effective multilateralism, which is at the heart of the EU Security Strategy (ESS) adopted in 2003.

End of Action: 2013

Parties: in progress (new Action)

IS0806 - The True European Voter: A Strategy For Analysing the Prospects of European Electoral Democracy That Includes the West, the South and the East of the Continent.

Chair: Dr Hermann SCHMITT (DE)

Rapporteur: Dr Kristiina TONNISSON (EE)

The main objective of the Action is to increase the material preconditions and the scholarly competence for analysing variations in the effectiveness of electoral democracy in Europe across countries and over time. For large-scale democracies, general elections are the ultimate link between societal interests and demands on the one hand, and governmental action on the other. In contemporary Europe, this link - the 'electoral connection' - is experiencing a number of threats. One is the European unification process itself due to its inherent diminution of political accountability. Another threat is a far reaching ideological depolarization of electoral choice option. A third results from the changes of European political parties over the last decades. Finally, effective political representation in post-communist societies is threatened by the legacies of communism. Due to diversities in the institutional make-up, socio-political development and recent history, these threats manifest themselves differently in different parts of Europe. Building on the achievements of the European Voter project, this Action intends to advance the knowledge of the imperfections of electoral democracy in Europe, and to come up with sound conclusions and policy recommendations. This shall be done by establishing a network of scholars and by building the necessary database for a comprehensive co-operative analysis of these threats.

End of Action: 2013

Parties: in progress (new Action)

IS0807 - Living in Surveillance Societies (LiSS)

Chair: Dr William WEBSTER (UK)

Rapporteur: Dr Gustavo CARDOSO (PT)

Surveillance, the systematic and purposeful attention to the lives of individuals or groups, is a ubiquitous feature of European society with citizens routinely monitored by a range of sophisticated technologies. Increasing levels of surveillance are typically justified

by the threat of terrorism, crime and disorder, and to improve public and private services.

The main objective of the Action is to increase and deepen knowledge about living and working in the surveillance age, in order to better understand the consequences and impacts of enhanced surveillance, and subsequently to make recommendations about its future governance and practice.

End of Action: 2013

Parties: in progress (new Action)

IS0901 - Women Writers in History: Toward a New Understanding of European Literary Culture

Chair: to be confirmed

Rapporteur: Ms Leopoldina FORTUNATI (IT)

The historiography of literature needs renewal. In particular women's contribution to European literary practice can and must be accounted for in a much more adequate way than current literary histories do. This Action lays the foundations for an innovative European-scale approach to this problem. The neglect of women as cultural agents is indeed an international phenomenon, directly relating to gender inequality in modern societies. International cooperation is needed in order to change things and demonstrate that women's growing presence, since the Middle Ages, prepared the way for their massive entrance into the "literary field" (Bourdieu) during the 20th century.

Using recent theoretical insights (Moretti, Hutcheon, Valdés) and new technological means, the Action will prepare avenues for collective research by organizing a strong network of European (and other) researchers. At the end of the Action the network will be ready to carry out a large European research programme that contributes to a more balanced picture of western and eastern Europe's cultural heritage).

The main objective of the Action is to create a strong collaborative international Research Network and to produce a Road Map outlining future systematic collaborative research in European women's literary history.

End of Action: 2013

Parties: in progress (new Action)

IS0902 - Systemic Risks, Financial Crises and Credit: the roots, dynamics and consequences of the Subprime Crisis

Chair: *to be confirmed*

Rapporteur: Dr Judith CLIFTON (ES)

What started as a burst of a speculation bubble in the US real estate market has developed into the most severe financial crisis since the Great Depression. Characteristic of the Subprime Crisis was the tight connection between the American real estate credit market and the structures and processes of global markets. The slicing and dicing of subprime was made possible by modern financial instruments like derivatives, modern practices like securitization, and new actors like Credit Rating Agencies who provided first class ratings and thereby suggested what turned out to be false security, and Hedge funds that generated demand. The crisis is therefore as much a crisis of the modern capitalist system as it is of finance. It has led to greater transformation of the American and European financial markets than any planned reform. Discursively, the crisis has challenged core ideas of monetarism and led to a revival of Keynesian monetary and fiscal policies.

This interdisciplinary Action critically assesses sources, dynamics and consequences of the global financial crisis. It aims to develop a completely new approach to financial stability, reach a better understanding of financial crises in general, and formulate specific policy goals to make financial markets more secure.

The main objective of the Action is to provide comprehensive documentation and state of the art analysis of the current Subprime Crisis and its consequences.

End of Action: 2013

Parties: in progress (new Action)

IS0903 - Enhancing the Role of Medicine in the Management of European Health Systems: Implications for Control, Innovation and User Voice

Chair: *to be confirmed*

Rapporteur: Mr Christoph LEHNER (AT)

This Action is rooted in a number of recent trends in healthcare: the growing involvement of doctors in management and changes in medical education, training and career structures. These changes are assumed to be positive, leading to improvements in organization learning and control, innovation and user voice. However the evidence supporting such conclusions remains fragmented. While changes in the relationship between management and medicine have received some attention at national levels, there is less research adopting a rigorous, comparative, interdisciplinary perspective.

The main objective of the Action is to increase empirical, theoretical and policy relevant knowledge about the changing role of medical professionals in the management of healthcare.

End of Action: 2013

Parties: in progress (new Action)

TD0902 - Submerged Prehistoric Archaeology and Landscapes of the Continental Shelf

Chair: to be confirmed

Rapporteur: Dr Daniela KOLEVA (BG)

The main objective of the Action is to promote research on the archaeology, climate and environment of the drowned landscapes of the continental shelf, created during periods of lower sea level, which form a major part of the European cultural heritage.

For most of human history on the European continent over the past one million years, sea levels have persisted at levels lower than present by as much as 130m, creating extensive coastal and lowland landscapes attractive to human settlement. Between 16,000 and 6000 years, most of this territory was drowned by rapid sea level rise from -130m, following the last Ice Age, transforming the geographical and environmental context of human development with consequences that persisted into the modern era. This drowned landscape preserves valuable sedimentary archives of long-term environmental and climatic changes, and an increasing number of archaeological remains have been found, documenting human response and adaptation to this rapidly changing environment. With intensification of commercial activity on the seabed and improved research technology, the quantity of evidence is increasing rapidly. So too are the threats of destruction of this cultural heritage.

This Action will improve knowledge on the location, preservation conditions, investigation methods, interpretation and management of underwater archaeological, geological and palaeoenvironmental evidence of prehistoric human activity, create a structure for the development of new interdisciplinary and international research collaboration, provide guidance for archaeologists, heritage professionals, scientists, government agencies, commercial organisations, policy makers and a wider public.

End of Action: 2013

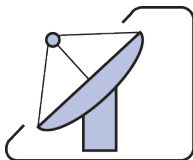
Parties: in progress (new Action)

Information and Communication Technologies (ICT)

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The Domain *Information and Communication Technologies* covers scientific and technical research in all areas of information and communication science and technologies. The ICT research area is best summarized as treating the processing, transmission, storage, retrieval, management, usage,

and exchange of information and knowledge, with emphasis on fundamental aspects and pre-competitive technology development.

The following research areas are covered in this Domain. The scope of the Domain is not restricted to these activities.

Information science and technologies. The area covers all the aspects related with the foundations, design, analysis, development, and application of hardware and software systems. Related areas are foundations of computer science, software development technologies, software engineering, intelligent systems, advanced interfaces, user aspects, information management, high performance computing, and open, embedded, and distributed systems.

Communication technologies. Research in this area concentrates on the transfer of information from source to sink. Fundamental aspects cover physical, electromagnetic and functional modelling of all elements of information and communication systems such as terminals, antennas, transmission channels, networks, devices, components and materials. Research concerning photonic devices and the modelling and synthesis of electromagnetic meta-materials involves materials research, both in the optical and the submillimeterwave region. Here, cross-border interaction with Materials, Physical, and Nanosciences is required.

Societal aspects of ICT. Research in this area covers both the influence of ICT on society and the requirements imposed by society on the ICT infrastructure. Interdisciplinary cooperation with disciplines dealing with societal needs is essential for the development of this research area. Therefore, an important area for this domain is multidisciplinary research – with an ICT core – in fields like sustainable development, health, attention to the elderly and the disabled, culture, learning, bioinformatics, and many others, performed in cooperation with the corresponding COST

domains. New ideas and initiatives are welcome as well those with high interdisciplinary elements and close links and overlaps with other domains.

294 - Towards the Maturation of IT Usability Evaluation

Chair: Dr Effie LAI-CHONG LAW (CH)

Rapporteur: Mr Graham WORSLEY (UK)

The main objective of this Action is to deepen the understanding about the inherent strengths and weaknesses of individual Usability Evaluation Methods, in order to identify reliable and valid methods for comparing them in terms of their effectiveness, efficiency and scope of applicability, aiming at the development of effective strategies for extracting useful information from the results of such methods, improving the systems tested.

End of Action: 2009

Parties: AT, BE, CH, CY, DE, DK, ES, FI, FR, GR, IE, IS, IT, NL, NO, PL, RO, RS, SE, SI, UK

295 - Dynamic Communication Networks: Foundations and Algorithms

Chair: Dr Pierre FRAIGNIAUD (FR)

Rapporteur: Prof. Mieczyslaw MURASZKIEWICZ (PL)

The main objective of this Action is to provide foundations, models, algorithms, and general tools for dynamic communication networks. These new decision-support tools will favour the study and the efficient design of applications for networks of decentralised interacting and evolving entities, experiencing possibly severe modifications of their environments.

End of Action: 2009

Parties: BE, CH, CY, CZ, DE, EE, ES, FI, FR, GR, HU, IL, IS, IT, NL, NO, PL, PT, SE, SI, UK

Non-COST participation: Carleton University (CA), Université du Québec (CA), University of Ottawa (CA)

296 - Mitigation of Ionospheric Effects on Radio Systems

Chair: Prof. Alain BOURDILLON (FR)

Rapporteur: Prof. Otto KOUDELKA (AT)

The main objective of the Action is to develop an increased knowledge of the effects imposed by the ionosphere on practical

radio systems, and for the development and implementation of techniques to mitigate the deleterious effects of the ionosphere on such systems.

End of Action: 2009

Parties: AT, BE, BG, CY, CZ, DE, ES, FI, FR, GR, HR, HU, IT, PL, PT, RO, SI, TR, UK

Non-COST participation: Geomagnetic Laboratory Natural Resources, Ottawa (CA), LEME (CN), Polar Research Institute (CN), Department of Electrical, Electronic and Systems Engineering, Radio Research Laboratory (KR), University Kebangsaan (MY), IZMIRAN (RU), University of St Petersburg (RU), University of Massachusetts, Lowell (US)

297 - High Altitude Platforms for Communications and Other Services

Chair: Mr Tim TOZER (UK)

Rapporteur: Prof. Dina SIMUNIC (HR)

The main Objective of the Action is to increase knowledge and understanding of the use of High Altitude Platforms for delivery of communications and other services, by exploring, researching, and developing new methods, analyses, techniques, and strategies for developers, service providers, system integrators, and regulators.

End of Action: 2009

Parties: AT, BE, CH, CY, CZ, DE, ES, FI, FR, GR, HU, IE, IL, IT, PL, RS, SE, SI, SK, UK

Non-COST participation: National Institute of Information and Communications Technology (JP), The Institute for Information Transmission Problems (RU), NOAA-CU Center for Environmental Technology (US)

298 - Participation in the Broadband Society

Chair: Dr Bartolomeo SAPIO (IT)

Rapporteur: Mr Graham WORSLEY (UK)

The Action's objectives are: 1) to examine the modalities in which users actually use ICTs, to discover their current forms of creativity; 2) to look ahead to technology related-developments in the more medium term; 3) to suggest new approaches and methodologies for constructing a more user- driven model of innovation in order to overcome the limitations of current models of 'user-centred' development; 4) to produce a new phase in interdisciplinary cooperation. This would provide the basis for conceptually integrating the various ways of assessing the experience of broadband technologies from the perspective of different disciplines.

End of Action: 2010

Parties: AT, BE, BG, CH, CY, DE, DK, ES, FI, FR, GR, HR, HU, IE, IT, NL, PT, RO, RS, SE, SI, UK

Non-COST participation: Australian National University Canberra (AU), RMIT University (AU), Polytechnic University (HK), Institute for Socio-Economic Studies of Population (RU)

299 - Optical Fibres for New Challenges Facing the Information Society

Chair: Dr Luc THEVENAZ (CH)

Rapporteur: Prof. Milan DADO (SK)

The purpose of this Action is to find novel and disruptive applications of fibre optics, to define guidelines for standardisation of optical fibre applications and to combine the transdisciplinary expertise of key-players in this field to promote the invention of new optical fibre based information providing tools.

End of Action: 2010

Parties: BE, CH, CY, CZ, DE, DK, ES, FI, FR, GR, HR, IE, IL, IT, PL, PT, RO, SE, SK, UK

Non-COST participation: University of Sydney - School of Physics (AU)

2100 - Pervasive Mobile & Ambient Wireless Communications

Chair: Prof. Roberto VERDONE (IT)

Rapporteur: Dr Jan SIMSA (CZ)

The Action wants to increase knowledge of mobile and wireless network technologies by exploring and developing new methods, models, techniques, strategies and tools that will facilitate the implementation of next generation mobile communication systems and that will foster the development of the paradigms of pervasive and ambient wireless communications.

End of Action: 2010

Parties: AT, BE, BG, CH, CY, CZ, DE, DK, ES, FI, FR, GR, HR, HU, IE, IL, IT, MK, NL, NO, PL, PT, RO, RS, SE, SI, SK, UK

Non-COST participation: Communications Research Centre (CA), Universidad Icesi (CO), National Institute of Information and Communications Technology (JP), Tokyo Institute of Technology (JP), Nanyang Technological University (SG), Motorola (US)

2101 - Biometrics for Identity Documents and Smart Cards

Chair: Dr Andrzej DRYGALJO (CH)

Rapporteur: Prof. Dorte HAMMERSHØI (DK)

This Action was established to investigate novel technologies for unsupervised multimodal biometric authentication systems using a new generation of biometrics-enabled identity documents and smart cards, while exploring the added value of these technologies for large-scale applications with respect to the European requirements in relation to the storage, transmission, and protection of personal data.

End of Action: 2010

Parties: BG, CH, CY, DE, DK, ES, FI, FR, GR, HR, IE, IT, NL, PL, SI, TR, UK

2102 - Cross-Modal Analysis of Verbal and Non-verbal Communication

Chair: Dr Anna ESPOSITO (IT)

Rapporteur: Prof. Guntars BALODIS (LV)

This Action aims to develop an advanced acoustical, perceptual and psychological analysis of verbal and non-verbal communication signals originating in spontaneous face-to-face interaction, in order to identify algorithms and automatic procedures capable of identifying the human emotional states.

End of Action: 2010

Parties: AT, BE, BG, CH, CY, CZ, DE, DK, ES, FI, FR, GR, HR, HU, IE, IS, IT, LT, NL, NO, PL, PT, RS, SE, SI, SK, TR, UK

Non-COST participation: Ain Shams University (EG)

2103 - Advanced Voice Function Assessment

Chair: Prof. P.H. DEJONCKERE (NL)

Rapporteur: Prof. Dina SIMUNIC (HR)

This Action wants to combine previously unexploited techniques with new theoretical developments to improve the assessment of voice for as many European languages as possible, while acquiring in parallel data with a view to elaborating better voice production models.

End of Action: 2010

Parties: AT, BE, CZ, DE, DK, ES, FI, FR, GR, IE, IT, LT, NL, PT, SE, SI, UK

IC0601 - Sonic Interaction Design (SID)

Chair: Prof. Davide ROCCHESSE (IT)

Rapporteur: Dr Michael ANSORGE (CH)

Sonic Interaction Design is the exploitation of sound as one of the principal channels conveying information, meaning, and aesthetic/emotional qualities in interactive contexts. The Action pro-actively contributes to the creation and consolidation of new design theories, tools, and practices in this innovative and interdisciplinary domain. While being advanced through a few sparse projects, this field relies on the COST – SID Action to strengthen the links between scientists, artists, and designers in the European Research Area. The COST – SID platform stands on four legs: (i) perception, cognition, and emotion; (ii) design; (iii) interactive art; (iv) information display and exploration. These are each supported by the research and development of the requisite new interactive technologies. Due to the breadth of its application spectrum, the COST – SID Action has the potential of affecting everyday life through physical and virtual interactive objects, as today there is the possibility to design and actively control their acoustic response so that it conveys an intended aesthetic, informational, or emotional content.

*End of Action: 2011**Parties: AT, BE, CH, DE, DK, ES, FI, FR, IE, IL, IS, IT, NL, NO, PT, SE, UK**Non-COST participation: Sonic Communications Research Group (AU), McGill University (CA),***IC0602 - Algorithmic Decision Theory**

Chair: Prof. Alexis TSOUKIAS (FR)

Rapporteur: Prof. Veljko MALBASA (RS)

The Action aims to put together researchers coming from different fields such as Decision Theory, Discrete Mathematics, Theoretical Computer Science and Artificial Intelligence in order to improve decision support in presence of massive data bases, combinatorial structures, partial and/or uncertain information and distributed, possibly interoperating decision makers. Such problems arise in several real world decision problems such as humanitarian logistics, homeland security, epidemiology, risk assessment and management, e-government and the implementation of recommender systems. The Action will coordinate ongoing research projects and provide a more solid framework to already existing networked activities.

*End of Action: 2011**Parties: AT, BE, CH, CY, DE, DK, ES, FI, FR, GR, HU, IE, IL, IT, LT, LU, MK, NL, NO, PL, PT, UK**Non-COST participation: NICTA (AU), DIMACS (US)*

IC0603 - Antenna Systems & Sensors for Information Society Technologies (ASSIST)

Chair: Prof. Juan R. MOSIG (CH)

Rapporteur: Prof. Otto KOUDELKA (AT)

Antennas are a key constituent of all terrestrial, airborne and space based wireless multimedia, communications and sensor systems. Antenna functions are fast evolving, driven by the demanding needs of the Information Society Technologies. Traditional antenna areas still demand research and innovation efforts. But also, new unforeseen and challenging problems are appearing. Antennas and electromagnetic sensors are also becoming a major system component in areas such as Consumer Electronics, Health Care, Biology, Radio Astronomy, Earth Sciences, and Earth Resources Monitoring. Cooperation towards a deeper understanding of antenna operation in these new complex environments and for the corresponding development of adequate modelling and measuring tools are the main scientific objectives of this Action. These trans-disciplinary oriented goals will benefit both antenna specialists and researchers working on the above mentioned domains. Additional benefits include university-industry collaborations, mobility of young researchers and support of Pan-European initiatives (European Conference and European School of Antennas).

End of Action: 2011

Parties: BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GR, HR, HU, IE, IT, LV, NL, NO, PL, PT, RS, SE, TR, UK

Non-COST participation: University of Queensland (AU), Royal Military College (CA)

IC0604 - Anatomic Telepathology Network (EURO-TELEPATH)

Chair: Dr Marcial GARCÍA ROJO (ES)

Rapporteur: Prof. Doina BANCIU (RO)

Coordination of research efforts to develop the most adequate technological framework for the management of multimedia electronic healthcare records (data and images) through the Internet. The Action will consolidate the most renowned research references in the field of informatics applied to Anatomic Pathology in order to eventually develop, with support of national and other European programs, the fusion standards to represent, interpret, browse and retrieve digital medical images while preserving their diagnostic quality as needed for clinical, learning and research purposes. In a latter stage, this coordinated research shall bring about a comprehensive R&D project which will deliver a much needed world wide search engine based on WebServices. This will definitively open the path to integration, search, access, exchange and upgrade of digital pathological images and associated reports

among different hospital information systems regardless of their location. Based on common standards developed by European Normalization Committee (CEN), the World Wide Web Consortium (W3C) and other bodies (DICOM, HL7, SNOMED), the direct result of this Action shall be a new Pathology Technical Framework (IHE Pathology) to be taken as a new reference standard by the specialized E-health industry as well as the entire medical community.

End of Action: 2011

Parties: CH, CY, DE, ES, FI, FR, GR, HR, IT, LT, NL, NO, PL, PT, RS, UK

Non-COST participation: Wipro Technologies (IN)

IC0701 - Formal Verification of Object-Oriented Software

Chair: Prof. Bernhard BECKERT (DE)

Rapporteur: Dr Gideon ARIELY (IL)

The main objective of the Action is to develop verification technology with the reach and power to assure dependability of object-oriented programs on industrial scale. Software is vital for modern society. The efficient development of correct and reliable software is of ever growing importance. This Action will concentrate on program verification: the construction of logical proofs that programs are correct. Logic-based technologies for the formal description, construction, analysis, and validation of software can be expected to complement and partly replace traditional software engineering methods in the future. Already, program verification methods have outgrown the area of academic case studies, and industry is showing serious interest. The logical next goal is the verification of industrial software products. Most programming languages used in industrial practice (such as Java, C++, and C#) are object-oriented. The Action will therefore focus on the verification of programs written in object-oriented languages and the particular problems this entails.

End of Action: 2012

Parties: BE, CH, DE, DK, EE, ES, FR, IE, IL, IT, NL, NO, PL, PT, SE, UK

Non-COST participation: Victoria University of Wellington (NZ)

IC0702 - Combining Soft Computing Techniques and Statistical Methods to Improve Data Analysis Solutions

Chair: Dr Christian BORGELT (ES)

Rapporteur: Prof. Leon VAN DER TORRE (LU)

The main objective of the Action is to strengthen the dialogue between the statistics and soft computing research communities in

order to cross-pollinate both fields and generate mutual improvement activities. Soft computing, as an engineering science, and statistics, as a branch of mathematics, emphasize different aspects of data analysis. Soft computing focuses on obtaining working solutions quickly, accepting approximations and unconventional approaches. Its strength lies in its flexibility to create models that suit the needs arising in applications (context of discovery, model generation). In addition, it emphasizes the need for intuitive and interpretable models, which are tolerant to imprecision and uncertainty. Statistics is more rigorous and focuses on establishing objective conclusions based on experimental data by analysing the possible situations and their (relative) likelihood (context of justification, model validation). It emphasizes the need for mathematical methods and tools to assess solutions and guarantee performance. Bringing the two fields closer together will enhance the robustness and generalisability of data analysis methods, while preserving the flexibility to solve real-world problems efficiently and intuitively.

End of Action: 2012

Parties: AT, BE, CH, CY, DE, EE, ES, FR, HU, IT, LT, NL, NO, PL, PT, TR, UK

IC0703 - Data Traffic Monitoring and Analysis: theory, techniques, tools and applications for the future networks

Chair: Dr Fabio RICCIATO (IT)

Rapporteur: Dr Marko JAGODIC (SI)

The main objective of the Action is to increase the quality and the impact of European research in the field of Traffic Monitoring and Analysis (TMA). Modern packet networks are highly complex and ever-evolving objects. Understanding, developing and managing such environment is difficult and expensive in practice. Traffic Monitoring and Analysis (TMA) has always been seen as a key methodology to understand telecommunication technology and operation, and the complexity of the Internet has attracted many researchers to face traffic measurements since the pioneering times. The recent advances in the field of TMA suggest that evolved TMA-based techniques can play a key role in the operation of real networks. Today, the lack of insight and early recognition of emerging risks and/or performance issues can expose the network infrastructure to stability and security problems. TMA is therefore the basis for prevention and response in network security, as typically the detection of attacks and intrusions requires the analysis of detailed traffic records, e.g. packet traces. This Action will coordinate both Research Groups and Network Operators active in the field of TMA, promoting the development of novel techniques and focusing the research efforts towards commonly recognized problems, thus driving the research towards real-world applications. It will foster the adoption of common monitoring tools and analysis platforms,

so as to catalyze the emergence of a European de-facto standard for traffic monitoring, ultimately increasing the impact of European research in the field.

End of Action: 2012

Parties: AT, BE, BG, CH, CY, DE, DK, ES, FI, FR, GR, HU, IE, IL, IT, NL, NO, PL, PT, SE, UK

Non-COST participation: Institute of Control Sciences (RU)

IC0801 - Agreement Technologies

Chair: Prof. Sascha OSSOWSKI (ES)

Rapporteur: Prof. Mieczyslaw MURASZKIEWICZ (PL)

Agreement Technologies refer to computer systems in which autonomous software agents negotiate with one another, typically on behalf of humans, in order to come to mutually acceptable agreements. This Action aims at coordinating national efforts on a new paradigm for next generation distributed systems, based on the concept of agreement between computational agents. An entity may choose whether to fulfil an agreement or not, and it should fulfil it when there is an obligation to do so derived from the standing agreements. Autonomy, interaction, mobility and openness are the characteristics that the paradigm will cover from a theoretical and practical perspective. Semantic alignment, negotiation, argumentation, virtual organisations, learning, real time, and several other technologies will be in the sandbox to define, specify and verify such systems. Both functional and non-functional properties are to be studied. Security on execution will be based on trust and reputation measures. These measures will help agents to determine with whom to interact and what terms and conditions to accept.

End of Action: 2012

Parties: BE, CH, CY, DE, EE, ES, FR, GR, HU, IE, IT, LU, NL, PT, RO, SE, SI, UK

Non-COST participation: The British University in Dubai (AE), Universidad Nacional Del Sur (AR), University of Technology Sydney (AU), Instituto de Informática da Universidade Federal do Rio Grande do Sul (BR), Universidad Autónoma Metropolitana (MX)

IC0802 - Propagation tools and data for integrated Telecommunication, Navigation and Earth Observation systems

Chair: Dr Antonio MARTELLUCCI (NL)

Rapporteur: Dr Murat AYDOS (TR)

Telecommunication, Navigation and Earth Observation systems and services are developing world-wide with a multiplicity of standalone

terrestrial and space systems that operate in diverse frequency bands. Global Integrated Networks (GIN) will be necessary in the near future to provide better integrated services. Their design requires a comprehensive knowledge of the various propagation media. Up to now radio channel modelling has been performed separately for each type of radio systems.

This activity will develop a coordinated set of models, techniques and data related to the radio channel in order to improve the design and performance of Global Integrated Networks. The activity will recommend and provide the most appropriate radio channel models, channel assessment techniques and data for the design and operation of these GINs.

The frequencies of interest range from 100 MHz to 100 GHz (VHF to W band) and cover optical free space communications. The target architectures include mobile and fixed, satellite and terrestrial communication systems (including optical links), satellite navigation systems and Earth Observation systems. The physical propagation fundamentals will be based on experimental and climatological data.

The activity will bring together remote sensing, propagation and systems experts at the European level, thus contributing to advance the state-of-the-art in the field, with a clear added value for Europe.

End of Action: 2012

Parties: AT, BE, CZ, DE, ES, FI, FR, GR, IT, LU, NO, PT, SE, SI, SK, UK

Non-COST participation: Telecommunications Centre at Catholic University (BR), McMaster University (CA), Indian Institute of Technology Kharag-pur (IN), National University of Computer and Emerging Sciences (PK)

IC0803 - RF/Microwave Communication Subsystems for Emerging Wireless Technologies (RFCSET)

Chair: Dr Apostolos GEORGIADIS (ES)

Rapporteur: Prof. Guntars BALODIS (LV)

A plethora of new applications for novel RF/microwave subsystems is being introduced as new communication and security systems, radar, surveillance, and positioning services are becoming available. Such systems include mobile networks (4G), wireless communications systems (WiMAX, WiBRO, WiFIBER, UWB), radar, satellite navigation systems (GPS, Galileo), and sensor networks. Theoretical advances in signal processing lead to the conception of new architectures, applications, and a better use of the capacity of the underlying media. These advances, in turn, push the performance requirements of the analog front-ends to their limits.

In order to fulfil the complex requirements of the new systems it is necessary to bridge the gap between the signal processing and the RF/microwave electronics communities by bringing together experts

to collaborate towards the implementation of better communication subsystem design and optimization methodologies. On one hand, analog circuit design is improved by more accurately taking into account the properties of the transmitted signals. On the other hand, signal processing techniques for novel system architectures are also optimized by taking into consideration the properties of the analog front-end.

Within this context, a balanced mix of experienced researchers, selected representatives from the European industry, and young researchers is brought together, to define the future subsystem requirements, applications, and trends.

End of Action: 2012

Parties: BE, CH, CY, CZ, DE, DK, ES, FI, FR, GR, HU, IT, NO, PL, PT, RS, SE, SK, UK

Non-COST participation: La Trobe University (AU)

IC0804 - Energy efficiency in large scale distributed systems

Chair: Prof. Jean-Marc PIERSON (FR)

Rapporteur: Prof. Veljko MALBASA (RS)

As large scale distributed systems gather and share more and more computing nodes and storage resources, their energy consumption is exponentially increasing. While much effort is nowadays put into hardware specific solutions to lower energy consumptions, the need for a complementary approach is necessary at the distributed system level, i.e. middleware, network and applications. The main objective of the Action is to foster original research initiatives addressing energy awareness/saving and to increase the overall impact of European research in the field of energy efficiency in distributed systems.

End of Action: 2013

Parties: in progress (new Action)

IC0805 - Open European Network for High Performance Computing on Complex Environments

Chair: Mr Emmanuel JEANNOT (FR)

Rapporteur: Prof. Vladimir LAZAROV (BG)

In different fields of science and engineering it is necessary to solve complex and challenging problems with high computational cost. For this purpose, scientists and engineers normally use homogeneous high performance computers. Nowadays, the emergence of heterogeneous computing allows research groups, enterprise and educational institutions to use networks of processors which are

already available. On the other hand, high performance computers have become more and more hierarchical and heterogeneous (e.g., a cluster of multiprocessor nodes using multicore processors). These modern hierarchical and heterogeneous computing infrastructures are hard to program and use efficiently, particularly for extreme-scale computing. Consequently, none of the state-of-the-art solutions are able to efficiently use such environments.

The main objective of the Action is to develop an integrated approach for tackling the challenges associated with heterogeneous and hierarchical systems for High Performance Computing (HPC).

End of Action: 2013

Parties: in progress (new Action)

IC0806 - Intelligent Monitoring, Control and Security of Critical Infrastructure Systems

Chair: Dr Elias KYRIAKIDES (CY)

Rapporteur: Mr Karel GOOSSENS (BE)

Everyday life relies heavily on the reliable operation and intelligent management of large-scale critical infrastructures, such as electric power systems, telecommunication networks, and water distribution networks. The design, monitoring, control and security of such systems are becoming increasingly more challenging as their size, complexity and interactions are steadily growing. Moreover, these critical infrastructures are susceptible to natural disasters, frequent failures, as well as malicious attacks. There is an urgent need to develop a common system-theoretic framework for modelling the behaviour of critical infrastructure systems and for designing algorithms for intelligent monitoring, control and security of such systems.

The main objective of the Action is to develop innovative intelligent monitoring, control and safety methodologies for critical infrastructure systems, such as electric power systems, telecommunication networks, and water systems.

End of Action: 2013

Parties: in progress (new Action)

IC0901 - Rich-Model Toolkit: An Infrastructure for Reliable Computer Systems

Chair: *to be confirmed*

Rapporteur: *to be confirmed*

The main objective of the Action is making automated reasoning techniques and tools applicable to a wider range of problems, as well as making them easier to use by researchers, software

developers, hardware designers, and information system users and developers.

The Action coordinates activities on developing infrastructures for automated reasoning about the new notion of Rich Models of computer systems. Rich Models have the expressive power of a large fragment of formalizable mathematics, enabling specification of software, hardware, embedded, and distributed systems. Rich Models support modeling at a wide range of abstraction levels, from knowledge bases and system architecture, to software source code and detailed hardware design.

The Action contributes to the construction of Rich-Model Toolkit, a new unified infrastructure that precisely defines the meaning of Rich Models, introduces standardized representation formats, and incorporates a number of automated reasoning tools. Moreover, the Action develops and deploys new tools for automated reasoning that communicate using these standardized formats. The resulting tools will have a wide range of applicability and improved efficiency, helping system developers construct reliable systems through automated reasoning, analysis, and synthesis.

End of Action: 2013

Parties: in progress (new Action)

IC0902 - Cognitive Radio and Networking for Cooperative Coexistence of Heterogeneous Wireless Networks

Chair: to be confirmed

Rapporteur: to be confirmed

The main objective of the Action is to integrate the cognitive concept across all layers of communication systems, resulting in the definition of a European platform for cognitive radio and networks.

The Action proposes coordinated research in the field of cognitive radio and networks. The cognitive concept applies to coexistence between heterogeneous wireless networks, that share the electromagnetic spectrum for maximum efficiency in resource management. Several efforts are currently in place in European research centers and consortia to introduce cognitive mechanisms at different layers of the communications protocol stack. This Action goes beyond the above trend by integrating the cognitive concept across all layers of system architecture, in view of joint optimization of link adaptation based on spectrum sensing, resource allocation, and selection between multiple networks, including underlay technologies.

The cross-layer approach will provide a new perspective in the design of cognitive systems, based on a global optimization process that integrates existing cognitive radio projects, thanks to the merge of a wide-range of expertise, from hardware to applications, provided by over 30 academic and industrial partners.

The final result will be the definition of a European platform for cognitive radio and networks. To reach this goal, algorithms and protocols for all layers of the communications stack will be designed, and a set of standard interfaces as well as a common reference language for interaction between cognitive network nodes will be defined.

End of Action: 2013

Parties: in progress (new Action)

IC0903 - Knowledge Discovery from Moving Objects (MOVE)

Chair: to be confirmed

Rapporteur: to be confirmed

The main objective of the Action is to develop improved methods for knowledge extraction from massive amounts of data regarding moving objects.

This Action aims to build a network for collaboration that leads to the improvement of ICT methods for knowledge extraction from massive amounts of data about moving objects. This knowledge is essential to substantiate decision making in public and private sectors. Moving object data typically include trajectories of concrete objects (e.g. humans, vehicles, animals, and goods), as well as trajectories of abstract concepts (e.g. spreading diseases). While movement records are nowadays generated in huge volumes, methods for extracting useful information are still immature, due to fragmentation of research and lack of comprehensiveness from monodisciplinary approaches. Overcoming these limitations calls for COST-like networking.

In response to a strong expression of interest from the academic, industrial, and user communities, this Action will empower the development of substantial and widely applicable methods in mobility analysis, focusing on representation and analysis of movement, including spatio-temporal data mining, and visual analytics. Results will be demonstrated through showcases for decision makers. Researchers from various subdomains in computer and geographic information sciences will join domain specialists from a broad range of relevant applications, from courier services and transportation to ecology, and epidemiology, among others. This will make Europe a central stakeholder in an emerging key domain.

End of Action: 2013

Parties: in progress (new Action)

IC0904 - TOwards the IntegRation of TransecTOrial IT DeSign and Evaluation

Chair: *to be confirmed*

Rapporteur: *to be confirmed*

The main objective of the Action is to harmonise research and practice on design and evaluation methodologies for computing artefacts, across sectors and disciplines.

Third-wave human computer interaction (HCI) is characterised by a diversifying user base and use contexts, new emphasis on user experience and new interaction styles. This implies a need for informed method choice sensitive to domains, user groups and system objectives. Effective method use requires complex judgments about applicability across applications and genres, with failure implying significant financial and human costs. The adoption of ICT across ages and abilities further increases the need for sound D&E methods, which bring about useful, usable, desirable computing artefacts that improve life quality. Effective cross-sectorial transfer of design and evaluation (D&E) methods is plausible and demonstrable. Relevant research work, however, is fragmented and scattered.

The Action aims to provide harmonization and leadership currently lacking in this field by bringing together researchers and D&E professionals. Their broad experience of D&E methods deployed in different sectors and disciplines enables comparison of method applications, assessing transferability of both established and novel approaches. These collaborative activities in Working Groups and open Workshops will facilitate production of a generic D&E method selection and application framework and scientific publications reaching the wider research community. The Action will also provide young interdisciplinary researchers with systematic training and networking opportunities such as STSMs and Training Schools.

End of Action: 2013

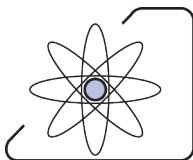
Parties: in progress (new Action)

Materials, Physical and Nanosciences (MPNS)

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Materials, Physical and Nanosciences are equally important fields in advancing science.

The Domain *Materials, Physical and Nanosciences* is home to materials science and physics, extending from conception through production, characterization, examination, evaluation, fabrication, joining to actual application and service, including related databases, simulation tools, standards and inspections. The Domain covers the full range of materials on length scales down to the nano-meter and atomic range, including surface modifications and the corresponding change in physical properties is also targeted at. The Domain includes exploratory basic research as well as applied research in physics as a key to understanding the laws governing the behaviour of matter and energy.

The following examples illustrate aspects of research in this Domain. The scope of the Domain is not restricted to these activities but will adjust to changes arising from novel ideas within European research community.

New developments in industrial technology and technology driven projects requiring the synthesis of new material. In this context, materials science, physics and nano-science or combinations thereof will be supported from this domain. Especially physics underpins many industries and technological processes; it contributes to the synthesis of new materials and to a broad variety of new devices based on the progress made in areas such as optics, plasma physics, surface physics, materials simulation and others.

Emerging Technologies for energy supply, telecommunication bio-technology and related sectors which trigger innovative progress in conventional sectors such as power technology, transport, aerospace, lighting, and monitoring or the establishment of completely new technology areas.

Cultural Heritage: The sciences contributing to this Domain are part of Cultural Heritage as they answer the most fundamental scientific questions related to the ageing of various kinds of objects of art. Therefore the Domain is also responsible for Actions in Cultural Heritage focusing on restoration and conservation of ancient architecture, built environment and artifacts.

Multidisciplinary Research: Materials science, Physics and, to an even larger extent, nano-science are multidisciplinary research fields. The Domain maintains active interaction with other COST domains on many relevant issues such as, for example, environment, global warming and social aspects of nanotechnology. By recognizing the huge potential of nano-sciences in such different areas the Domain encourages multidisciplinary actions and cooperates closely with the other Domains. Therefore, new ideas and initiatives are welcome as well as all ideas with high interdisciplinary elements and close links and overlaps with other Domains.

533 - Materials for Improved Wear Resistance of Total Artificial Joints

Chair: Prof. Zhongmin JIN (UK)

Rapporteur: Prof. Axel KRANZMANN (DE) , Prof. Joaquim Manuel VIEIRA (PT)

This Action in biomaterials for uses on the development of materials for improved wear resistance of artificial joints and novel low wearing designs.

End of Action: 2009

Parties: AT, BE, CH, CZ, DE, ES, FI, FR, GR, IE, IT, LT, NL, PL, PT, RO, SE, SK, UK

Non-COST participation: University of Minig and Technology (CN)

536 - Alloy development for Critical components of Environmental friendly power plant (ACCEPT)

Chair: Mr John HALD (DK)

Rapporteur: Prof. Jiri SVEJCAR (CZ)

The objective of the Action is to develop highly efficient steam power plant with low emissions, through three development steps, on the nano-scale, the meso-scale and the macro-scale, from innovative alloy development to validation of component integrity.

End of Action: 2009

Parties: AT, BE, CH, CZ, DE, DK, ES, FI, HU, IT, NL, PL, SE, SK, UK

539 - Electroceramics from Nanopowders Produced by Innovative Methods (ELENA)

Chair: Prof. Biljana STOJANOVIC (RS)

Rapporteur: Dr Witold LOJKOWSKI (PL)

The main Objective of the Action is to improve the physical and electronic properties of advanced electroceramics and thick films produced by chemical, physical and mechanical synthesis techniques focusing on the polymeric precursors, sol-gel, spray pyrolysis, microemulsion, ultrasonic and freeze-drying methods.

End of Action: 2009

Parties: BE, BG, CH, CZ, DE, ES, FI, FR, GR, HU, IT, LT, NO, PL, PT, RO, RS, SE, SI, SK, UK

Non-COST participation: Baku State University (AZ), University of Sao Paulo State (BR), Keio University (JP), Technical University of Moldova (MD), Institute of Solid State Chemistry (RU), Institute for Problems of Materials Science (UA)

540 - Photocatalytic technologies and novel nanosurfaces materials – critical issues (PHONASUM)

Chair: Dr František PETERKA (CZ)

Rapporteur: Dr Anthony R. FLAMBARD (DE)

The main objective of the Action is to via a concerted European effort increase the fundamental knowledge of nanocrystalline photoactive materials and development of new products, which utilize self sterilizing and self cleaning photoactive materials in commercial applications. The Action will also concentrate on the development of EU standards for the characterization of photocatalytic materials.

End of Action: 2010

Parties: AT, BE, BG, CH, CZ, DE, DK, ES, FI, FR, GR, HU, IE, IT, PL, PT, RO, RS, SI, UK

541 - Semi-solid Processing of Steels (Thixosteel)

Chair: Dr Ahmed RASSILI (BE)

Rapporteur: Prof. Laurence KATGERMAN (NL)

The main objective of the Action is to develop an industrial applicable process for the thixoforming of steel alloys, as well as for the control of the whole production chain, including material and tool developments.

End of Action: 2010

Parties: BE, CY, DE, ES, FR, IE, IT, PL, TR, UK

Non-COST participation: Al Akhawayn University (MA)

542 - High Performance Energy Storages for Mobile and Stationary Applications (HPSMT)

Chair: Dr Dalik SOJREF (DE)

Rapporteur: Dr Marija KOSEC (SI)

The main objective of the Action is the development of high performance energy storage systems and their implementation in mobile and stationary applications in transportation and energy technologies

End of Action: 2010

Parties: BE, BG, CZ, DE, ES, FR, GR, IE, IL, IT, LT, NL, PL, PT, RO, UK

Non-COST participation: ECONDO Ltd. (RU), Joint Institute for High Temperatures (RU), Mendeleev Russian University for Chemical Technology (RU), Russian Railway Research Institute (RU)

543 - Research and Development of Bioethanol Processing for Fuel Cells (BIOETHANOL)

Chair: Dr Riitta Liisa KEISKI (FI)

Rapporteur: Dr Rimantas LEVINSKAS (LT)

The Action focuses on developing new technologies for bioethanol that can be used effectively in small-scale fuel systems of electric power output between 0.5 and 10 kW. The technologies cover low-temperature bioethanol reforming in hydrogen selective membrane reactors and cleaning methods as well as their combinations with any type of low-temperature fuel cell.

End of Action: 2010

Parties: AT, CH, DE, DK, ES, FI, HU, IE, IT, NL, NO, PL, SE, UK

P15 - Advanced Paramagnetic Resonance Methods in Molecular Biophysics

Chair: Prof. Sabine VAN DOORSLAER (BE)

Rapporteur: Prof. Ivan NEDKOV (BG)

The main objective of the Action is to initiate a concerted European effort to develop new electron paramagnetic resonance (EPR) instruments and methodologies in order to determine the structure, dynamics and structure-function relationships of biological systems.

End of Action: 2010

Parties: AT, BE, CH, DE, DK, ES, FR, GR, HR, HU, IL, IS, IT, NL, NO, PL, PT, RO, SI, UK

Non-COST participation: University of Queensland (AU), Institute of Organic Chemistry - Novosibirsk (RU), Kazan Physical Technical Institute (RU)

P16 - Emergent Behaviour in Correlated Matter (ECOM)

Chair: Prof. Ernst BAUER (AT)

Rapporteur: Prof. Fabio BELTRAM (IT)

The main objective of this action is to provide an essential contribution to knowledge and development in the various fields of strongly correlated electron systems via a concerted European effort. Basic research in this area requires the co-operation of a large number of scientists from various fields.

*End of Action: 2009**Parties: AT, BE, CH, CZ, DE, EE, ES, FR, GR, HR, HU, IT, NL, PL, PT, RO, RS, SI, SK, UK**Non-COST participation: Sungkyunkwan University (KR), Kurchatov Institute (RU), Tallahassee High Field Laboratory (US)***P17 - Electromagnetic processing of Materials (EPM)**

Chair: Dr Sergei MOLOKOV (UK)

Rapporteur: Prof. Joaquim Manuel VIEIRA (PT)

The main objective of the Action is to increase knowledge about the action of the electromagnetic fields to control, process and manipulate liquid and solid metals, semiconductors, electrolytes, ferrofluids, and plasmas with the aim of producing new or improve the quality of existing materials.

*End of Action: 2009**Parties: BE, CY, CZ, DE, ES, FI, FR, GR, IE, IL, IT, LT, LV, NL, PL, RO, SK, TR, UK**Non-COST participation: University of Newcastle (AU), Université des Sciences et de la Technologie Houari Boumedienne (DZ), D.V.Efremov Scientific Research Institute of Electrophysical Apparatus (RU), Institute of Continuum Media Mechanics (RU)***P18 - The Physics of Lightning Flash and its Effects**

Chair: Prof. Rajeev THOTTAPPILLIL (SE)

Rapporteur: Prof. Zsolt KAJCSOS (HU)

The main objective of the Action is to increase the knowledge of the physics of the lightning discharge and of its effects on natural and man-made systems.

*End of Action: 2009**Parties: AT, BE, BG, CH, CY, DE, DK, ES, FI, FR, HU, IL, IT, MK, NL, PL, PT, RS, SE, SI, UK**Non-COST participation: McMaster University (CA), Ryerson University (CA), University of Toronto (CA), Doshisha University (JP), Kyiv Polytechnic Institute (UA), Usikov Institute for Radio-Physics and Electronics (UA), University of Alaska (US), University of Florida (US)*

P19 - Multiscale modeling of materials

Chair: Prof. Matti ALATALO (FI)

Rapporteur: Prof. Lukas ROHR (CH)

The main objective of the Action is to increase the basic knowledge on technologically important materials and processes of their treatments and to provide a scientific basis for improving their macroscopic properties.

End of Action: 2010

Parties: AT, BE, BG, CH, CZ, DE, ES, FI, FR, GR, HU, IL, LT, NO, PL, PT, SE, UK

Non-COST participation: Auckland University of Technology (NZ)

P20 - Large-Eddy Simulation for Advanced Industrial Design (LES-AID)

Chair: Prof. Bernard GEURTS (NL)

Rapporteur: Prof. Zsolt KAJCSOS (HU)

The main objective of the Action is to develop large-eddy simulation strategies for turbulent flows in industrial applications involving combustion, external/internal flows and multi-phase fluids.

End of Action: 2010

Parties: BE, CH, CY, CZ, DE, DK, ES, FR, GR, HU, IT, MK, NL, PL, SE, UK

Non-COST participation: Seoul National University (KR), Space Research Institute (RU), Los Alamos National Laboratory (US), NASA Glenn Research Center (US), University of Maryland (US), University of Southern California (US), Worcester Polytechnic Institute (US)

P21 - Physics of Droplets

Chair: Prof. Nicolas VANDEWALLE (BE)

Rapporteur: Dr Stefan FRUNZA (RO)

The Action aims at improving the fundamental understanding of the physics of droplets (production, transport, coating and stock), from the microscopic scale to our macroscopic world. Fundamental information will provide tools for broad practical applications reaching from the traditional food industry to cutting-edge technologies.

End of Action: 2010

Parties: AT, BE, BG, CH, DE, ES, FR, GR, IE, IL, IT, NL, NO, PL, RO, SI, UK

Non-COST participation: University of South Australia (AU)

MP0601 - Short Wavelength Laboratory Sources

Chair: Prof. Alan MICHETTE (UK)

Rapporteur: Prof. Zsolt KAJCSOS (HU)

Our ability to manipulate short wavelength radiation ($\sim 0.01\text{--}100\text{nm}$, equivalent to $\sim 120\text{keV--}12\text{eV}$) has increased significantly over the last three decades. This has led to major advances in applications in a wide range of disciplines such as: the life and medical sciences, including cancer-related studies; environmental science, including studies of pollution and its effects; archaeology and other cultural heritage disciplines; and materials science. Although expansion in application areas is due largely to modern synchrotron sources, many applications will not become widespread, and therefore routinely available as analytical tools, if they are confined to synchrotrons. This is because synchrotrons require enormous capital and infrastructure costs and are often, of necessity, national or international facilities. This seriously limits their scope for applications in research and analysis, in both academia and industry. How many universities, research institutes or even industrial laboratories would have electron microscopes if electron sources cost EUR 100 Mio or more? Hence the need to develop bright but small and (relatively) cheap x-ray sources, not to replace synchrotrons but to complement them. It is the purpose of this Action to facilitate such developments.

End of Action: 2011

Parties: BE, CZ, DE, ES, FR, HU, IE, IT, NO, PL, SE, SK, UK

MP0602 - Advanced Solder Materials for High Temperature Application (HISOLD)

Chair: Dr Ales KROUPA (CZ)

Rapporteur: Dr Peter SVEC (SK)

The focus of the Action is the investigation of Pb-free replacements for high-Pb solders for high-temperature applications. This comprises a study of the chemical, physical and mechanical properties of alloys containing a large number of permutations of different alloying elements. A multiscale approach will be used:

Meso-scale: The application of thermodynamics and kinetics to the study of alloying behaviour; the development of materials property databases.

Macro-scale: The creation of a phenomenological description of corrosion and deformation processes occurring in a solder joint during fabrication and service,

Micro- (nano-) scale: The investigation by experiment and modelling of the initial stage of the formation of intermetallic phases at the solder/substrate interface. This will involve the consideration of diffusion.

This will be most efficiently achieved through coordinated international cooperation providing a basis for interdisciplinary research. The action will increase the basic understanding of alloys that can be used as Pb-free alternatives to high-temperature solders for practical applications, for example in the aerospace and automotive industries.

End of Action: 2011

Parties: AT, BE, BG, CH, CZ, DE, DK, FI, FR, HU, IT, NL, PL, PT, RO, RS, SE, SI, SK, TR, UK

Non-COST participation: Ural State Pedagogical University (RU), Ivan Franko National University (UA)

MP0603 - Chemical imaging by means of CARS-microscopy (MicroCARS)

Chair: Dr Annika ENEJDER (SE)

Rapporteur: Dr Stefan FRUNZA (RO)

The aims of the proposed Action are to ascertain scientific exchange between European experts that have significantly contributed to the development of a novel laser-based microscopy method, Coherent Anti-Stokes Raman Scattering (CARS) microscopy, and to establish it among a broader scientific community in nanobiotechnology. The Action has a highly interdisciplinary character: advanced physical light interaction mechanisms will be explored and employed to provide fundamental structural and chemical information on a nano-scale for the benefit of material and life sciences. CARS-microscopy allows visualization of molecules under natural conditions without the need for exogenous markers. Instead, their intrinsic vibrations are probed, carrying information on both molecular composition and physical state. CARS-microscopy is accomplished with exceptionally high 3-D resolution, through thick samples, and with negligible photo-damage thanks to the nonlinear character of the CARS process and probe beams in the near-infrared regime. The Action will demonstrate the potential of CARS-microscopy by compelling applications, involving 3-D mapping of the organization/dynamics of molecules in material and biological nanostructures.

End of Action: 2011

Parties: AT, DE, DK, ES, FI, FR, IE, LT, NL, SE, UK

MP0604 - Optical Micro-Manipulation by Nonlinear Nanophotonics

Chair: Prof. Francesco SIMONI (IT)

Rapporteur: Prof. Sveinn OLAFSSON (IS)

The objective of this Action is to establish active links between

European laboratories working in the field of optical manipulation and related applications and to foster and accelerate long-term development of this field in Europe. The goal is to increase knowledge about the basic mechanisms of optical trapping and to develop novel methods of manipulation, micro-patterning and imaging, to be exploited in the future bio-medical technology and in micro-mechanics. The scientific innovation concerns: basic mechanisms of the mechanical light-matter interaction; holographic techniques; nonlinear optical methods in microscopy and trapping. The potential impact on technology concerns the implementation of advanced equipment and devices for: nondestructive and non-invasive manipulation and imaging of micro-objects; patterning and templating of micro-devices; measurements in microfluidics. The scientific exchange resulting from the Action will facilitate the interconnections between these topics to obtain new results in the field of optical manipulation as well as to pave the way to new scientific understanding and technological advancement in the forthcoming era of nanobiotechnology.

End of Action: 2011

Parties: AT, BG, CH, CZ, DE, DK, ES, FI, FR, GR, HU, IE, IT, LT, PT, SE, SI, UK

Non-COST participation: Australian National University (AU), University of Queensland (AU)

IE0601 - Wood Science for Conservation of Cultural Heritage (WoodCultHer)

Chair: Prof. Luca UZIELLI (IT)

Rapporteur: Prof. Zsolt KAJCSOS (HU)

European Cultural Heritage includes large numbers of objects made partially or completely of wood, e.g. panel paintings, wooden sculptures, music instruments, furniture and fittings, tools, vehicles, timber structures, wooden foundation piles. Wood is a peculiar material, of biological origin, highly variable, susceptible to physical chemical and biological deterioration, hygroscopic, swelling and shrinking due to temperature and humidity variations, anisotropic, viscoelastic, mechano-sorptive; its ageing behaviour is not yet well known. Wood science has greatly developed in the last few decades, and only recently started to be applied to the conservation of wooden artworks. This Action aims to improve the conservation (including study, preventive conservation and restoration) of European Wooden Cultural Heritage Objects (WCHOs), by fostering targeted research and multidisciplinary interaction between researchers in various fields of wood science, conservators of wooden artworks, other scientists from related fields. Special emphasis will be given to the ageing of wood material (e.g. its factors – physical, mechanical, biological, chemical, environmental – and their interactions), methods for studying long-term deterioration, interactions between WCHOs and the environment (in the atmosphere and in the soil, thus including

archaeological wood), evaluation of long-term compatibility of methods and products for restoration, evaluation of equipment for the diagnosis, restoration, monitoring and conservation of WCHOs, implementation of results into preventive conservation practice and standardization.

End of Action: 2011

Parties: AT, BE, CH, CZ, DE, DK, ES, FI, FR, GR, HU, IT, LV, MK, MT, NL, NO, PL, PT, RO, SE, SI, TR, UK

Non-COST participation: Agricultural University of Tirana (AL), RISH (JP), SCION (NZ)

MP0701 - Composites with Novel Functional and Structural Properties by Nanoscale Materials (Nano Composite Materials-NCM)

Chair: Dr Erich KNY (AT)

Rapporteur: Prof. Joaquim Manuel VIEIRA (PT) and Dr Dag HØVIK (NO)

The main objective of the Action is to form a European-wide scientific and technology knowledge platform on the topic of nanocomposite materials in order to advance the R&D, the use, and the exploitation of these innovative materials in Europe with a special focus on SME's. Polymer materials reinforced with nanoscale components are adding new dimensions to composite materials and major improvements in functional and structural properties are within reach. Such polymer nanocomposites are of great importance for a multitude of industrial uses in automotive, health care, electronics, aerospace, mechanical engineering, construction and building and consumer products with great economical and ecological benefits. This new technology constitutes a driving force for new employment opportunities in Europe. The interdisciplinary network will create valuable links for the European research area, and will strengthen the approach to build scientific excellence in this field. It will stimulate European cooperation, technology transfer and will create valuable input from nationally funded projects for European industry with special focus on SME's.

End of Action: 2012

Parties: AT, BE, CH, CY, CZ, DE, ES, FI, GR, HU, IE, IT, LT, LV, NO, PL, PT, RO, SE, SK, TR, UK

Non-COST participation: INHA University (KR), New Zealand Institute for Crop & Food Research Ltd. (NZ)

MP0702 - Towards Functional Sub-Wavelength Photonic Structures

Chair: Dr Marian MARCINIAK (PL)

Rapporteur: Dr Witold LOJKOWSKI (PL)

The main objective of the Action is to establish active links between European laboratories working in the field of artificial materials for photonics applications, where the structural dimensions are at or below the wavelength of light. Fabrication of such structures has become possible due to the expertise delivered by nanotechnology, which opens the way to the study of new functional artificial materials and plasmonic structures, promising progress in miniaturisation - and which will allow exploration of new aspects of light-matter interaction. The goal is to increase knowledge about the basic mechanisms of the interaction of light with matter on a sub-wavelength scale. The scientific innovation concerns: the basic mechanisms of light-matter interaction in micro- and nanostructured materials - including metals (plasmonics), the trade-off between strong localization and propagation losses, photonic diagnostic instruments, and non-linear effects. The technological impact of the Action will lead to the implementation of advanced optical equipment and devices with high performance and low cost. The scientific transformation resulting from the Action will facilitate interconnection between topics that will produce new results in the field of photonics and pave the way to the forthcoming era of nanophotonics.

End of Action: 2012

Parties: AT, BE, BG, CH, CY, CZ, DE, DK, ES, FI, FR, GR, IE, IL, IT, LT, NL, NO, PL, PT, RO, SE, SK, TR, UK

Non-COST participation: State Engineering University of Armenia (AM), Laser Physics Centre, Australian National University (AU), MQPhotonics Research Centre, Macquarie University (AU), Optoelectronic Devices Group, National Research Council (CA), Gwangju Institute of Science and Technology (KR), Université Chaouaib Doukkali (MA), Fiber Optics Research Center (RU), International Laser Center, M.V. Lomonosov Moscow State University (RU), Pushkov Institute of Terrestrial Magnetism, Russian Academy of Sciences (RU), Laser Physics Group, Saratov State University, (RU), Kharkiv National University of Radio-Electronics (UA), Usikov Institute of Radio Physics and Electronics (UA)

MP0801 - Physics of Competition and Conflicts

Chair: Dr Peter RICHMOND (IE)

Rapporteur: Prof. Panos ARGYRAKIS (GR)

Recently physicists have extended ideas of atoms and lattices to more generalized concepts of agents and networks and are facilitating new understanding of systems traditionally the province of other disciplines. Applications include, for example, competition between firms, mergers and acquisitions, evolutionary dynamics, cultural change and transportation networks. Set to undergo a renaissance

in the 21st century, the area of complexity, rooted in statistical physics and probability theory is at the core of these developments. Better understanding in these areas will provide routes to greater social stability and economic well-being across an increasingly networked world. The Action will promote discussion and research. The Action will promote discussion and research across the physical and sociological disciplinary divide by providing a platform from which the participating researchers can develop important, new and substantial research initiatives aimed at tackling these key trans-disciplinary issues. Overall the Action will provide a unique forum for physicists and mathematical scientists to share leading-edge knowledge, experience and build up a common language with economists, social scientists, industry and government.

End of Action: 2012

Parties: AT, BE, BG, CH, CZ, DE, DK, ES, FI, FR, GR, HU, IE, IT, LT, NL, NO, PL, RO, RS, TR, UK

Non-COST participation: Universidad de Buenos Aires (AR), Australian National University (AU), Tokyo Institute of Technology (JP), Institute for Condensed Matter (UA)

MP0802 - Self-assembled guanosine structures for molecular electronic devices

Chair: Dr Lea SPINDLER (SI)

Rapporteur: Dr Anthony R. FLAMBARD (DE)

Guanosine is one of the DNA nucleotides and together with its derivatives it has a high potential for self-recognition and self-assembly, as well as the recognition ability for other biologically important molecules. These properties will be explored in detail with the goal to increase the knowledge on basic principles of guanosine-assembly, to synthesize new optimized materials, and to explore their electronic and optical properties. Novel reproducible and well ordered supramolecular structures will be designed to serve as molecular-scale architectures for new hybrid molecular electronics. The key innovation is in merging the biorecognition properties of guanosine-based materials with their promising electronic properties, which opens up a wide range of possible biomedical applications.

End of Action: 2012

Parties: BE, DE, ES, FR, HU, IT, LT, PL, SI, UK

MP0803 - Plasmonic components and devices

Chair: Prof. Olivier MARTIN (CH)

Rapporteur: Prof. Eva OLSSON (SE)

The Action will foster, coordinate and strengthen scientific and

technological collaboration in plasmonics in Europe. Over the last 10 years, plasmonics - the optics of metallic nanostructures - has emerged as a very promising technology. Two key applications of plasmonics are the processing of optical information at the nanoscale and label free biosensing. The Action will cover both fields of application, since similar fundamental and technological issues are at stake. Emphasis will be put on the integration of plasmonic components into CMOS and organic devices. The Action will help bridge the gap between fundamental research and European industry; it will also develop and implement a strategy for education on plasmonics in Europe.

End of Action: 2012

Parties: AT, BE, CH, CZ, DE, DK, ES, FI, FR, GR, IE, IL, LT, NL, PL, PT, SE, TR, UK

MP0804 - Highly Ionised Pulse Plasma Processes

Chair: to be confirmed

Rapporteur: Prof. Sveinn OLAFSSON (IS)

The main objective of the Action is to make optimal use of new Highly Ionised Pulse Plasma (HIPP) processes through a greater understanding of the physics involved and the development of improved products by superior HIPP coatings. Enhanced properties such as increased hardness, density, refractive index, better adhesion, modified crystal structure, and much more can be realized, as shown by academia and will be transferred to industry, since also industrial partners are involved. By joining knowledge and resources a new generation of deposition processes will be established with benefit for nearly all technical branches due to the cross sectional character of thin film technology.

End of Action: 2013

Parties: in progress (new Action)

MP0805 - Novel Gain Materials and Devices Based on III-V-N Compounds

Chair: Prof. Naci BALKAN (UK)

Rapporteur: Dr Solveig ROSCHIER (FI)

The main objective of the Action is to advance novel gain materials based on III-V-N semiconductor compounds including dilute nitrides and indium rich GaInN. The Action will provide resources for a pan-European effort, so that small laboratories lacking facilities will be able to collaborate with other groups to design, model, realise and characterise novel prototype devices that can be tested in an application context. This Action will therefore also serve to spread the technology know-how in the field to all participating areas in

Europe. The Action will bring together experts covering the full technology spectrum of semiconductor technologies and promote an open collaboration between groups already in the field, as well as groups getting into the field. This will lead to faster identification of and solution to problems and possibilities, thus increasing the competitiveness of European electronics and optoelectronics industries.

End of Action: 2013

Parties: in progress (new Action)

MP0806 - Particles in turbulence

Chair: Prof. Federico TOSCHI (NL)

Rapporteur: Prof. Laurence KATGERMAN (NL)

Fluid turbulence is ubiquitous and so is its ability to transport particulate matter such as dust, soot or droplets. The dynamics of particles in a turbulent flow is fundamental to everyday life - examples of open scientific and technological issues include rain formation in clouds, pollution dispersion in the atmosphere, optimization and emission reduction in combustion, plankton population dynamics - and constitute a major scientific challenge with immediate practical implications and applications. Open scientific issues such as inertia, finite particles sizes, collisions, advection in complex flow geometries are examples of fundamental key ingredients which pose challenging theoretical problems and need to be understood in order to have an impact on applications. The main objective of the Action is to support fundamental research on the statistical properties of particles transported by turbulent flows.

End of Action: 2013

Parties: in progress (new Action)

MP0901 - Designing novel materials for nanodevices: From Theory to Practise (NanoTP)

Chair: *to be confirmed*

Rapporteur: *to be confirmed*

The main objective of the Action is atomic-scale interface design and characterisation. Engineering of surfaces and interfaces of nanostructures remains a central goal of modern solid state physics and chemistry, since atomically controlled interfaces play a key role in the performance of nanodevices. Limitations in characterisation and theoretical modelling tools have been a major obstacle to the development of controllable device interfaces. Technology is now entering a period of convergence between theory and characterisation tools: new electron microscopy tools can provide images and chemical mapping with atomic resolution; developments

in near-field optical microscopy probes enable Raman spectroscopy of individual nano-objects. STXM-NEXAFS has been used to characterise individual nanoobjects. Concurrently, developments within the available computer codes (AIMPRO, siesta/transiesta...) allow routine handling of systems with many 100s of atoms, and latest results show the promise of scaling this down by a factor of 10-100, i.e. into the range of realistic nano-objects. These developments will allow theoretical modelling and experimental characterisation at the same nanometric scale. This Action combines development of these new tools with the expertise needed to exploit them for improved nano-interface control and novel device design. This approach will support the design and integration of novel materials of high technological relevance.

End of Action: 2013

Parties: in progress (new Action)

MP0902 - Composites of Inorganic Nanotubes and Polymers (COINAPO)

Chair: to be confirmed

Rapporteur: to be confirmed

The main objective of the Action is to develop new composite materials from inorganic nanotubes and polymers and to establish appropriate links and transfer of knowledge needed for application and commercialisation of this kind of composite media by European industry. Nanotubes made of inorganic materials are an interesting alternative to carbon nanotubes, showing advantages such as e.g. easy synthetic access, good uniformity and solubility, and predefined electrical conductivity depending on the composition of the starting material. They are therefore very promising candidates as fillers for polymer composites with enhanced thermal, mechanical, and electrical properties. Target applications for this kind of composites are materials for heat management, electrostatic dissipaters, wear protection materials, photovoltaic elements, etc. The Action will link together European scientists working on this rapidly emerging field to create a basis for a highly interdisciplinary research network focused on development and exploration of inorganic nanotube-polymer composites. The Action will generate a fundamental knowledge and create widespread links needed for application and commercialization of this kind of composite media by European industry.

End of Action: 2013

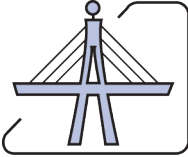
Parties: in progress (new Action)

Transport and Urban Development (TUD)

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The Domain *Transport and Urban Development* aims at fostering international research networking activities of scientists and experts dealing with transport systems and infrastructures, urban land use and development, architecture and design, and civil engineering issues. The focus is

on multi- and interdisciplinary approaches and the aim is to cover both basic and applied research activities including technical and technological developments and their changeovers that are relevant to policy and decision making processes. A significant concern is devoted to activities exploring new research needs and developments.

The domain is by definition cross-sectoral and multidisciplinary, encompassing a wide range of scientific expertises within the transport and land use planning, design, and management activities with a special emphasis on the strong interrelationships among the relevant policy fields as well on all aspects related to sustainable development. The domain activities should be innovative and complementary to other European programmes in the relevant fields.

The following non-exclusive examples illustrate aspects of actual research in this Domain. The scope of the Domain is not restricted to these activities.

Sustainable transport and urban planning policy, addressing issues of both sustainable transport and urban development. The focus is on the environmental and socio-economic impacts of transport, traffic safety, security and energy consumption, as well as modal diversion and modal re-equilibrium, intermodal solutions and interoperability among the different systems. The integrated spatial and land-use planning, environmental and transport planning and modelling will focus on recommendations for sustainable and interdisciplinary policy and planning concerning transport issues and urban development, solutions for a safer mobility of people and goods, securing living conditions, including psychological issues of these problems.

Design of transport systems and development of urban infrastructures, addressing issues related to transport infrastructures (building, development, maintenance, rehabilitation), the development of new technologies both for infrastructures

(materials, etc.) and the vehicles (alternative fuels, etc.) and encompassing issues related to the construction and management of networks and utilities, urban safety, security and disaster management.

Urban architecture and civil constructions: planning and design, covering urban design and architecture, urban constructions, reconstruction and rehabilitation of structures and buildings, including cultural heritage areas, green structures as well as issues of quality of life.

The management of the transport systems, infrastructures and urban structures, addressing on one hand transport policies, also related to transport demand management, traffic management, market issues, people education towards more sustainable behaviours, and on the other civil engineering and construction topics, such as rehabilitation, organisation and management of the construction sector, logistics and energy use.

356 - Towards the definition of a measurable environmentally sustainable transport (EST)

Chair: Dr Robert JOUMARD (FR)

Rapporteur: Prof. Radu ANDREI (RO)

The main objective of this COST Action is to design harmonised and scientifically sound methods to build better environmental indices (or indicators) by using existing European indices, and to build methods to be applied to the decision-making process of the transport sector in the different European countries.

End of Action: 2010

Parties: AT, BE, BG, CH, CZ, DE, DK, EE, ES, FR, GR, HU, IT, LV, NL, NO, PL, PT, SE, UK

Non-COST participation: Université de Blida (DZ)

357 - Accident Prevention Options with Motorcycle Helmets (PROHELM)

Chair: Dr Paul BRÜHWILER (CH)

Rapporteur: Mr Goran MLADENOVIC (RS)

The main objective of this Action is to increase knowledge on how motorcycle helmets could be improved to help facilitate the avoidance of accidents.

End of Action: 2009

Parties: BE, BG, CH, DE, ES, FR, GR, IE, IL, IT, NO, PL, PT, TR, UK

358 - Pedestrians' Quality Needs (PQN)

Chair: Mr Rob METHORST (NL)

Rapporteur: Mr Willi HÜSLER (CH)

The Action wants to provide an essential contribution to systems knowledge of pedestrians' quality needs and the requirements derived from those needs, thus stimulating structural and functional interventions, policy making and regulation to support walking conditions throughout the EU and other involved countries.

*End of Action: 2010**Parties: AT, BE, CH, CZ, DE, EE, ES, FI, FR, GR, HU, IL, IT, NL, NO, PL, PT, RS, SE, UK***C20 - Urban Knowledge Arena – Developing a European Arena for Cross-Boundary Co-operation in Production of Knowledge and Know-how on Complex Urban Problems**

Chair: Mr Henrik NOLMARK (SE)

Rapporteur: Ms Ulla PRIHA (FI)

The main objective of the Action is to explore and develop a European arena for cross-boundary, integrated knowledge and know-how on complex urban problems, which is termed the Urban Knowledge Arena.

*End of Action: 2009**Parties: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, HU, IL, IT, MK, NL, NO, PL, PT, SE, UK***C21 - Urban Ontologies for an Improved Communication in Urban Civil Engineering Projects (Towntology)**

Chair: Dr Jacques TELLER (BE)

Rapporteur: Mr Pekka LAHTI (FI)

The main objective of the Action is to increase the knowledge and promote the use of ontologies in the domain of Urban Civil Engineering projects, in order to facilitate communications between information systems, stakeholders and UCE specialists at a European level (Groupware).

*End of Action: 2009**Parties: BE, CH, ES, FI, FR, GR, IT, NO, RO, UK*

C22 - Urban Flood Management

Chair: Dr Chris ZEVENBERGEN (NL)

Rapporteur: Prof. Gábor TELEKES (HU)

The main objective of the Action is to increase knowledge required for preventing and mitigating potential flood impacts to urban areas by exchanging experiences, developing integrated approaches, and by promoting the diffusion of best practices in Urban Flood Management.

End of Action: 2009

Parties: CY, CZ, DE, ES, FR, GR, HU, LU, NL, NO, PL, RS, SI, UK

C23 - Strategies for a Low Carbon Built Environment

Chair: Prof. Phillip John JONES (UK)

Rapporteur: Prof. Luis BRAGANÇA LOPES (PT)

The main objective of the Action is to investigate how carbon reductions can be achieved through appropriate design and management of the urban built environment.

End of Action: 2009

Parties: AT, BE, CH, CY, DE, DK, ES, FI, GR, IT, LT, MT, NL, NO, PL, PT, RS, SI, UK

C24 - Analysis and Design of Innovative Systems for Low-EXergy in the Built Environment (COSTeXergy)

Chair: Dr Elisa C. BOELMAN (NL)

Rapporteur: Prof. György SÁMSONDI KISS (HU)

The main objective of the Action is to develop and define practical design support instruments in order to demonstrate the practical applicability of the exergy concept to the built environment.

End of Action: 2010

Parties: BE, DE, DK, FI, GR, HU, IT, NL, NO, PL, SE, SI, UK

Non-COST participation: Musashi Institute of Technology (JP)

C25 - Sustainability of Constructions: Integrated Approach to Life-time Structural Engineering

Chair: Prof. Luis BRAGANÇA LOPES (PT)

Rapporteur: Prof. Charalampos BANIOPOULOS (GR)

The main objective of the Action is to promote science-based developments in sustainable construction in Europe through the collection and collaborative analysis of scientific results concerning life-time structural engineering and especially integration of environmental assessment methods and tools of structural engineering.

End of Action: 2010

Parties: AT, BE, CY, CZ, DE, DK, ECJRC, FI, GR, HR, HU, IT, LT, LU, LV, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, TR, UK

Non-COST participation: Joint Research Center (JRC)

C26 - Urban Habitat Constructions under Catastrophic Events

Chair: Prof. Federico MAZZOLANI (IT)

Rapporteur: Prof. Kiril GRAMATIKOV (MK)

The main objective of the Action is to increase knowledge of the behaviour of constructions in the urban habitat under catastrophic events, when exposed to extreme events arising from earthquakes, fire, wind, impact, explosions, etc., in order to predict their response when both the applied loading and the inherent structural resistance are combined in such a way as to reduce the safety level below acceptable values, leading in some cases to a premature collapse.

End of Action: 2010

Parties: AT, BE, CH, CY, CZ, DE, FI, FR, GR, HU, IT, LT, MK, MT, NL, PL, PT, RO, SE, SI, TR, UK

C27 - Sustainable Development Policies for Minor Deprived Urban Communities

Chair: Prof. Paolo VENTURA (IT)

Rapporteur: Prof. Björn MALBERT (SE)

The Action wants to explore, assess and improve the different policy actions open to small, deprived, urban communities, geared to sustainable development.

End of Action: 2010

Parties: BE, CH, CY, CZ, ES, FI, GR, HU, IT, LV, NO, PL, PT, TR

TU0601 - Robustness of Structures

Chair: Dr Michael FABER (CH)

Rapporteur: Prof. Kiril GRAMATIKOV (MK)

Robustness of structures first received significant attention 40 years ago following the partial collapse of Ronan Point, and recent terrorist attacks have resulted in renewed international resources being devoted to the topic. Despite its importance, the engineering profession has yet to reach consensus on quantification of robustness for use in design codes and construction projects. The COST Action aims to develop a foundation for treatment of structural robustness in future structural design codes. Building on the expertise and experience of European experts and close coordination with the European and international engineering associations such as IABSE, ECCS, CIB, fib, Rilem, ISO and the Joint Committee on Structural Safety (JCSS), a new risk-based approach for assessing robustness will be developed and a model code will be produced to guide improvements in future Eurocode revisions. This will greatly improve the efficiency of structural design, ensure the rational treatment of structural safety, safeguard the qualities of the environment, protect societal functionality and economical assets and is expected to increase the international competitiveness of the European building and construction sectors.

End of Action: 2011

Parties: BE, CH, CY, CZ, DE, DK, ES, FI, HU, IE, IL, IT, NL, NO, PL, PT, RO, SI, TR, UK

TU0602 - Land Management for Urban Dynamics

Chair: Prof. Maurizio TIRA (IT)

Rapporteur: Dr Terje KLEVEN (NO)

Previous studies in urban development show the decisive importance of the public actor's ability to mobilize the required land resources for the success of urban projects. European cities largely differ from each other in their land ownership situation, building industry and real estate configurations, mortgage system, planning culture, policies, and management tools. However, the actual impacts of those differences on the success of urban development are poorly known, in spite of their utmost importance for European long term economic growth, especially for new Eastern EU members. COST offers an accurate framework to lead an Europe-wide comparative study that focuses on (1) land management regimes and land policies for urban development and regeneration, (2) land management tools for large urban development projects, and (3) the overall assessment of the performance of those regimes, policies, and tools. This action will benefit the scientific community as well as the political and administrative bodies, the practitioners, and the

main stakeholders.

End of Action: 2011

Parties: BE, CH, CY, DK, ES, FI, FR, IT, LT, LV, NL, NO, PL, PT, SI, UK

TU0603 - Buses with a high level of service

Chair: Mr Francois RAMBAUD (FR)

Rapporteur: Dr Begoña GUIRAO ABAD (ES)

In order to improve sustainable mobility in urban areas, France launched recently its own concept “Buses with a high level of service” (BHLS), taking into account the “Bus Rapid Transit” concept developed in the USA, as well as, experiences from several French authorities, such as Île de France, Rouen and Nantes. Bus manufacturers have continuously innovated technological fields (motorization, new information and communication technologies...), but these developments will not have a significant impact unless a comprehensive approach is applied to the whole bus system, which among many other criteria takes into account the infrastructure that acts as its backbone. Throughout Europe, we observe similar strategies, such as in Sweden (e.g. the trunk network in Stockholm), in England and in Ireland under the name of “Fastway bus” or “Quality Bus Corridor”. In Germany (metrobus concept) and in The Netherlands (HOV – “Hoogwaardig Openbaar Vervoer”), some cities experiment also with “High capacity bus systems”. In order to boost these trends with efficiency, and to promote a useful way to enhance public transport networks and the bus image, this Action will have the following main targets: - to capitalise the state of the art, as well as, the different conceptual approaches - to identify and to understand best practises - to carry out recommendations for decision-making at all levels, as well as for the EU bus research.

End of Action: 2011

Parties: BE, CZ, DE, ES, FR, GR, IE, IT, NL, PT, RO, SE, UK

TU0701 - Improving the Quality of Suburban Building Stocks

Chair: Prof. Roberto DI GIULIO (IT)

Rapporteur: Prof. Charalampos BANIOPOULOS (GR)

The main objective of the Action is the development and dissemination of knowledge and tools to assess and promote the refurbishment of existing suburban building stocks. Suburban building estates make up more than 50% of all European Urban Heritage. Most of the buildings – generally multi-family housing blocks consisting of small apartments – were completed after 1950 using low-cost

technologies and are often characterized by very poor quality, which contributes to the social decay of suburbs. The aim of the Action is to investigate, compare, define and disseminate common knowledge concerning methods, procedures and technologies for:

- the renovation and revitalization of suburban housing settlements,
- increasing their value, and
- improving safety and the quality of life of inhabitants.

The approach is based on a concept of Quality which incorporates a multitude of factors including energy efficiency, accessibility, sustainability and multi-functionality of buildings. On the other hand, quality standards must be improved in order to satisfy user needs as regards comfort, safety and accessibility, as well as the new European regulations concerning sustainability and energy savings. In order to achieve these objectives, new specific social, financial, technical and procedural models must be developed to facilitate the decisions of local authorities, housing corporations, owners and designers. A relevant number of representative case studies from the countries involved in the Action will be analyzed to test and validate the results achieved.

End of Action: 2012

Parties: BE, CH, DE, DK, FI, GR, HR, IT, LT, MK, NL, PL, PT, RO, RS, SE, SI, TR, UK

TU0702 - Real-time Monitoring, Surveillance and Control of Road Networks under Adverse Weather Conditions

Chair: Dr Nour-Eddin EL FAOUZI (FR)

Rapporteur: Dr Mate SRSEN (HR)

The main objective of the Action is to understand better the impacts of weather on freeways/motorways as well as on urban networks highway operations and to develop, promote and implement strategies and tools to mitigate those impacts. Adverse weather conditions can have a significant impact on traffic operations and quality of traffic flow. The advanced technologies for collecting and archiving weather data can assist the development of intelligent weather-based traffic management strategies, monitoring and control systems. In view of the paramount importance of weather-responsive tools for real-time traffic surveillance, this project will focus on the development of strategies and techniques aimed at improving the road traffic management and safety. The main goal is to mitigate the negative impacts of adverse weather conditions to traffic flows and to predict the traffic flows under adverse weather conditions. The term of 'adverse weather conditions' refers to the meteorological conditions that decrease the visibility and worsen the pavement conditions. This project will bring together researchers actively working on road networks related issues. It will concentrate on mutually complementary methodologies for modelling, estimation and control that will improve the safety of traffic networks. Traffic flows are highly dependent on weather conditions and researches on this

issue are very limited in the literature. Next, traffic flow prediction by reliable algorithms will be addressed in tight connection with the traffic sensor network. This project will address also many issues related to efficient, reliable and quick exchange of information and data over sensor networks for vehicular traffic. The data are received only at boundaries between some segments and averaged within possibly irregular time intervals. Additionally, there are missing data and sensor failures that need to be taken into account. Further, with the developed models and estimators, advanced control strategies will be developed dealing with appropriate fusion of the multiple sensor data.

End of Action: 2012

Parties: AT, BE, CH, DE, ES, FI, FR, GR, IS, NL, PL, PT, SE, TR, UK

Non-COST participation: Monash University Melbourne (AU), The University of Tokyo (JP)

TU0801 - Semantic enrichment of 3D city models for sustainable urban development

Chair: Dr Claudine METRAL (CH)

Rapporteur: Dr Symeon CHRISTODOULOU (CY)

Many urban or environmental models are defined with the objective of helping practitioners and stakeholders in their decision-making processes. Models which represent in 3 dimensions the geometric elements of a city are called 3D city models. These models are increasingly used in different cities and countries for an intended wide range of applications beyond mere visualization. Such uses are made possible by adding semantics to the geometrical aspects, leading to semantically enriched 3D city models. Furthermore, in the perspective of a sustainable development, cities ought to be studied in a comprehensive manner taking into account many interrelations between various urban issues. This can be achieved by identifying and extracting the knowledge underlying in related data and models. Using ontologies is a robust way to achieve the semantic enrichment of 3D city models as well as their interoperability with other urban models, so that they become an effective matrix of urban knowledge in a perspective of sustainability.

This Action will (1) create an integrative platform based on semantically enriched 3D city models, (2) use an ontology-based methodology that could be reused, (3) assess the usability of the integrated platform for planning and decision-making.

End of Action: 2012

Parties: AT, BE, CH, DE, DK, ES, FR, HR, IT, LV, NL, NO, SE, SI, SK, UK

TU0802 - Next generation cost effective phase change materials for increased energy efficiency in renewable energy systems in buildings. NeCoE-PCM

Chair: Dr Sarah MCCORMACK (IE)

Rapporteur: Prof. Luis BRAGANÇA LOPES (PT)

The European Green Paper Towards a European Strategy for Security of Energy Supply sets to double renewables from 6% to 12% in 2010 with further targets in the Renewable Energy Framework Directive of 20% by 2020. With buildings accounting for 40% of the total primary energy requirements in Europe, developing effective energy alternatives for buildings is imperative. The difficulty with matching energy supply to energy demand can be overcome by incorporation of proper energy storage systems. Phase change materials (PCM) can absorb a large amount of latent energy at constant temperature during phase changes and can be used to control temperature in a range of applications.

This Action's objective is to foster and accelerate long-term advancement of renewable energy systems and phase change materials research in Europe through design, development, characterisation and simulation of new generation modified hybrid phase change materials for use in energy storage for heating, cooling and renewable energy applications.

End of Action: 2013

Parties: in progress (new Action)

TU0803 - Cities Regrowing Smaller – Fostering Knowledge on Regeneration Strategies in Shrinking Cities across Europe

Chair: Prof. Thorsten WIECHMANN (DE)

Rapporteur: Prof. Andre DE NAEYER (BE)

At the beginning of the 21st century, Europe has many examples of the phenomenon of shrinking cities. One of the most challenging tasks for urban Europe in the near future is to deal with the results of demographic, economic and physical contraction processes, and to plan for the future of considerably smaller but nevertheless liveable cities.

The main objective of the Action is to foster the interdisciplinary knowledge of regeneration strategies in shrinking cities across Europe. By promoting the exchange of scientific knowledge in Europe and stimulating new ideas in selected reference cities, the network will act as a catalyst for innovative solutions to deal with demographic change and urban decline.

End of Action: 2013

Parties: in progress (new Action)

TU0804 - Survey Harmonisation with New Technologies Improvement (SHANTI)

Chair: Dr Jimmy ARMOOGUM (FR)

Rapporteur: Mr Jan SPOUSTA (CZ)

The issues of global warming and petrol scarcity have reminded us that a sustainable and efficient transport system is as crucial for our economy and standard of living as it will be for future generations. An essential prerequisite for sound decision making and policies are reliable and comparable data.

The main objective of the Action is to provide guidelines to harmonize European travel survey which will facilitate the assessment of policies at European level in terms of efficiency and equity while allowing each country maintaining comparability with its past surveys.

End of Action: 2013

Parties: in progress (new Action)

TU0901 - Integrating and Harmonizing Sound Insulation Aspects in Sustainable Urban Housing Constructions

Chair: *to be confirmed*

Rapporteur: *to be confirmed*

In Europe, regulatory requirements concerning acoustic performance of buildings differ widely in performance descriptors and limit values. The diversity (indicators, steps between classes, grade of quietness achieved, etc.) found in the nine existing national schemes and proposals in three more countries is an obstacle for exchange of experience, development and trade.

The main objective of the Action is to harmonise the descriptors for airborne and impact sound insulation between dwellings and for airborne sound insulation of facades as well as to prepare a European classification scheme with a number of quality classes.

End of Action: 2013

Parties: in progress (new Action)

TU0902 - Integrated assessment technologies to support the sustainable development of urban areas

Chair: *to be confirmed*

Rapporteur: *to be confirmed*

It is widely recognised that urban areas need to curb greenhouse gas emissions, reduce consumption of resources and adapt to be more resilient to climate change impacts - and become more sustainable in general.

The main objective of the Action is to develop better representations of the urban systems interactions and dynamics as well as new configurations of urban areas so that they consume fewer resources, emit less pollution, are more resilient to the impacts of climate change and are more sustainable in general.

End of Action: 2013

Parties: in progress (new Action)

TU0903 - Methods and tools for supporting the use, calibration and validation of traffic simulation models

Chair: to be confirmed

Rapporteur: to be confirmed

To this date, the bulk of resources and effort in the field of traffic simulation have focused on “model development”, leading to many simulation models being available on the market. These models are extensively used in applications that have great potential impact on the safety, capacity and environmental efficiency of the road system. However the fidelity of results and conclusions drawn from a simulation study, as well as the range of possible applications the tools can reliably be used for, are questionable: the same simulation study carried out by different people, even when using the same tool, is likely to give different results. Thus, the trustworthiness of the results almost entirely depends on the ability of the model users and on their intuition. Moreover, the increasing complexity of models makes appropriate and correct use a difficult task even for experts, requiring very specific calibration and validation methodologies. The main objective of the Action is to develop, implement and promote the use of methods and procedures for supporting the use of traffic simulation models, especially on the topics of model calibration and validation.

End of Action: 2013

Parties: in progress (new Action)

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NB: COST National Coordinator (CNC) = National contact points

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