2005

About COST

European Cooperation in the field of Scientific and Technical Research

1st release - March 2005

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Preface

The aim of this pocket guide to COST 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.

If you are interested in an ongoing Action, then I hope that the information contained in this guide will enable you to make the appropriate contacts and for those interested in proposing new Actions to have contact information.

Further information is available from the COST Web Site but it is best to contact my colleagues in the COST Office who will be able to provide detailed information and advice and will be pleased to assist you.

The details of the ongoing Actions demonstrate both the span of COST supported research and its dynamism. COST is a key player in the European Research Area in the way in which it develops collaboration in research and provides the foundation for advancing science, supporting industry, in developing standards, and generally meeting the needs of the research community and of society.

I hope that this booklet will inspire other researchers to use COST and join this community by sending us their proposals for possible new Actions.

Tony Mayer
Director COST Office

March 2005

Introduction & COST mission

COST – European **CO**operation in the field of **S**cientific and **T**echnical **R**esearch – is the oldest and widest system for research networking in Europe. It is based on an inter-governmental framework for cooperation research agreed following a Ministerial Conference in 1971. From the outset a commitment to the "wider" Europe was demonstrated as this agreement involved 19 countries. Starting from a limited number of domains, COST has now grown into a system for research collaboration covering 34 Member States plus one cooperating state, Israel, and is active in 13 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.

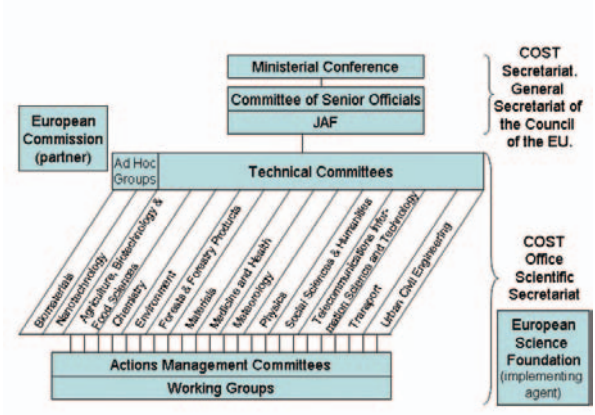
The funds provided by COST support the coordination costs of the research networks (Actions) with the research funding for the network participants being a national responsibility. In this way, COST "leverages" some € 20 billion of research funding through support which is less than 1% of the total investment and reaches out to some 30.000 researchers from across Europe. The COST system is primarily funded from a specific line within the EU Sixth Framework Programme.

"Bottom-up approach" (the initiative of launching a COST Action comes from the European scientists themselves), "à la carte participation" (only countries interested in the Action participate), "equality of access" (participation is open to European countries not belonging to the European Union) and "flexible structure" (easy implementation and light management of the research initiatives) are the main characteristics of COST. As a precursor of advanced multidisciplinary research, COST has a very important role for the realisation of the European Research Area (ERA) anticipating and complementing the activities of the Framework Programmes, constituting a "bridge" towards the scientific communities of emerging countries, increasing the mobility of researchers across Europe and fostering the establishment of "Networks of Excellence" in many key scientific domains such as: Physics, Chemistry, Telecommunications and Information Science, Nanotechnology, Meteorology, Environment, Medicine and Health, Forestry, Agricultural Sciences and the Social Sciences and Humanities. It covers both basic and more applied or

strategic research and also addresses issues of a pre-normative nature or of societal importance.

The governance of COST reflects its inter-governmental nature through Ministerial Conferences and the Committee of Senior Officials (CSO), which 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 two representatives to the CSO, one of whom is usually the COST National Coordinator. Reporting to the CSO are the COST Technical Committees (TC) which are responsible for the essential quality control of the COST Actions, for assessing new proposals and for the strategic development of their respective domains. Each COST country may appoint representatives to the Technical Committee (normally two) who are senior scientists or experts in their respective fields from their countries. The Secretariat to the Technical Committees and to the COST Actions is provided by the COST Office established by the European Science Foundation (ESF) under an agreement between the CSO and ESF.

COST Governance



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

Ongoing Actions are monitored by the Technical Committees

through the presence of Technical Committee rapporteurs at Action meetings and by annual reports and presentations by Actions to their respective Technical Committees.

Finally, there is an evaluation of completed Actions through an external Evaluation Panel whose report is considered and approved by the Technical Committee.

At the “sharp” end of COST are the Actions themselves. These Actions usually have a duration of 4-5 years and have an average budget of around € 70.000 per annum to support networking activities. Once a proposal has been accepted by the Technical Committee, it is referred to the CSO for formal approval. Each Action is then open for COST Member States to join the Action by signing a formal Memorandum of Understanding. Once five signatures have been received, the Action will be launched. Each Action is under the supervision of a Management Committee, again with two representatives per signatory country. The aim is to launch the Action with a "kick-off" meeting within 2 months of CSO approval.

Normally, Management Committees form working groups addressing the specifics of the Action’s work programme contained in the Technical Annex to the Memorandum of Understanding.

COST Actions cover support for Management Committee and working groups, 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 in Network of Excellence programme.

COST Actions contribute to European competitiveness and to normalisation and standardisation bodies and may even generate SMEs. COST Actions have a societal importance in their contribution to knowledge and to its wider dissemination to policy makers and to a wider public.

There may be interest in COST Actions from outside the COST countries provided there is mutual benefit in such collaboration. This participation covers the whole World and provides an additional strengthening to research networking. In particular, COST provides funds for approved institutions in COST's "near neighbours" countries in the Balkans and to Europe's immediate east and south.

COST operates a Continuous Open Call for proposals for new Actions using a two stage process. Preliminary proposals (up to 3 pages) will be assessed by the relevant Technical Committee(s). Proposers of successful preliminary proposals will be invited to submit full proposals which will be subject to external peer review and further assessment by the Technical Committee(s).

COST in the Sixth Framework Programme and the ERA

COST is supported by a specific line within the EU Sixth Framework Programme at a level between €50M and €80M. This is organised through a Specific Support Action contract between the European Commission and the European Science Foundation, which provides the administrative, scientific and technical secretariat for COST through the COST Office. The current contract (value - €34M until the end of 2005) reflects the agreement between the CSO and the ESF. The contract will be subject to a Mid Term Review during 2005.

COST is an important element in the European Research Area. The agreement between it and the ESF brings together the two major research networking structures into a closer and synergetic relationship. There is an active partnership in place between the European Commission and COST to ensure both the complementarity between COST and the Framework Programme and the links to the overall activities of the Commission. COST has also created a close working links with EUREKA and is developing its contacts with European standards bodies and with organisations such as INTAS in supporting the involvement of Europe's "near neighbours" in COST Actions.

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 the COST Office is targeted at the expenses needed to support the cooperation between the scientific activities of the COST Actions.

The main instruments for the support of the cooperation of the COST Actions are:

1. Travel and subsistence

This covers the reimbursement for scientists for their attendance of Management Committee meetings, workshops, conferences, Technical Committee meetings or synergy meetings with other research activities such as ESF, the Framework Programme, etc.

The reimbursement is based on a flat rate for accommodation and meals and covers transport costs (train- air ticket, car, local transport, etc.), for which the meeting participants are encouraged to use the most economic transport (such as APEX or "no frill" airlines) available.

Normally only up to 2 scientists per COST signatory country are reimbursed for a meeting except for the Technical Committees where only one expert per country can be reimbursed for attendance at plenary sessions (normally 3 sessions per year).

2. Subsidies

It may occasionally be considered necessary by a Management Committee or Technical Committee to request subsidies to review, co-ordinate, evaluate or summarise the results of its activities or to prepare a document or booklet 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 Technical Committees.

3. Dissemination, Publications

The dissemination of the scientific results of the COST activities is a core task of COST. 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 Technical Committees and can be funded from the COST Office budget:

Publications as the classical means of dissemination of scientific results. The main emphasis is given to publish:

• In scientific journals as contributions or special issue according to standard procedures for submission of manuscripts.

• As books produced by renowned publishers in the field of the relevant scientific research area.

• As proceedings of workshops and conferences.

• General information leaflets and brochures.

Electronic media

• The use of the internet and web is for COST a central tool for the dissemination of scientific activities, programmes and results.

• The COST Office develops and maintains a central web-site where all relevant information about the COST activities are made available to the general public. This web site contains an extensive number of links to other relevant web sites.

• In addition each Action will normally have its own web-site 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. COST is a suscriber to AlphaGalileo and so news from COST itself and the Actions may be placed on AlphaGalileo for access by journalists in Europe.

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

These Missions (Exchange Visits) are aimed at strengthening the existing networks by allowing scientists to go to 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.

The Applicant must be engaged in a programme of research in an institution of a COST Member State having signed the MoU of the Action concerned.

The host institution can be public or private, and should be in a COST Member State having signed the MoU and participating in the COST Action or in an approved non-COST participating institution.

The STSM should not be in the country where the Applicant is normally a resident.

The selection of candidates is delegated to the Management Committee (MC) of the Action.

Short-term scientific missions between different Actions of the

same field might be considered by the Management Committees involved in certain justified cases.

The financial support is a contribution to the cost of a STSM and may not necessarily cover all the costs in each case. The grant normally covers only travel and subsistence.

The average contribution for a STSM will be a fixed grant based on the Applicants budget request and decision of the relevant committee. It will normally not exceed € 2500. Any exceptions need special justification.

The costs associated with the STSM must not exceed the limits set in the general Short-term scientific missions, and the duration normally should be minimum one week (5 working days), maximum 3 months.

5. Workshop/Conference/meeting support

Workshops/Conferences and other meetings may be organised by a Management Committee in any COST country, providing it has signed 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.

The Conference/Workshop should be organised in conjunction with a Technical or Management Committee meeting or other major scientific event in the field of the Action so that all members of the Committee can attend and so that eligible Management Committee or Technical Committee members are reimbursed.

The organisation of such events may require financial support which can be granted for the following expenses:

• Room and technical equipment rental.

• Printing - Photocopying - programme (preliminary, definitive), application form, draft report, flyers etc.

• Phone, fax, mail - announcements, letters of confirmation.

• Personnel - staff involvement - or temporary recruitment of a secretary if necessary, or services of a Congress organising agency (if the Conference/Workshop is very large).

• Internal transport - e.g. bus for a scientific visit.

• Coffee breaks and light refreshments.

• Meals/dinners (if deducted from the daily allowance of the reimbursed participants).

• Conference/Workshop Proceedings.

COST support is normally only a contribution to the total budget. The contribution should normally not exceed € 10000.

For a requested support of up to € 3000, the contribution will take the form of a fixed grant.

6. Assessment, monitoring and evaluation of COST Actions

The assessment, monitoring and evaluation in COST is normally followed by COST Technical Committees ensuring that COST activities have a high standard of scientific and technical quality. While the Technical Committees themselves are composed of competent and respected experts in their domains, they are supplemented by external experts in implementing peer review. The COST budget can provide funding (honoraria) for such external experts, either when involved in Review Panels or the provision of written assessments for full proposals.

7. Training Schools

"Training Schools" within the frame of the Action topic are aimed at providing support for a group of scientists over a period of several days (normally around 5 days) 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 should also cover appropriate re-training as part of "life-long learning".

8. COST/ESF High Level Research Conferences

This scheme allows Management Committees to take advantage of the expertise of ESF in running European Research Conferences to create a partnership bringing together both junior and more experienced researchers to debate and exchange ideas at the forefront of research on specific topics, related to the Actions. This is a "shared cost" activity between the Action and ESF.

9. Annual grants

The COST Office operates an annual grant scheme for the TIST domain. This is also an option for new Actions in other domains, especially Chemistry. This scheme will be assessed during 2005/2006. Details about the scheme can be found in the COST document "Annual grant scheme for COST Action".

10. Action General Support Grant

COST Actions Management Committees may assign up to € 2000 per annum from within an Action budget to the MC chair as

grant holder for the general support of the Action management. This grant can be used to support and development of an Action Website, to be hosted at the server of one of the institutions represented on the Management Committee. Such Websites should only cover specific matters for the Action and should not duplicate material already published on the main COST Website in relation to COST and its structures or to general matters regarding the Action. This Website should also be used for MC and Working Group business. This grant can also be used for the general support of the Action's management committee operation, such as secretarial support, small scale Action related ad hoc activities and support for preparation events. This grant will be allocated as a fixed grant to the MC chair as grant holder. He has to report about the expenditure to the MC meeting.

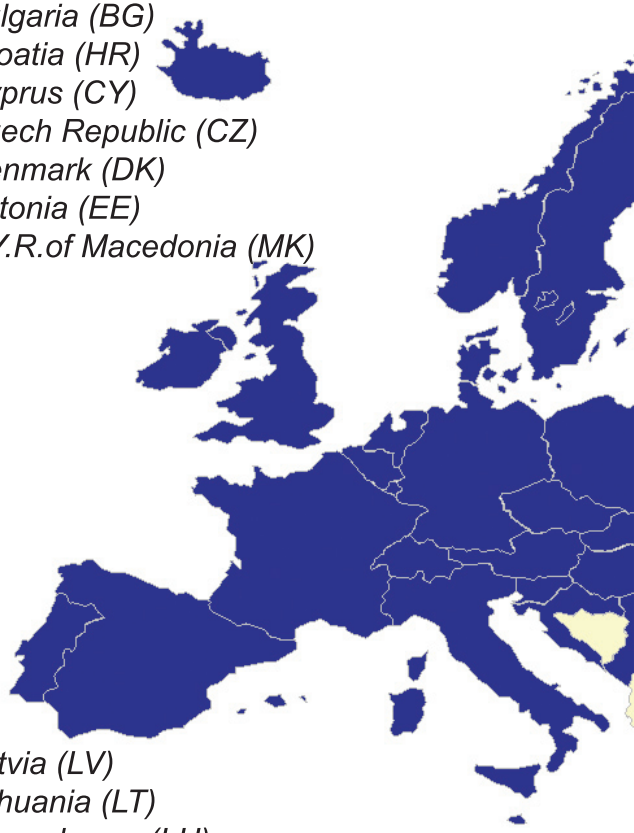
11. "Near Neighbours"

As part of the intention of COST to stimulate the participation of researchers from the Balkan region (not already involved as a COST Member State i.e. Albania, and Bosnia & Herzegovina), from Mediterranean countries (Algeria, Egypt, Lebanon, Libya, Morocco, the Palestinian Authority, Syria and Tunisia) and from European NIS countries (Armenia, Azerbaijan, Belarus, Georgia, Moldova, Russia and Ukraine), COST will fund the attendance of researchers (in accordance with COST Financial Rules and Procedures) at meetings of COST Actions. Such participation will be restricted to one participant per country at science meetings and at meetings of Management Committees (in the case of participation of non-COST institutions) and Working Groups. This sub-instrument will be in operation from 1 January to 31 December 2005 and it will be reviewed during the Autumn, 2005.

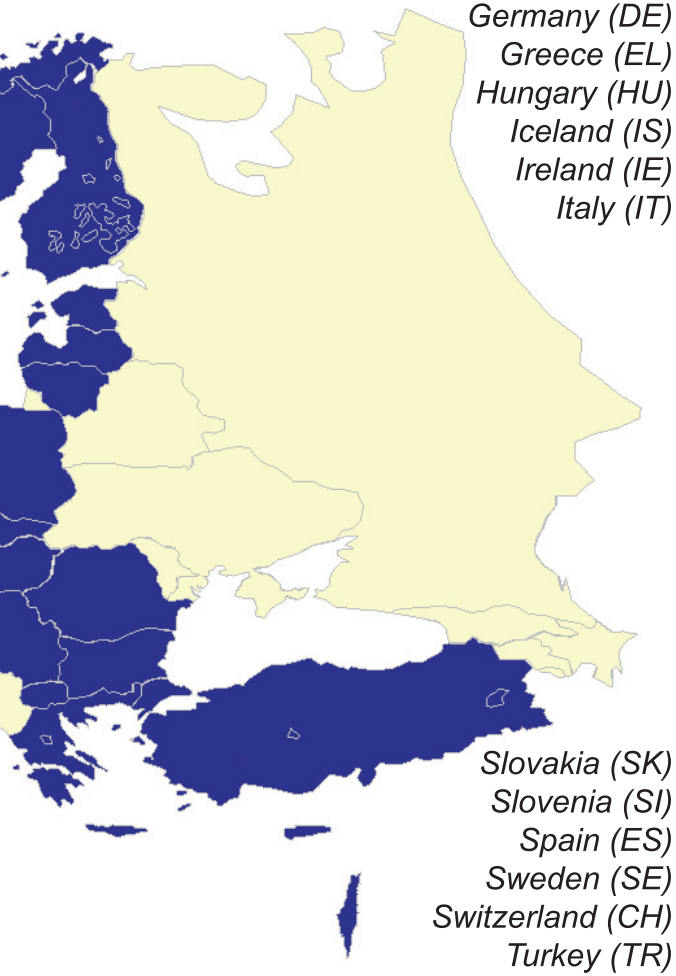
Subject to availability of funds, a sum of € 100.000 has been set aside per year on a "first come, first served" basis. Unused funds will revert to the general COST Actions fund.

COST 34 Member States

Austria (AT)
Belgium (BE)
Bulgaria (BG)
Croatia (HR)
Cyprus (CY)
Czech Republic (CZ)
Denmark (DK)
Estonia (EE)
F.Y.R.of Macedonia (MK)



Latvia (LV)
Lithuania (LT)
Luxembourg (LU)
Malta (MT)
The Netherlands (NL)
Norway (NO)
Poland (PL)
Portugal (PT)
Romania (RO)
Serbia and Montenegro (CS)



Finland (FI)
France (FR)
Germany (DE)
Greece (EL)
Hungary (HU)
Iceland (IS)
Ireland (IE)
Italy (IT)
Slovakia (SK)
Slovenia (SI)
Spain (ES)
Sweden (SE)
Switzerland (CH)
Turkey (TR)
United Kingdom (UK)

Israel (IL) is a cooperating state in COST

Committee of Senior Officials

(CNC = COST National Coordinator)

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Agriculture and Biotechnology → 8..
Chemistry → D..
Environment → 6..
Food Sciences → 9..
Forests and Forestry Products → E..
Materials → 5..
Medicine and Health → B..
Meteorology → 7..
Miscellaneous → G..
Physics → P..
Social Sciences and Humanities → A..
Telecommunications and Information Science and Technology → 2..
Transport → 3..
Urban Civil Engineering → C..

Country codes

COST Member States

Austria: AT
Belgium: BE
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Denmark: DK
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Germany: DE
Greece: GR
Hungary: HU
Iceland: IS
Ireland: IE
Israel: IL
Italy: IT
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Lithuania: LT
Luxembourg: LU
Malta: MT
Netherlands: NL
Norway: NO
Poland: PL
Portugal: PT
Romania: RO
Serbia and Montenegro: CS
Slovakia: SK
Slovenia: SI
Spain: ES
Sweden: SE
Switzerland: CH
Turkey: TR
United Kingdom: UK

Non-COST countries

Albania: AL
Argentina: AR
Armenia: AM
Australia: AU
Bosnia-Herzegovina: BA
Canada: CA
China: CN
China (Macao): MO
Eritrea: ER
Japan: JP
New Zealand: NZ
Russia: RU
South Africa: ZA
China - Taiwan: TW
Ukraine: UA
United States of America: US

COST Actions

Telecommunications and Information Science and Technology

Action 219 ter - Accessibility for all to services and terminals for next generation networks

2003 - 2007 Chair: Dr Patrick Roe (CH)

The main objective of the Action is to increase the accessibility of next generation telecommunication network services and equipment to elderly people and people with disabilities by design or, alternatively, by adaptation when required. In cases where this cannot be achieved, the Action will aim at promoting the establishment of appropriate assistive services and equipment.

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Non-COST participation: GSA Information Consultant - Ascot (AU), Trace R&D Center - Madison (US)

Action 270 - Reliability of optical components and devices in communications networks and systems

2000 - 2005 Chair: Dr Hans Limberger (CH)

The main objective of the Action is to develop methods to ascertain and improve the reliability of the new types of optical components and devices in communications networks and transmissions systems including aspects regarding network and component costs, environmental conditions and installation procedures for equipment in core transport networks, in subscriber access networks and in in-house (local area) networks.

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Action 272 - Packet-oriented service delivery via satellite

2001 - 2005 Chair: Dr Erina Ferro (IT)

The main objective of the Action is to contribute to the identification of key requirements, analysis, performance comparison, architectural design and protocol specification of future packet-oriented satellite communication systems, with a clear focus on Internet-type system concepts, applications and protocols/techniques on the various layers.

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Action 273 - Towards Mobile Broadband Multimedia Networks

2001 - 2005 Chair: Pr Luis Correia (PT)

This Action aims to increase knowledge of the radio aspects of mobile broadband multimedia networks, by exploring and developing new methods, models, techniques, strategies and

tools to further the implementation of fourth generation mobile communication systems. It considers frequencies ranging from the upper UHF up to millimetre waves, and data rates higher than 2 Mb/s (probably up to 155 Mb/s).

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Action 274 - Theory and Application of Relational Structures as Knowledge Instruments

2001 - 2005 Chair: Pr Gunther Schmidt (DE)

To advance the understanding and use of relational structures in applicable object domains is the objective of this Action.

There are the following sub–objectives:

1. To study the semantic and syntactic aspects of relational structures arising from real world situations.

2. To investigate automated inference for relational systems, and, where possible or feasible, develop deductive systems which can be implemented into industrial applications such as diagnostic systems.

3. To develop non-invasive scaling methods for the prediction of relational data, and to compare and possibly integrate a nominal scaling approach with numerical methods such as fuzzy relations, Bayesian networks etc.

4. To study and enhance current methods of relational qualitative reasoning about physical systems.

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Action 275 - Biometrics-Based Recognition of People over the Internet

2001 - 2005 Chair: Dr Aladdin Ariyaeeinia (UK)

The main objective of the Action is to investigate effective methods for the recognition of people over the Internet based primarily on voice and facial characteristics in order to facilitate, protect and promote various financial and other services over this growing telecommunication medium.

In operational terms, the main objectives can be specified as follows:

1. To improve knowledge of the issues and problems involved.

2. To study the current techniques for voice and face recognition and to evaluate their performance in the medium considered.

3. To investigate methods for the fusion of the considered biometric data and the interpretation of the results.

4. To analyse the implementation problems including user-interface issues and investigate effective solutions.

5. To identify the potential applications and analyse their requirements.

6. To develop standard methods and tools for the assessment of biometrics-based identification methods.

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Action 276 - Information and Knowledge Management for Integrated Media Communication Systems

2001 - 2005 Chair: Pr Jurij Tasic (SI)

The main objective of the Action is to develop advanced multimedia data and knowledge management technologies for personal multimedia communication systems and services, including specific signal processing and implementation techniques for users' personal terminals. In addition, key system aspects will be considered, such as: system integration, personification of services, usage trials and demonstrations of advanced personal services. The planned activities that should be pursued will not only influence the base of innovations and competitiveness, but will also make a contribution towards answering personal and European society's needs.

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Action 277 - Nonlinear Speech Processing

2001 - 2005 Chair: Dr Marcos Faundez (ES)

The ultimate objective of this Action is to improve the voice services in telecommunication systems through the development of new non-linear speech processing techniques.

The new technologies developed within the Action are to provide higher quality speech synthesis, more efficient speech coding, improved speech recognition, and improved speaker identification and verification. The methods are expected to contribute significantly to the acceptance of voice interfaces for information systems such as the mobile Internet (by improved synthesis and recognition). Furthermore, these methods are expected to lead to improved efficiency in future generations of speech coders used in wireless networks, including packet-based wireless networks.

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Action 278 - Spoken Language Interaction in Telecommunication

2001 - 2005 Chair: Pr Børge Lindberg (DK)

The main objective of the Action is to increase the knowledge of

potentially useful applications and methodologies in deploying spoken language interaction in telecommunication. Emphasis is on achieving knowledge of speech and dialogue processing in multi-modal communication interfaces. Furthermore, the objective is to achieve knowledge of natural human-computer interaction through more cognitive, intuitive and robust interfaces, whether monolingual, multi-lingual or multi-modal.

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Action 279 - Analysis and Design of Advanced Multiservice Networks supporting Mobility, Multimedia and Internetworking

2001 - 2005 Chair: Pr José Brazio (PT)

The main objective of the Action is to develop techniques for the analysis, design and control of advanced multiservice networks supporting mobility, multimedia and interworking, by means of the development and application of new and better analytical techniques for the mathematical understanding and optimisation of the behaviour of communications equipment, protocols, and network topologies and architectures, and of economic aspects such as pricing principles and network cost estimation. The results will have the form of mathematical models and results, algorithms, computer tools, and analyses of empirical traffic and network data.

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Action 280 - Channel Modelling and Propagation Impairment Mitigation for Millimetre Wave Radio Systems

2001 - 2005 Chair: Dr Misha Filip (UK)

Improvement of the design and planning of present and future millimetre wave broadband telecommunications systems (incl. broadcast) and services (especially multimedia) through the development of knowledge and tools for a refined evaluation of their performance is the main objective of the Action.

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Action 281 - Electromagnetic fields and health emerging information and communication technologies

2001 - 2006 Chair: Pr Norbert Leitgeb (AT)

The main objective of the Action is to obtain a better understanding of possible health impacts of emerging technologies, especially related to communication and information technologies, which

may result in exposure to electro-magnetic fields.
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Action 282 - Knowledge and Exploration in Science and Technology

2001 - 2005 Chair: Pr Geerd Diercksen (DE)

The primary objective of the Action is to develop and implement computerised systems for extracting previously unknown, non-trivial, and potentially useful knowledge from structurally complex, high-volume, distributed, and fast-changing scientific and R&D databases within the context of current and newly developing global computing and data infrastructures such as the GRID. The development of new discovery methodologies capable of effectively and efficiently extracting knowledge from such databases will be achieved not only by close collaboration of information scientists and database experts, but also by the readiness of both to adequately familiarise themselves with the motivations, goals, methodologies, and languages of the scientific fields involved.

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Action 283 - Computational and Information Infrastructure in the Astronomical Datagrid

2001 - 2005 Chair: Pr Fionn Murtagh (UK)

This Action aims to develop innovative and well focused approaches to data and information handling, in the context of astronomy and astrophysics. This includes processing and interpretation of data and, more generally, information, at the time of data capture or later ("archival research"), and including aspects of the collaborative work and man-machine environments needed for this. To achieve this very broad goal, this Action will address a range of problems on the interface between astronomy and astrophysics, and the computational sciences. Serendipitously this Action will seek to tie together the work of astronomers and computer scientists, to mutual benefit.

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Action 284 - Innovative Antennas for Emerging Terrestrial and Space-based Applications

2002 - 2006 Chair: Pr Juan Mosig (CH)

The main objectives of the Action are to progress and innovate in the theoretical modelling and in the multidisciplinary design and development of new architectures, components, circuits and test techniques for antennas. The focus will be on antenna arrays, active and adaptive antennas and their beam forming,

in support of broadband applications up to millimetre waves. Furthermore, it aims at fostering University-Industry cooperation in the field of antennas.

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Action 285 - Modelling and Simulation Tools for Research in Emerging Multiservice Telecommunications

2003 - 2007 Chair: Pr Nejat Ince (TR)

The main objective is to enhance existing and develop new modelling and simulation tools for research in emerging Multi-service telecommunications networks in the areas of: Model Performance Improvement, Air and Network Interfaces for 3G and 4G mobile radio systems, Multilayer Traffic Modelling and Analysis.

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Action 286 - Electromagnetic Compatibility (EMC) in Diffused Communication Systems

2003 - 2007 Chair: Pr Andrew Marvin (UK)

This Action seeks to advance European research into the complex aspect of EMC with a view to facilitating solutions to the ever increasing electromagnetic interference problems posed by the proliferation of electronic communications, and information processing systems.

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Action 287 - Gesture Controlled Audio Systems

2003 - 2007 Chair: Pr Nicola Bernardini (IT)

The main objective of this Action is to significantly contribute to the advancement of the development of different gesture data analysis and capture/actuation aspects connected to the control of digital sound and music processing.

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Non-COST participation: McGill University (CA)

Action 288 - Nanoscale and ultrafast photonics

2003 - 2007 Chair: Dr Judy Rorison (UK)

The main objective of the Action is to advance the application of ultra fast nanophotonics to provide high capacity photonic communication infrastructures, as well as to bring forward advanced research on novel topics such as advanced optical signal processing and optical logic, microwave photonics and exploratory technologies (based on nanophotonics) such as

quantum communication.
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Action 289 - Spectrum and Power Efficient Broadband Communications

2003 - 2007 Chair: Pr Mehmet Safak (TR)

The Action's objective is to increase the capacity of communication systems within a specified transmission bandwidth with minimum available transmitter power, bearing in mind the cost effectiveness and the practical implementability of the system. This is a serious requirement for communication systems calling for higher data rates, more mobility and, at the same time, a less hazardous electromagnetic environment. To achieve this goal, existing and innovative communication techniques/systems will be investigated from the viewpoint of the bandwidth and the power efficiency.

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Action 290 - Quality of Service in Future Wireless Systems

2004 - 2008 Chair: Dr Yevgeni Koucheryavy (FI)

The main objective of the Action is to increase the knowledge on future Advanced Mulitservice Wireless Networks (MWNs) and specifically on traffic nature and behaviour and its impact on network architecture, performance and planning.

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Action 291 - Towards Digital Optical Networks

2004 - 2008 Chair: Pr Ioannis Tomkos (GR)

The primary objective of this Action is to focus on novel network concepts and architectures exploiting the features and properties of photonic technologies, to enable future telecommunications networks. It is aiming to propose a new generation of systems and networks that will accommodate the unpredictable and growing size of data files and messages exchanged and stored as well as real time services (e.g. voice, video etc) over global distances requiring an agile Communication Grid supporting quality of services.

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Action 292 - Semantic Multimodal Analysis of Digital Media

2004 - 2008 Chair: Dr Ebroul Izquierdo (UK)

The main objective of this Action is to push forward the frontiers of current research on semantic analysis inference

and conceptualization for high-level annotation and retrieval of digital audiovisual content.
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Action 293 - Graphs and Algorithms in Communication Networks

2004 - 2008 Chair: Dr Xavier Muñoz (ES)

The main objective of this Action is to advance the field of communication networks design by letting experts and researchers with strong mathematical background meet peers, both from Industry and Academia, specialized in networking, and share their mutual experience by forming a multidisciplinary scientific cooperation community.
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Action 294 - Towards the Maturation of IT Usability Evaluation

2005 - 2009 Chair: Dr Effie Lai-Chong Law (CH)

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.
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Signatories: new Action (signatures in progress)

Action 295 - Dynamic Communication Networks: Foundations and Algorithms

2005 - 2009 Chair: Dr Pierre Fraigniaud (FR)

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.
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Signatories: new Action (signatures in progress)

Action 296 - Mitigation of Ionospheric Effects on Radio Systems

2005 - 2009 Chair: Dr Ljiljana Cander (UK)

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.
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Signatories: new Action (signatures in progress)

- Action 297 - High Altitude Platforms for Communications and Other Services (HAPCOS)

2005 - 2009 Chair:
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.
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Signatories: new Action (signatures in progress)

Transport

- Action 340 - Towards an intermodal transport network : lessons from history

2000 - 2005 Chair: Dr Michèle Merger (FR)
The main objective of the Action is to contribute to the creation of a European intermodal transport network by defining a framework of references and concepts to guide current European policy in this area.
This will be achieved by identification and analysis of the obstacles that transport intermodality has encountered to date.
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- Action 346 - Energy and fuel consumption from heavy duty vehicles

1999 - 2005 Chair: Dr Peter Sturm (AT)
The primary objective of the Action is to develop an improved methodology for estimating pollutant emissions and fuel consumption from commercial road transport operated with Heavy Duty Vehicles (HDV's) in Europe. The methods should make it possible to estimate the emissions [g/km] from single vehicles as well as from vehicle fleets. The activities will be concentrated on improving the amount and quality of basic data on emissions and transport activity, as well as validating and improving existing models.
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Non-COST participation: Technical University of Moscow (RU)

Action 348 - Reinforcement of pavements with steel meshes and geosynthetics

2002 - 2006 Chair: Mr Hans Rathmayer (FI)

This Action was established to enhance the process of material assessment and design, as well as to develop appropriate structural design methods and measurement techniques in order to reach for this technology the status of a generally accepted alternative in road constructions.

Throughout Europe funding of infrastructure construction works, rebuilding and maintenance works is decreasing. Applying reinforcing technology to pavements and granular sub-bases the service life of the structures can be increased and maintenance costs reduced.

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Non-COST participation: Montana State University (US)

Action 349 - The Accessibility of Coaches and Long Distance Buses for People with Reduced Mobility

2001 - 2005 Chair: Mr Donald Macdonald (UK)

The principal objective is to produce a concept providing guidance on the construction and design of interurban and international coach and bus systems in respect of the needs of people with reduced mobility in order to assist operators, passenger and authorities when developing plans for accessible and high quality transport systems. The Action's results can be of considerable relevance in the development of the EU legislative or regulatory acts, similarly to previous two Actions dealing with accessibility of urban buses and railways.

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Action 350 - Integrated assessment of environmental impact of traffic and transport infrastructure

2001 - 2005 Chair: Mr Hans Bekker (NL)

The main objective of the Action is to establish a concept integrating at regional scale all the environmental aspects of traffic and land-transport infrastructure in relation to the decision-making process. This in order to assist policy makers at an earlier stage of their decision-making on transport and mobility.

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Action 351 - Water Movement in Road Pavements and Embankments

2003 - 2006 Chair: Mr Andrew Dawson (UK)

This Action aims to increase the knowledge required for improving the highway performance and minimising the leaching

of contaminants from roads and traffic.
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Action 352 - Influence of Modern In-vehicle Information Systems on Road Safety Requirements

2004 - 2008 Chair: Mr Michael Bernhard (CH)

The main objective of the Action is to create a scientific base for road traffic and vehicle equipment legislation, safety evaluation methodology and rules for drivers' education and training for the appropriate use of In-Vehicle Information Systems (IVIS) in order to enhance road safety.

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Action 353 - Winter Service Strategies for Increased European Road Safety

2004 - 2008 Chair: Dr Marilyn Burtwell (UK)

The maximisation of road safety trough the development of a framework for the management of winter traffic is the objective of this Action.

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Action 354 - Performance Indicators for Road Pavements

2004 - 2008 Chair: Pr Johann Litzka (AT)

The main objective of the Action is the definition of uniform European performance indicators and indexes for road pavements taking the needs of road users and road operators into account.

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Action 355 - Changing behaviour towards a more sustainable transport system

2004 - 2008 Chair: Dr Christophe Rizet (FR)

The main objective of the Action is to analyse the conditions under which the process of growing unsustainable transport demand could be reversed, by changing travellers, shippers, and carriers' behaviours.

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■ Action 357 - Accident Prevention Options with Motorcycle Helmets (PROHELM)

2005 - 2009 Chair:

The main objective of this Action is to increase knowledge on how motorcycle helmets could be improved to help facilitate the avoidance of accidents.

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Signatories: new Action (signatures in progress)

Materials

■ Action 525 - Advanced Electroceramics: Grain Boundary Engineering

1999 - 2005 Chair: Pr Robert Freer (UK)

This Action aims to understand the role played by grain boundaries in controlling the manufacture, microstructure and properties of electronic ceramics.

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■ Action 526 - Automatic Process Optimization in Materials Technology

2000 - 2005 Chair: Dr Fredy Hediger (DE)

The primary objective of the Action is to develop and to apply numerical optimisation methodologies for automatic materials process design, based on quantified product quality, relating to process targets and constraints, including economic aspects.

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■ Action 527 - Plasma polymers and related materials

2000 - 2005 Chair: Pr Hynek Biederman (CZ)

The objective of the Action is to improve the knowledge of the plasma polymerisation process in relation to the desired physical and chemical properties of resulting plasma polymers with special regard to the understanding and following suppression of ageing processes of plasma polymers at ambient and extreme conditions.

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■ Action 528 - Chemical solution deposition of thin films

2000 - 2005 Chair: Pr Marija Kosec (SI)

The main objective of the Action is to improve the physical

and electronic properties of thin films (< 20 micrometer) made by chemical solution deposition techniques focusing on the sol-gel, liquid source CVD and spray pyrolysis methods to the quality required for the microelectronics, optoelectronics, and microsystems industries. To that end, knowledge of the precursor chemistry and processing, microstructure and nanostructure, and physics of the resulting thin films will need to be increased, and tailored to the requirements of these industries, especially for integration in larger process flows.

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Action 529 - Efficient Lighting for the 21st Century

2001 - 2006 Chair: Dr Georges Zissis (FR)

The main objective of the proposed Action, at both the basic breakthrough and the pre-competitive research levels, is to seek new concepts and materials for the lighting industry which avoid any known environmentally harmful substances through the study of the feasibility of high efficacy, novel, light source technologies.

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Action 530 - Life Cycle Inventories for Environmentally Conscious Manufacturing Processes

2001 - 2006 Chair: Dr Michael Betz (DE)

This Action seeks to increase knowledge about the environmental impacts of manufacturing processes in order to develop and apply environmentally conscious processes, reduce environmental impacts and costs, and take knowledge based decisions.

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Action 531 - Lead-free Solder Materials

2002 - 2007 Chair: Pr Herbert Ipser (AT)

The main objective of the Action is to increase the basic knowledge on possible alloy systems that can be used as lead-free solder materials and to provide a scientific basis for a decision which of these materials to use for different soldering purposes in order to replace the currently used lead-containing solders in the future.

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Non-COST participation: Materials and Manufacturing Ontario (CA), National Cheng Kung University (TW)

Action 532 - Triboscience and Tribotechnology: Superior Friction and Wear Control in Engines and Transmissions

2002 - 2007 Chair: Pr Kenneth Holmberg (FI)

The primary objective of the Action is to generate new scientific knowledge about the fundamental physical, chemical and mechanical phenomena governing friction, wear and lubrication. This knowledge will be used to develop novel low friction, wear control and environmentally adaptable lubrication solutions to solve the functionality of future engines and transmissions such as engines working with hydrogen fuels, micro-lubricated and dry lubricant free transmission applications.

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Non-COST participation: Institute for Problems of Materials Science (UA), Oak Ridge National Laboratory (US)

Action 533 - Materials for Improved Wear Resistance of Total Artificial Joints

2004 - 2009 Chair: Dr John Egan (UK)

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

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Action 534 - New Materials and Systems for Prestressed Concrete Structures

2002 - 2007 Chair: Dr Rob Polder (NL)

The main objective of the Action is to increase the knowledge on the durability of existing and newly built prestressed concrete structures in order to prolong their service life (80 instead of 50 years), to minimise repair and monitoring costs and to improve their long-term safety.

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Non-COST participation: Design Institute of China (CN), Jiatong University (CN), School of Civil Engineering and Architecture (CN), The First Highway Survey (CN)

Action 535 - Thermodynamics of alloyed aluminides (THALU)

2003 - 2007 Chair: Mr Jacques Lacaze (FR)

The main objective is to create the thermodynamic platform which is crucial for the development of new alloys based on intermetallic compounds. This scientific platform will comprise models of the thermodynamic properties of engineering aluminides, evaluated existing data and data, based on new theoretical and experimental approaches.

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

2004 - 2009 Chair: Pr Florian Schubert (DE)

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.

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Action 537 - Improvement of medical devices in clinical practice from the analysis of implanted prostheses

2004 - 2008 Chair: Pr Paolo Barbucci (IT)

The main objective of this biomaterials Action is to facilitate the understanding of failure of explanted prostheses, providing recognition of device complications, elucidating patient-prosthesis interaction, and determining tissue-material interaction mechanisms.

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Signatories: DE, ES, HU, IE, IT, PL, RO
Non-COST participation: Qindu Hospital (CN), Stomatological College (CN), St.-Petersburg State Institute of Technology (RU)

Action 538 - High Temperature Plant Lifetime Extension

2004 - 2008 Chair: Mr John Oakey (UK)

The main objective of the Action is to develop an innovative integrated toolbox of predictive methods/models and targeted invasive and non-invasive measurement techniques, improving the means for European industries to reliably quantify the condition and remaining life of plant components in all types of conventional fossil, biomass and waste-fired power plant.

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

2005 - 2009 Chair:

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.

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Signatories: new Action (signatures in progress)

Environment

Action 625 - 3-D Monitoring of Active Tectonic Structure

2000 - 2006 Chair: Dr Luigi Piccardi (IT)

Tectonic movements are among those major natural hazards which are faced by man. Their investigation is extremely difficult, as it can be based only on indirect methods. Therefore international cooperation is very important. The main objective of the Action is the monitoring, interpretation and evaluation of the ground micro-displacements in tectonically active regions and predicting of long-term trends in tectonic movements. The results will help to minimize hazards coming from earthquakes and minor tectonic movements endangering construction projects such as pipe lines, roads, bridges, etc.

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Non-COST participation: Seismological Institute (AL), University of Sarajevo (BA)

Action 626 - European aquatic modelling network (EAMN)

2000 - 2005 Chair: Dr Atle Harby (NO)

River channelisation, water resource developments, establishment of water reservoirs and other human activities have dramatically altered the habitats of European rivers. This has negative impact on their flora and fauna. To maintain the biodiversity of rivers in such conditions, ecologically sensitive management of river is needed. The main objective of the Action is to develop integrated methods and models of assessing the interactions between aquatic flora and fauna and riverine habitats.

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Action 627 - Carbon storage in European grasslands

2000 - 2006 Chair: Pr Mike Jones (IE)

In fulfilling European commitments to the Kyoto Protocol we need to improve our understanding of the carbon storage and circulation in plants and soils and efficient mechanisms for its control. This should be done also with respect to grasslands, one of major ecosystem groups in Europe. The main objective of the Action is to quantify, through experimentation and modelling, carbon storage in European grasslands and to identify the mechanisms controlling carbon allocation in plants and soils, especially carbon sequestration and carbon emissions.

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Action 628 - Life Cycle Assessment of Textile Products, Eco-efficiency and Definition of Best Available Technology (BAT) of Textile Processing

2001 - 2005 Chair: Pr Eija Nieminen (FI)

Industrial processing of textile products has considerable environmental impact which should be evaluated along the whole life cycle of products starting from raw material extraction and ending by use of the products and waste management. The main objectives of the Action are to expand multi-disciplinary life cycle assessments to cover the whole fibre production and textile product chain, as well as to develop eco-efficiency indicators for the different phases in the textile product chain.

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Action 629 - Fate, impact and indicators of water pollution in natural porous media at different scales

2001 - 2006 Chair: Pr Per Aagaard (NO)

Pollution of subsurface water resources is amongst the most important environmental problems. The management of water resources needs a set of significant indicators of the impact of soil and water pollution on the physical, chemical and biological alteration of the ground water system. The main objective of the Action is to improve the scientific base for the development of integrated indicators of environmental risks created by pollutants in water with emphasis on the water bodies in natural porous media such as soils, subsoil vadose zones, and aquifer systems.

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Action 631 - Understanding and modelling plant-soil interactions in the Rhizosphere environment

2002 - 2006 Chair: Dr Philippe Hinsinger (FR)

The rhizosphere plays a key role in controlling the soil-plant relationship. Processes operating in the rhizosphere are very sensitive to environmental changes caused by the pollution. They can play an important role in remediation of polluted environments. The enhancement of plant-based environmental technologies requires an improved understanding of rhizospheric processes. The main objective of this Action is to explain the rhizosphere processes with the aid of a modelling approach. The emphasis is on dynamic feedback loops between plant and soil in naturally contaminated and polluted indigenous, transitional and forest ecosystems.

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Action 633 - Particulate matter: Properties related to health effects

2002 - 2007 Chair: Pr Regina Hitzenberger (AT)

Atmospheric particles are major component of air pollution. Their negative health effects are well known, but the understanding of the causal chains of various parameters of particulate matter and the health effects is still very weak. For such purpose the developing of links between the natural sciences and medical disciplines is needed. The main objective of the Action is to increase the information on particulate matter with respect to geographical and meteorological conditions, particle formation processes and their transport. The results will be used for setting environmental standards in Europe and for defining measures to reduce particle emission.

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Action 634 - On- and Off-site Environmental Impacts of Runoff and Erosion

2004 - 2008 Chair: Pr Anne-Véronique Auzet (FR)

Erosion and runoff have not only on-site effects, mainly soil degradation, but also off-site effects such as eutrophication of watercourses and lakes, and property damage by flooding. To avoid environmental impact of erosion the links between science and land users should be strengthen. The main objective of the Action is to develop an integrated understanding of on- and off-site impacts of soil erosion at the catchment scale in close cooperation with land management authorities. This Action is a follow up of former Action 623 which investigated soil erosion effects.

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Action 635 - INTERCAFE : Conserving Biodiversity – Interdisciplinary Initiative to Reduce pan-European Cormorant-Fisheries Conflicts

2004 - 2008 Chair: Dr David Carss (UK)

The successful protection of cormorants in recent years is causing a growing number of conflicts with commercial fisheries. To avoid these conflicts the achievements of research of cormorant ecology should be implemented in combination with practical fishing management policies. The main objective of the Action is to improve European scientific knowledge of cormorant-fisheries interactions.

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Non-COST participation: National Academy of Sciences of Ukraine (UA), Odessa National University (UA)

■ Action 636 - Xenobiotics in the Urban Water Cycle

2005 - 2009 Chair: Dr Anna Ledin (DK)

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. Aproximately 70,000 of them may be potentially hazardous for humans or ecosystems.The ability of xenobiotics to spread into the environment will be studied from a multidisciplinary viewpoint.

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Signatories: new Action (signatures in progress)

Meteorology

■ Action 718 - Meteorological Applications for Agriculture

1999 - 2005 Chair: Pr Giampiero Maracchi (IT)

This Action has an interdisciplinary focus and tries to define the requirements of agricultural customers and to set the agrometeorological products accordingly. This includes developing protocols for the validation, implementation and use of models, bearing in mind user requirements and operational constraints related to the data and the information currently available. To identify the requirement in terms of scale and time resolution and end-users' needs is the first step of any application of meteorological information for agriculture and environment protection.

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■ Action 719 - The use of geographic information systems in Climatology and Meteorology

2000 - 2006 Chair: Pr Hartwig Dobesch (AT)

GIS has shown a great potential in the fields of climatology and meteorology. The main objective of the Action is to broaden and enhance the potential of GIS in those fields by developing applications, with emphasis on the procedures and capabilities for integrating and adding value to data from various sources and on quality control and presentation of climate and other related data. The Action tries to foster European cooperation in the development of operational applications of GIS in meteorology and climate research and to strengthen the links between National Meteorological Services, the research community

and GIS industry.

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Non-COST participation: Scientific and Industrial Enterprise "Ecomedservice" (UA)

Action 720 - Integrated ground-based remote sensing stations for atmospheric profiling

2000 - 2006 Chair: Dr Wim Monna (NL)

To study and forecast atmospheric phenomena at increasingly finer scales, both in research and operational activities, aerological measurements with adequate resolution in space and time are needed. Atmospheric numerical modelling at increasingly finer scales requires high-quality measurements with high temporal and spatial resolution. In this respect, ground-based remote-sensing techniques are best suited to complement existing measurement techniques with satellites, commercial aircraft and radiosondes. The Action works on the integration of various techniques into one profiling station, which will enable the improvement of the quality of standard outputs, control procedures and the derivation of additional parameters.

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Non-COST participation: Meteorological and Geophysical Service of Macao (MO), Innovation Center "Magic Solutions" (UA)

Action 722 - Short range forecasting methods of fog, visibility and low clouds

2001 - 2006 Chair: Dr Wilfried Jacobs (DE)

Meteorological forecasting at a very short notice (up to 12 hours) is called nowcasting. Numerous customers, particularly from transport companies, request nowcasting of fog, which is a limiting factor concerning visibility. The main objective of the Action is to develop advanced methods for very short-range forecasts of fog, visibility and low clouds, adapted to characteristic areas and to user requirements. This overall objective implies the development of pre-processing methods of the necessary input data together with the development of the appropriate forecast models and methods and adaptable application software for the production of the forecasts.

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Non-COST participation: Canadian Meteorological Service (CA)

Action 723 - Data Exploitation and Modeling for the Upper Troposphere and Lower Stratosphere

2002 - 2006 Chair: Dr Stefan Buehler (DE)

The upper troposphere and lower stratosphere (UTLS) is the region of the atmosphere formed approximately 5 kilometres above and below the tropopause. This region of the Earth's atmosphere plays an important role in the Earth's climate and in

possible climate change. Several strong feedback mechanisms in the climate system are strongly influenced by the processes in the UTLS. The sparse knowledge of these processes is one of the weaknesses in current climate prediction. The Action is trying to advance the understanding of the state of the global UTLS, in order to provide an improved basis for policy advice in connection with global change.

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Action 724 - Developing the basis for monitoring, modelling and predicting Space Weather

2003 - 2007 Chair: Pr Jean Lilensten (FR)

Space Weather is succinctly defined as: "conditions on the sun and in the solar wind, magnetosphere, ionosphere, and thermosphere that can influence the performance and reliability of space-borne and ground-based technological systems and can endanger human life or health". The impact of space weather ranges from technical problems with satellites arising from charged particles to problems experienced by power transmission grid operators on the ground during geomagnetic storms.

The main goal of the Action is to develop a European framework for the science underpinning space weather applications, as well as exploring methods for providing a comprehensive range of space weather services to a variety of users, based on modelling and monitoring of the Sun-Earth system.

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Non-COST participation: Cosmic Ray Division - Yerevan Physics Institute (AM), Moscow State University (RU), Space Research Institute - Russian Academy of Sciences (RU), Lviv Centre of Institute of Space Research (UA)

Action 725 - Establishing a European Phenological Data Platform for Climatological Applications

2004 - 2009 Chair: Dr Elisabeth Koch (AT)

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.

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

2004 - 2009 Chair: Dr Zenobia Litynska (PL)

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.

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Action 727 - Measuring and forecasting atmospheric icing structures

2004 - 2009 Chair: Dr Bengt Tammelin (FI)

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.

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

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

2004 - 2009 Chair: Pr Ranjeet Sokhi (UK)

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.

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

2005 - 2010 Chair: Dr Jan Willem Erisman (NL)

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.

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Signatories: new Action (signatures in progress)

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

2005 - 2009 Chair: Pr Gerhard Jendritzky (DE)

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.

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■ Action 731 - Propagation of Uncertainty in Advanced Meteo-Hydrological Forecast Systems

2005 - 2010 Chair: Dr Andrea Rossa (IT)

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.

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■ Action 732 - Quality Assurance and Improvement of Microscale Meteorological Models

2005 - 2009 Chair: Pr Michael Schatzmann (DE)

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.

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

2005 - 2010 Chair:

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.

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Agriculture and Biotechnology

Action 838 - Managing arbuscular mycorrhizal fungi for improving soil quality and health in agriculture

1998 - 2005 Chair: Dr Silvio Gianinazzi (FR)

Concerns about the undesirable side-effects of agrochemicals have highlighted the contribution made to plant health by soil micro-organisms such as arbuscular mycorrhizal (AM) fungi. These mutualistically symbiotic fungi play a crucial role in plant nutrient acquisition and in plant protection from plant pathogens and environmental stress. Given the effects of AM inoculation on plant growth and health, as biofertilisers and bioprotectors, it is accepted that an appropriate management of this symbiosis would permit a satisfactory reduction of chemical fertiliser and pesticide inputs. Maximum benefits will only be obtained from inoculation with efficient AM fungi and a careful selection of compatible host/fungus/soil combinations.

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Non-COST participation: Institute for Agricultural Microbiolgy (RU), Research Institute of Microbiology (RU)

Action 841 - Biological and Biochemical diversity of hydrogen metabolism

1999 - 2005 Chair: Pr Wilfried Hagen (NL)

The main objective of this Action is to merge interrelated European expertise in order to understand the molecular structural basis of biochemical and physiological processes connected to hydrogen metabolism and its biological and chemical diversity.

In spite of the recognized role of hydrogenases in various bioenergetic processes of unicellular organisms, their practical application is hindered by a limited understanding of the structure and mechanisms of function of the key enzymes involved.

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Non-COST participation: Institute of Technology of Tokyo (JP), University of Kyoto (JP), Waseda University (JP), Russian Academy of Sciences (RU), Basic Sciences Center (US), University of Georgia (US)

Action 842 - Biological control of pest insects and mites with special reference to Entomophthorales

1999 - 2005 Chair: Dr Siegfried Keller (CH)

Currently, research in Europe on this topic covers taxonomy, ecology, life cycle and in-vitro cultivation of selected species among the Entomophthorales. Before practical and commercial application of entomopathogenic fungal systems becomes feasible, problems relating to the spread, long-term establishment and safety of introduced biological agents need to be addressed.

The main objective of this Action is to prepare the ground for the field application of mycoinsecticides, based in particular on entomophthoralean fungi, by increasing the knowledge of their biological and ecological features and host-pathogen interactions.

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Action 843 - Quality enhancement of plant production through tissue culture

1999 - 2005 Chair: Dr Sergio Ochatt (FR)

By propagation through tissue culture (in vitro), new and/or elite, plants can be mass-propagated with far greater speed than through traditional methods. Additionally, micropropagation produces high-quality plants that may be free from viral and bacterial diseases and that have an increased cropping capacity. Thus, in vitro culture is an essential cornerstone for a sustainable crop-based agricultural industry across the EU.

This Action targets the development of potentially faster techniques such as somatic embryogenesis, propagation in liquid medium or automated culture preparation/handling systems.

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Action 844 - Apoptosis and programmed cell death: molecular mechanisms and applications in Biotechnology and Agriculture

1999 - 2005 Chair: Pr Laszlo Fesus (HU)

Apoptosis is a genetically controlled general biological phenomenon occurring in nematodes, plants and even in unicellular organisms and is necessary for tissue renewal.

Programmed cell death is an integral part of many aspects of plant development including xylogenesis, sex determination, leaf abscission and the hypersensitive response to pathogen infection. In each of these cases, specific groups of cells within a larger population of living cells are triggered to die.

The main objective of the Action is to combine interrelated European expertise to understand the molecular mechanism of apoptosis and to use this increased knowledge in the development of new approaches in biotechnology, agriculture, food industry,

pharmaceutical industry and novel strategies in the prevention of environmental toxicity.

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Action 845 - Brucellosis in Animals and Man

2000 - 2006 Chair: Dr Alastair Macmillan (UK)

The main objective of the Action is to improve the efficiency of control and eradication of brucellosis from animals in Europe thereby facilitating international trade and improving public health.

This Action will focus on an understanding of the epidemiology of brucellosis, including the role of wildlife, the epidemiological link between animals, food and man and the effects on public health. A better understanding might lead to more sensitive and specific diagnostic tests and to the development of improved vaccines or vaccination strategies.

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Non-COST participation: Instituto Nacional do Tecnología Agropecuarias - INTA (AR), University of Asmara (ER), World Organisation for Animal Health (NGO)

Action 846 - Measuring and Monitoring of Farm Animal Welfare

2000 - 2005 Chair: Dr Harry Blokhuis (NL)

Despite the fact that research in the field of farm animal welfare has received considerable attention in recent years and considerable progress has been made, important and fundamental questions related to the measurement of animal welfare, still remain. Especially the relationships, relevance and validation of different parameters need further study. In this connection, the tuning, standardisation and intercalibration of methodologies between laboratories is of paramount importance.

Important benefits of this Action include sharing of practical experience and results by participating countries and the avoidance of duplication of effort.

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Action 847 - Textile quality and biotechnology

2000 - 2005 Chair: Dr Johanna Buchert (FI)

The textile industry is often identified as a key sector where opportunities available for adapting biotechnology are high but current awareness of is very low. This is mainly due to the large number of SMEs manufacturing textiles. This Action is focused on a specialised area of textile processing, i.e. on the quality of fibres and on biotechnical and environmental-friendly applications.

The main aim is to enhance the interaction of European research

groups active in different fields of the textile biotechnology area. As a result novel biotechnological applications for textile processing can be expected to be developed, supporting the competitiveness of the research as well as industry.

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Action 848 - Multi-facetted research in rabbits: a model to develop a healthy and safe production in respect with animal welfare

2000 - 2005 Chair: Dr Luc Maertens (BE)

The main objective of this Action is to create a multidisciplinary model to improve the fundamental and applied knowledge about rabbits in commercial rabbitries. Expected applications will be the deployment of a scientifically based prevention programme, the development or improvement of existing strains free from highly pathogenic agents and adapted breeding methods which take into account the interactions between nutritional status, health and physical convenience of the does. Furthermore, it intends to develop housing systems and standards respecting the social character of this species. These objectives are of vital importance for the survival of the commercial production of this animal.

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Action 849 - Parasitic Plant Management in Sustainable Agriculture

2001 - 2006 Chair: Pr Diego Rubiales Olmedo (ES)

Parasitic plants are becoming severe constraints to Mediterranean and Tropical agriculture on major crops and the efficacy of available means to control them is minimal.

The main objective of this Action is to increase the understanding of the interaction between parasitic plants and their hosts in order to implement sustainable means of control. To reach this goal the Action will facilitate active interfacing among botanists, ecologists, anatomists, physiologists, biochemists, molecular biologists, breeders, plant pathologists, weed scientists, chemists and agronomists, towards informal and formal joint research projects. It is also important to include socio-economic analysis of improved management methods to determine their efficacy under field conditions.

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Action 850 - Bio-control Symbioses (Symbiotic Complexes for Biological Control of Pests)

2001 - 2006 Chair: Pr Ralf-Udo Ehlers (DE)

Bio-control is based on natural enemies as alternative pesticidal agents. Nematodes that kill slugs or insects have specialised bacteria that live with the nematodes and are usually essential for the nematodes to kill their prey. Other bacteria living intimately with those same nematodes or their insect hosts may influence sex ratios or otherwise manipulate nematode and insect life histories. These intimate associations (symbioses) of biocontrol organisms are the subject of this Action. This brings bacteriologists, nematologists, entomologists, molluscologists, biochemists and a number of kinds of molecular biologists together with industrialists with the aim of integrating their efforts to understand and exploit the peculiar attributes of symbioses.

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Non-COST participation: Russian Academy of Sciences (RU), UNESCO (NGO)

Action 851 - Gametic cells and molecular breeding for crop improvement

2001 - 2006 Chair: Dr Brian Peter Forster (UK)

The main objective of this Action is to discover the biological controls of gametic embryogenesis and to exploit these in plant breeding.

The biological controls and their interactions with culture conditions will be harnessed in improving the efficiency of doubled haploid production in a wider number of genotypes and species. Doubled haploids represent unique genetic stocks, which can be tested repeatedly and as such open up interesting areas of research. It is expected that doubled haploid production in Europe will increase in the next 5 years and this Action will be a major vehicle for progress. Large multinational biotechnology companies are making investments in this area; the Action provides a means for small and medium size companies and the public sector to maintain such an involvement.

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Action 852 - Quality Legume-Based Forage Systems for Contrasting Environments

2001 - 2006 Chair: Dr Aslaug Helgadottir (IS)

The main objective of the Action is to increase the quantity and quality of homegrown proteins from regionally adapted legume-based forage systems. Temporal and spatial variation in legume performance occurs and this restricts the confidence of farmers in legume-based systems. If reliability is to be improved and the range of forage legumes extended in Europe we will require

understanding of the constraints of environment, the reasons for divergence between species' potential and actual performance, the causes of yield variability and lack of persistence, the mechanisms controlling diet selection in animals and the role of management.

The complexity of the issues requires collaboration among scientists from diverse fields of research: genetics/plant breeding, physiology, agronomy, pathology, microbiology, animal nutrition, and systems modelling.

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Non-COST participation: Pastoral and Veterinary Institute (AU)

Action 853 - Agricultural Bio-Markers for Array Technology

2002 - 2007 Chair: Dr Jürg Ernst Frey (CH)

Micro-array technology refers to techniques that allow simultaneous analysis of many thousands of individual tests. The availability of this new technology opens up outstanding perspectives for the field of molecular diagnostics in its broadest sense.

This Action constitutes a European network of laboratories with similar interests that collaborate in the evaluation of the suitability of the developed array-products on a pan-European scale, and it will establish the awareness of its advantages even in those European countries that do not yet actively take part in developing array technology based products.

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Action 854 - Protozoal Reproduction Losses in Farm Ruminants

2002 - 2006 Chair: Dr Franz Conraths (DE)

Infectious organisms can cause significant losses in farm ruminant production as a result of abortion, embryonic damage or maternal infertility. Abortion in ruminants may pose a very considerable public health risk as many of the pathogens that cause disease in ruminants may pose a significant danger to humans.

The main objective of this Action is to develop strategies to control reproductive diseases caused by protozoa in farm ruminants. Areas covered are biology, biochemistry and genetic background of virulence; pathogenesis and host immune responses; diagnosis; epidemiology, economics and control.

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Action 855 - Animal Chlamydiosis and its zoonotic implications

2003 - 2007 Chair: Dr Konrad Sachse (DE)

Chlamydiae are widely distributed throughout the world, causing

various forms of disease in animals and humans. Several species are known to be transmissible from animals to humans, causing significant zoonotic infections.

The main objective of the Action is to improve the general diagnostic standards in Europe in connection with animal chlamydioses. Diagnostic data collected during the Action will be the basis for recommendations on improved management, control and prophylaxis of chlamydial infections.

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Action 856 - Denitrification in agriculture, air and water pollution

2002 - 2007 Chair: Dr Herrmann Bothe (DE)

Denitrification, one of the main branches of the global nitrogen cycle, is an energy-yielding process in which microorganisms utilise nitrate as terminal respiratory electron acceptor under oxygen limited conditions. Many aspects of the denitrification processes are poorly understood at present. This Action will contribute to increase the knowledge in the field, particularly to understand complex interactions of the biological N-cycle by bringing together scientists from different countries and different areas of competence.

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Action 857 - Apicomplexan Biology in the Post-Genomic Era

2003 - 2008 Chair: Dr Fiona Tomley (UK)

Apicomplexan protozoa cause more human deaths than any other group of infectious agents and are also the most significant parasites of livestock. There is an ongoing urgent need to develop novel, sustainable therapies. The genome sequences of many apicomplexans will soon be known and publicly available. Sequencing is almost complete for one strain of the malarial parasite Plasmodium falciparum, and underway for additional malarial strains and other species. This will make it possible to carry out comparisons between genomes and to begin to link gene information to specific functions. Post-genomic technologies are highly relevant for apicomplexans, which have large genomes and complex life cycles. Interaction between specialists working on different parasites will be essential to maximise the enormous potential of genomic and post-genomic studies.

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Action 858 - Viticulture: Biotic and abiotic stress - Grapevine Defence Mechanism and Grape Development

2003 - 2009 Chair: Pr Serge Delrot (FR)

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.

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

2004 - 2009 Chair: Dr Jean-Paul Schwitzguébel (CH)

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.

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Action 860 - Sustainable low-input cereal production : required varietal characteristics and crop diversity

2004 - 2008 Chair: Dr Hanne Østergaard (DK)

The main objective is to establish methods for selecting varieties, lines and populations, and to develop ways to increase and make use of crop diversity and genotype-environment interactions to ensure stable and acceptable yields of good-quality crops for low-input, especially organic cereal production in Europe. There is an increasing demand throughout Europe for sustainable crop production characterised by reduced inputs of pesticides and synthetic fertilisers (low-input cropping systems) and increased agricultural biodiversity.

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■ Action 861 - European Network for Pig Genomics

2004 - 2009 Chair: Dr François Hatey (FR)

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.

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■ Action 862 - Bacterial Toxins for Insect Control

2005 - 2010 Chair: Dr Neil Crickmore (UK)

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.

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■ Action 863 - Euroberry Research: from Genomics to Sustainable Production, Quality & Health

2005 - 2009 Chair: Pr Bruno Mezzetti (IT)

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.

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Food Sciences

■ Action 920 - Foodborne Zoonoses: a Coordinated Food Chain Approach

2001 - 2006 Chair: Dr Christopher John Thorns (UK)

Foodborne disease remains a significant cause of morbidity and mortality in Europe and the rest of the developed world. It is now recognised that the most appropriate way to enhance food safety is to identify the critical contamination points in the food processing chain affecting the safety of the final product.

The main objective of the Action is to better control foodborne zoonotic infections. This will be achieved by focusing on the development and harmonisation of diagnostic and typing methods, on the need to provide early warning or alert surveillance systems for potential emerging pathogens, by applying a quantitative risk assessment to the foodchain, and by a greater understanding of the mechanisms of survival of zoonotic pathogens along the

foodchain.
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Action 921 - Food Matrices: Structural Organisation and Impact on Flavour Release and Perception

2002 - 2006 Chair: Dr Nathalie Cayot (FR)

Flavour perception is related to the way aroma is released (or inversely retained) from food systems. Flavour release depends on the nature and concentration of flavour compounds present in the food, as well as on their availability for perception as a result of interactions between the major components and the flavour compounds in the food. Food compositional and structural factors and eating behaviour determine perception and the extent of flavour release. Knowledge of binding behaviour of flavour compounds in relation to the major food components, their rates of partitioning between different phases, and the structural organisation of food matrices is of great practical importance for the flavouring of foods, in determining the relative retention of flavours during processing or the selective release of specific compounds during processing, storage and mastication.

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Action 922 - Health Implications of Dietary Amines

2001 - 2006 Chair: Dr Heather Wallace (UK)

The human diet contains significant amounts of amines and amine related compounds that are present either naturally or as a result of food processing or storage. Some of these compounds are known to be hazardous to health, while the dangers associated with others are poorly understood. On the other hand, some are beneficial to health. This Action brings together information from diverse scientific areas and disciplines in order to evaluate the potential risks or benefits to human health of dietary amines.

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Action 923 - Multidisciplinary Hen Egg Research

2002 - 2006 Chair: Pr Rainer Huopalahti (FI)

The role of the hen egg in the human nutrition is important. Eggs are nutritious and healthy, the biological value of both albumen and yolk is high, and the eggshell provides an excellent barrier against both chemical and biological attacks. Hen eggs have been an important nutrient source for mankind for thousands of years. However the total potentiality of the eggs has not yet been discovered.

The main objective of this Action is to find new uses of hen egg in order to exploit the outputs beyond the traditional food value of eggs, including biomedicals, nutraceuticals and ovobiotechnologies.

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

2004 - 2009 Chair: Pr Bart Nicolai (BE)

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.

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Action 925 - The importance of prenatal events for postnatal muscle growth in relation to the quality of muscle based foods

2004 - 2008 Chair: Pr Niels Oksbjerg (DK)

Meat producing animals and fish play a significant role for the economy and the human nutrition in Europe. To be competitive on the international market, the production efficiency has to be maximised taking into consideration quality aspects of muscle based foods of importance for consumer attitudes towards these.

The main objective of this Action is to explain the interaction between genetics and environment in prenatal events (myogenesis and satellite cell behaviour) in an attempt to find new and alternative methods to be used in selection for optimising postnatal growth and meat/fish quality.

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Action 926 - Impact of the new technologies on the health benefits and safety of bioactive plant compounds

2004 - 2008 Chair: Dr Jenny Gee (UK)

The human diet contains hundreds of compounds, which are not considered as nutrients, but appear to play a role in the maintenance of health. There has been an active search to identify

such substances, particularly from fruit and vegetables.

The main objective of the Action is to ensure that maximum benefit is gained in Europe from the application of new technologies in cellular and molecular biology in the study of bioactive components in fruits and vegetables in relation to disease prevention.

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Action 927 - Thermally processed foods: possible health implications

2004 - 2009 Chair: Pr Vincenzo Fogliano (IT)

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.

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Social Sciences and Humanities

Action A17 - Small and medium enterprises, economics development and regional convergence in Europe

2000 - 2005 Chair: Dr Jordi Suriñach (ES)

The main objective of the Action is to determine the factors stimulating the birth and attraction of small and medium enterprises through the analysis of linkage between small and medium enterprises and regional growth. The Action will share, and sometimes initiate, research about how the generation and attraction of similar enterprises could promote regional convergence in the European Union (EU), especially after the integration of Eastern Europe. The main beneficiary of this Action is the EU as a whole since, under the assumption that SMEs are the engines of growth, the results in this analysis provide research and data for policy-making in order to promote

the location of such firms. Those regions lagging behind will benefit because this analysis focuses on routes of action that favour convergence in the Union.

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Action A19 - Children's Welfare

2001 - 2006 Chair: Pr An-Magritt Jensen (NO)

Taking into account the recognition, in politics and public debate, that Europe is moving rapidly towards a deficit in children and a dramatic ageing of its societies, this Action focuses on the concomitant changing position of children as far as their welfare situation is concerned. The main objective of the Action is to enhance the knowledge of children's welfare in both private and public realms in terms of their access to and use of material resources, space, and time by employing a generational and a comparative perspective.

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Action A20 - The Impact of the Internet on the Mass Media in Europe

2001 - 2006 Chair: Pr Colin Sparks (UK)

The coming together of telecommunications, computing and the media, usually termed "convergence", is one of the central issues of contemporary society. The range of questions raised by this process is enormous, covering as it does technical issues, business models, social changes, working practices, legal regulation, etc. The aim of this Action is to investigate the impact of the Internet on mass media industries. Its main objective is to develop knowledge in order to understand the various changes that mass media industries are currently undergoing, and will in the future undergo, as a result of the development of the Internet.

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Action A21 - Restorative Justice Developments in Europe

2002 - 2006 Chair: Pr Ivo Aertsen (BE)

The main objective of the Action is to enhance and to deepen knowledge on theoretical and practical aspects of restorative justice in Europe, with a view to supporting implementation strategies in a scientifically sound way. The Action is focused on analysing the process and the effects of victim-offender mediation and conferencing, national recording systems, national legislation in relation to victim-offender mediation, the relation between criminal justice and restorative justice practices and

agencies, training models and the experience of training legal professionals in the restorative justice area, new restorative justice models and applications, and theoretical concepts, approaches and frameworks on restorative justice.

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Action A22 - Foresight Methodologies - Exploring new ways to explore the future

2003 - 2007 Chair: Pr Ted Fuller (UK)

The main objective of the Action is to develop certain aspects of foresight methodology so as to ensure systematic use and optimum benefit of such exercices. This should be achieved within the framework of a European Network for Foresight Methodology that will facilitate communication and cooperation among researchers and practitioners. The Action provides a coherent supportive framework at the European level.

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Action A23 - The Evaluation of European Labour Market programmes

2004 - 2008 Chair: Pr Richard Blundell (UK)

The main objective of this Action is to increase the knowledge that is available on the effect of policy interventions on the functioning of the labour market. This knowledge will help to design future interventions and to maximise their effectiveness at the lowest cost. The Action aims to improve understanding, by empirical and theoretical research, of the challenges faced by policy makers to further participation in the labour market.

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Action A24 - The Evolving Social Construction of Threats

2004 - 2008 Chair: Dr Tarja Cronberg (FI)

The main objective of the Action is to improve current understandings of the social construction of threats and thereby increase the usefulness of such understandings for policy formulation. The Action aims at developing better tools of analysis and to facilitate communication between the world of academia and the world of policy-makers. This should make us better prepared for dealing with questions about how threats are constructed, why they are constructed differently in different places, and the implication of these differences for war and peace.

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Action A25 - European Small Arms and the Perpetuation of Violence

2004 - 2008 Chair: Dr Nicholas Marsh (NO)

A better understanding of the effects of trade in small arms is relevant to European policy formation and debates on a common foreign and security policy (especially humanitarian aid, peace building, and arms export control), on harmonisation of legislation and on citizens' participation in good governance. The Action co-ordinates the various European national small arms research programmes. It will achieve this goal via supporting collaboration on the exchange of data, research methods, and academic experience. The Action will help integrate the currently fragmented and uneven expertise and strengthen research capacity in Europe, and help build capacity where it is lacking.

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Action A26 - European city-regions in an age of multi-level governance

2004 - 2008 Chair: Pr Hans Thor Andersen (DK)

The main objective of this Action is to increase the knowledge about the extent to which different forms of sub-national governance, with a particular focus on city-regions, enable the pursuit of economic competitiveness to be reconciled with the goal of social cohesion. The Action thus involves a theoretical dimension to relate governance and policy fields in a contextual framework. Such a framework appears essential for studying and understanding the specific forms of governance structures in different localities across Europe. A reliable typology for treating forms and capacities of existing governance structures will be developed in order to make specific investigations. Finally, the Action contributes to basic research and thus improves the understanding of governance and its relation to social structures in general.

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Action A27 - Understanding Pre-Industrial Structures in Rural and Mining Landscapes (LANDMARKS)

2004 - 2008 Chair: Dr Almudena Orejas (ES)

During the last decades, several factors have contributed to the qualitative changes of certain landscapes characterised by the development of traditional activities and of rural settlement. The elements attached to pre-industrial activities are particularly sensitive. The Action aims to identify and evaluate pre-industrial elements in the European landscape, threatened by the abandonment of traditional agricultural and mining activities.

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

2004 - 2008 Chair: Pr Cees Flinterman (NL)

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.

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Action A29 - Human and Organisation Factors in Industrial Planning and Scheduling (HOPS)

2004 - 2008 Chair: Dr Toni Waefler (CH)

The main objective of HOPS is to increase the knowledge required for improving human performance in industrial planning, scheduling, and control (PSC). It is assumed that a breakthrough in these areas is a major prerequisite for a significant step forward in PSC-performance of industrial organisations. The potential that is hidden in human-centred approaches most likely exceeds the untapped potential in the (prevalent) technology oriented approaches by a significant amount. Although the Action aims at an integration of the isolated knowledge islands in the domain, a pluralism of research methods and approaches will be applied in order to keep a holistic perspective.

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

2005 - 2009 Chair:

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.

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

2005 - 2009 Chair:

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.

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Signatories: new Action (signatures in progress)

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

2005 - 2009 Chair:

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.

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

2005 - 2009 Chair:

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.

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Medicine and Health

Action B12 - Development of new radiotracers for the in-vivo assessment of biological functions and drug interactions

1999 - 2005 Chair: Pr Bernard Mazière (FR)

The main objective is to promote cooperation in the development of radiotracers for biomedical applications. This includes: synthesis of precursor molecules suitable for labelling with γ or β+ emitting radionuclides; labelling of these precursors with these radionuclides; evaluation of the biological effectiveness in experimental animal models; performing clinical trials and evaluation of the benefit of the new radiopharmaceuticals; providing pharmaceutical standards of preparation for safe application of the radiotracers (quality assurance programme); collaboration between university and pharmaceutical industry with respect to the utilisation of nuclear medicine probes in drug development. Clinical evaluation is performed at SPET- and PET-centres on healthy volunteers and ultimately in appropriate patient sub-groups. The pooling of results obtained at different centres are encouraged to establish optimal diagnostic protocols.

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Non-COST participation: Russian Academy of Sciences (RU)

Action B14 - Hyperbaric oxygen therapy (HBOT)

1998 - 2005 Chair: Pr Daniel Mathieu (FR)

The main objective is to improve the knowledge required for a rational use of HBOT, to a level making it possible to set out specific guidelines for the implantation and development of clinical HBOT centres and to provide scientifically sound recommendations for HBOT treatment of various diseases and conditions. For many accepted indications for HBOT, a more detailed knowledge of the precise actions of HBOT and the optimum dosage greatly enhance the therapeutic results and makes possible an optimal selection of patients who will mostly benefit from this treatment. Examples are: • Carbon monoxide poisoning; • Bone and soft tissue radionecrosis; • Anaerobic soft tissue infections; • Oncology; • Crush trauma; • Thermal burns: This Action aims at the coordination and optimisation of research in this and other areas of HBOT, in order to direct research efforts to specifically defined targets, and to avoid incomplete or duplicate research efforts by isolated HBOT groups.

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Action B16 - Multidrug resistance reversal

2000 - 2006 Chair: Pr Jozsef Molnar (HU)

The main objective is to increase the knowledge of the mechanisms

of multidrug resistance in bacterial and fungal infections with a view to developing new drugs capable of reversing this drug resistance. It must be emphasised that no similar multidisciplinary network exists. Although this field of study involving cellular mechanisms is far from the drug-marketing stage, the expected results are directly affecting clinical problems. Due to this, representatives from pharmaceutical companies are involved in the Action with a view to evaluating and developing the results as quickly as possible.

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Non-COST participation: Sainte-Anne-de-Bellevue QC (CA), University of Toronto (CA)

Action B17 - Insulin Resistance, Obesity and Diabetes Mellitus in the Elderly

1999 - 2005 Chair: Pr Peter Csermely (HU)

Diabetes mellitus of aged people is a considerable health burden of western societies. At present no widely established screening method is available to detect the persons who are predisposed to this condition. Due to our incomplete knowledge of the molecular mechanisms leading to NIDDM we have few means to influence the onset and development of this diverse disease. The ongoing research of candidate genes as well as various differential screening methods are coordinated with this Action. Various steps of insulin action are studied starting from the insulin receptor and following insulin action until it reaches the cell nucleus. There is special emphasis on the investigation of pathological changes of the molecular mechanism of insulin action in insulin resistance, obesity and NIDDM of the aged people. This research activity leads to the development of new drug-candidates for the curing-easing of the consequences of the disease.

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

Action B18 - Corpus cavernosum EMG in erectile dysfunction

2000 - 2005 Chair: Pr Eric Meuleman (NL)

The main objective is to determine the value of ccEMG in the investigation and management of erectile dysfunction. The Action should improve the clinical significance of ccEMG as a non-invasive test in erectile dysfunction. The objective is to make the ccEMG test available for (pharmaceutical) research and daily routine clinical use. The secondary objectives are: • basic understanding of ccEMG; • standardisation of ccEMG measurement; • interpretation of ccEMG; • role of ccEMG in diagnosis and treatment monitoring.

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Non-COST participation: Kingston General Hospital (CA), SJHC (CA)

Action B19 - Molecular cytogenetics of solid tumors

2000 - 2006 Chair: Pr Lidia Larizza (IT)

The main objectives are: (i) to generate new FISH reagents and technologies; these are applied to analyse different tumour types with the aim of broadening current knowledge of tumour-specific chromosomal changes associated with tumour development and progression, (ii) to transfer important breakthroughs into diagnostic services to improve on the speed and efficiency of tests with prognostic and diagnostic value. Monitoring tumour progression and response to therapeutic intervention are very useful for the identification and dissection of tumour-specific chromosomal markers. Secondary objectives are to promote exchanges in the following areas: • Genome resources; • Molecular cytogenetic technology; • Molecular cytogenetics of solid tumours (including the major tumour types); • Molecular cytogenetics of carcinomas; • Genetic predisposition to cancer. Participation of industry stimulates economic development of these scientific goals and helps to define needs of biotechnological industrial development.

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Non-COST participation: Children's and Women's Health Center of British Columbia (CA), Ontario Cancer Institute - Princess Margaret Hospital (CA), University of British Columbia (CA)

Action B20 - Mammary Gland development, Function and Cancer

2001 - 2006 Chair: Pr Antonella Baldi (IT)

The main objectives of the Action are generate new therapeutics protocol; improve the interpretation of epidemiological data on breast cancer and mammary gland infection and increase the knowledge required for improving the development of sustainable, welfare-friendly agriculture. Secondary objectives are: • to promote exchanges between the research groups in the following areas: Mammary gland development, function and neoplasia ; Milk components, nutrition and health; • to disseminate and exchange information and results through recruitment of scientists from other fields (such as experts in secretory tissues e.g. thyroid, prostate) and by enlarging the community of countries participating in the Action. The latter is partly achieved through the full engagement of colleagues in Eastern Europe.

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Non-COST participation: University of Western Ontario (CA)

Action B21 - Physiological modelling of MR image formation

2003 - 2007 Chair: Dr Richard Lerski (UK)

The main objective of the Action is to establish how software technology based on development of magnetic resonance imaging (MRI), simulation techniques and data processing algorithms can offer a flexible and economically feasible environment for the modelling of tissue physiology. This is an innovative idea which could have a dramatic and exciting outcome, opening up the detailed characterisation of disease processes by MR and other imaging methods. The health benefits to the European citizen could be great and a planned outcome of the work would be a European software product, not yet existing in the USA or Japan and entirely ground breaking in its scope and application.

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Non-COST participation: National Research Council of Canada (CA), Neurological Institute Montreal (CA)

Action B22 - Drug development for parasitic diseases

2003 - 2007 Chair: Pr Fred Opperdoes (BE)

The main objective is to support identification, evaluation and development of new drugs to treat protozoal diseases, with emphasis on the tropical diseases such as malaria, leishmaniasis, human African trypanosomiasis (sleeping sickness) and S. American trypanosomiasis (Chagas disease). Research on other parasitic diseases, such as amoebiasis, and opportunistic infections are also networked. The drug research and development process requires dedicated teams of experts to encompass discovery and the various steps of development, registration and distribution. The expertise and resources for the development process have been only available within the pharmaceutical industry. The Action works to provide a wide body of expertise and to maintain close contacts between academia, the pharmaceutical industry and international organizations. Benefits are assessed through: quality of science measured by publication of scientific papers, patents and drugs reaching development; platforms provided to support preparation and submission of joint grant applications for further research and/or establishment of new companies; interaction with small and large pharmaceutical companies, public-private partnerships and international organizations; links established to other international bodies and synergistic activities with these bodies.

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Non-COST participation: University of Technology of Sidney (AU), CHUL - Centre de Recherche en Infectiologie (CA), International Organisation for Chemical Sciences in Development (NGO)

Action B23 - Oral facial development and regeneration

2003 - 2007 Chair: Pr Henri Magloire (FR)

The main objective is to increase and facilitate understanding of

dental and oral-facial biology by elucidating the molecular basis of normal and abnormal development as well as tissue regeneration and allowing development of novel clinical approaches. General objectives are focused on the development and phylogenetic processes, identification of signaling networks and molecules, functions of regulatory genes and specific proteins, target genes and delivery molecules for prospective therapy. The specificity of the Action is to set up a multidisciplinary networks of scientists and clinicians and incorporate a core of European companies that participate in the earliest steps of product development. The Action aims to have a significant impact on knowledge, therapy and counseling of genetic disorders affecting teeth and oral facial development; translation of basic research findings to clinical applications for improved diagnosis and treatment; and tissue engineering of teeth and surrounding tissues.

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Non-COST participation: Université de Montréal (CA), University of Halifax (CA), University of Toronto (CA)

Action B24 - Laboratory animal science and welfare

2004 - 2009 Chair: Pr Timo Nevalainen

The 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, in order to further implementation, is a compilation of relevant guidelines and recommendations produced prior to the Action and by the Action into a format, which would allow all interested groups within the field to become familiar with the recommendations in a convenient, but efficient way.

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Action B25 - Physiologically based Pharmaco-Toxicokinetics and Dynamics

2005 - 2009 Chair:

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.
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Signatories: new Action (signatures in progress)

■ Action B26 - Obstructive Sleep Apnea
2005 - 2009 Chair:
The main objectives are:
- To assess the role of the Obstructive Sleep Apnea Syndrom (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).
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Signatories: new Action (signatures in progress)

■ Action B27 - Electric Neuronal Oscillations and Cognition (ENOC)
2005 - 2009 Chair:
The main objective is to increase the knowledge of the electricneuronal oscillations correlated to memory and attention as the basis for neuronal regulation aimed at enhancing the human performance and health.
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Signatories: new Action (signatures in progress)

■ Action B28 - Array Technologies for BSL3 and BSL4 Pathogens
2005 - 2009 Chair:
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.
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Signatories: new Action (signatures in progress)

Urban Civil Engineering

■ Action C12 - Improvement of buildings structural quality by new technologies
2000 - 2005 Chair: Pr Jean-Pierre Jaspart (BE)
The main objective of this Action is to develop, combine and disseminate new engineering technologies, to improve the

quality of urban buildings, to propose new technical solutions to architects and planners, to reduce the disturbances of the construction process in urban areas and finally to improve the quality of living in the urban habitat.

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Action C13 - Glass and interactive building envelopes

2000 - 2005 Chair: Dr Stephen Ledbetter (UK)

The main objective of the Action is to increase the knowledge of properties and possibilities of glazing in order to increase the performance of building envelopes, to reduce energy consumption and to improve the quality of life with respect to interior space, impact on the environment and human welfare. The Action makes optimal use of existing and currently developing knowledge, and aims to function as a source of valuable information to National and International Standards organisations.

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Non-COST participation: Lawrence Berkeley National Laboratory (US)

Action C15 - Technical infrastructure and vegetation-improving relations & preventing conflicts by an Interdisciplinary approach

2002 - 2006 Chair: Mr Hakan Schroeder (SE)

The main objective of this Action is to improve methods and technology related to the coexistence of technical infrastructures and vegetation in European cities, and to prevent potential problems arising from their interaction, through an interdisciplinary approach between research and development units working within technology, economics and biology. The area of research encompasses a planning perspective with the aims of analysing and evaluating the economic and environmental consequences of various methods and technology and preventing the occurrence of problems at the planning and construction stage.

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Action C16 - Improving the quality of existing urban building envelopes

2002 - 2006 Chair: Mr Leo Verhoef (NL)

The main objective of the Action is to improve the quality of the urban building envelopes for the non-traditional housing stock, as well as to propose and disseminate new relevant methods and technical options to architects, engineers and planners.

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■ Action C17 - Built Heritage: Fire Loss to Historic Buildings

2002 - 2006 Chair: Dr Ingval Maxwell (UK)

The main objective of the Action is the definition, at a European level, of the degree of loss to "Built Heritage" through the effects of fire and the proposal of remedial actions and recommendations to combat such loss, using minimal invasive techniques.

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■ Action C18 - Performance assessement of urban infrastructure services: the case of water supply, wastewater and solid waste

2004 - 2008 Chair: Ms Helena Alegre (PT)

The main objective of the Action is to increase the knowledge and to promote the use of effective, scientifically robust and well devised methodologies for decision-making based on the use of performance indicators for urban infrastructure services, able to attract utilities to use them as routine management tools.

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■ Action C19 - Proactive crisis management of urban infrastructure

2004 - 2008 Chair: Mr Jon Røstum (NO)

The main objective of the Action is to define current knowledge gaps and identify possible measures to improve the multi-disciplinary research on urban infrastructure vulnerability and the handling of crisis situations.

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■ Action C20 - Urban Knowledge Arena – Developing a European Arena for Cross-Boundary Co-operation in Production of Knowledge and Know-how on Complex Urban Problems

2005 - 2009 Chair: Mr Henrik Nomark (SE)

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.

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■ Action C21 - Towntology – Urban Ontologies for an Improved Communication in Urban Civil Engineering Projects

2005 - 2009 Chair: Mr Jacques Teller (BE)

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).
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Action C22 - Urban Flood Management

2005 - 2009 Chair:

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.

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Action C23 - Strategies for a Low Carbon Built Environment

2005 - 2009 Chair:

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.

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Chemistry

Action D14 - Functional molecular materials

1999 - 2005 Chair: Pr Antonin Vlcek (UK)

The main objective of the Action is an increase of the fundamental understanding of the chemistry occurring on functional molecular materials. It combines chemists and physicists, who have an interest in developing and evaluating novel molecularly based systems that order in two or three dimensions, and as a result of this order, exhibit novel properties. It is the aim of this Action to develop novel functional molecular and supramolecular systems, to understand the driving forces that allow their formation and two and three-dimensional organisation, to develop methods and tools to investigate, address, manipulate and change these systems and finally to exploit their specific material properties leading to new "smart materials".

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Action D17 - Oligomers, polymers and copolymers via metal catalysis

1999 - 2006 Chair: Pr Claudio Bianchini (IT)

The main objective of the Action is an increase of the understanding of the principles of oligomerisation, polymerisation and copolymerisation of unsaturated hydrocarbons via metal catalysis aimed at the sustainable development of the European chemical industry. The goals will lead to accelerated discoveries of new generations of single-site transition metal catalysts for the selective transformation of alkenes and alkynes into polymeric materials with improved performance parameters through less costly and environmentally friendly manufacturing procedures.

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Non-COST participation: Stanford University (US)

Action D18 - Lanthanide Chemistry for Diagnosis and Therapy

1999 - 2006 Chair: Pr Silvio Aime (IT)

The main objective of the Action is an increase of the knowledge of the chemistry of lanthanide(III) chelates and to apply this knowledge to the development of novel diagnostic agents and to therapy by an interdisciplinary approach by chemists, physicists, biologists, and physicians. The goals will lead to more effective diagnosis and therapy in health care, particularly of the ageing population.

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Non-COST participation: Joint Institute for Nuclear Research at Dubna (RU), University of California, Berkeley (US), University of Illinois (US), University of Texas at Dallas (US)

Action D19 - Chemical functionality specific to the nanometer scale

2000 - 2006 Chair: Pr Rolf Hempelmann (DE)

The main objective is to investigate the effect of nano-structural features on chemical properties. There is particular interest in answering questions such as “How are chemical reactivity or selectivity influenced by the size, shape or ordering of the pores or of the particles themselves?”, “How does the ordering of molecules or macromolecules in the pores influence these properties?” Since the provisions of answers to these questions require a wide range of techniques, a fundamental, interdisciplinary approach has been taken. The materials studied are of prime importance and have to be chosen with respect to the respective chemical functionality/ functionalities together with the corresponding application in question.

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Action D20 - Metal compounds in the treatment of cancer and viral diseases

2000 - 2006 Chair: Pr Enzo Alessio (IT)

The main objective of the Action is to further develop the Chemistry of metal containing compounds to be applied in cancer chemotherapy and eventually in antiviral therapy. Promising developments in the field of antitumour metal compounds call for major research efforts in this area. The number of European laboratories interested in the topic is sufficiently large to undertake a combined attempt to tackle long-standing and novel questions and come up with innovative answers.

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Non-COST participation: Kyiv National Taras Shevchenko University (UA), Rhodes University at Grahamstown (ZA)

Action D21 - Metalloenzymes and chemical biomimetics

2000 - 2006 Chair: Pr Luigi Casella (IT)

The main objective of the Action is to increase the knowledge of the chemistry of metal sites in proteins to strengthen their application to chemical, biotechnological, pharmacological and environmental sciences. This Action will co-ordinate new joint research efforts and strengthen existing ones in the interdisciplinary field dealing with metalloenzymes, metalloproteins and their chemical models. Promotion of more intensive exchange between groups, particularly those with complementary expertise, will be beneficial for European research and lead to a stronger impact in a rapidly growing field. It is expected that the Action will attract industrial research groups interested in biotechnological applications of metalloenzyme chemistry or new catalytic systems.

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Non-COST participation: Russian Academy of Sciences (RU), National Academy of Sciences of Ukraine (UA)

Action D22 - Protein-lipid interaction

2000 - 2006 Chair: Pr John Findlay (UK)

The focus of this Action is protein-lipid interactions on molecular level and time scales, based on interdisciplinary approach by chemists, physicists and biologists. The expected results are of high scientific, economic and educational value. Understanding the chemistry and physics of biological membranes is central of this Action.

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Action D23 - Metachem

2000 - 2005 Chair: Pr Hans Peter Lüthi (CH)

The main objective of the Action is the establishment of more effective collaboration mechanisms among European computational chemistry laboratories through the constitution of metalaboratories (clusters of geographically distributed laboratories having complementary expertise on specific chemical applications working by sharing computing resources in a meta-computing system) to develop complex computational applications in chemistry and related computing tools. This will be achieved by establishing a novel cooperation model aimed at developing the *a priori* modelling of complex chemical systems and encompassing the necessary scientific competence and/or computing means from different laboratories.

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Action D24 - Sustainable Chemical Processes:Stereoselective Transition Metal-Catalysed Reaction

2001 - 2006 Chair: Pr Pat Guiry (IE)

The main objective of the Action is to develop new transition metal-catalysed reactions with special emphasis on stereoselectivity to strengthen their application in chemical, biotechnological, pharmacological and environmental sciences. This objective will be pursued by improving the understanding of stereoselective catalysis as well as by discovering new catalysts providing high activity and enantioselectivity for a number of organic transformations, paying special attention to the recovery of the catalyst.

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Action D25 - Applied biocatalysis: stereoselective and environmentally-friendly reactions catalysed by enzymes

2001 - 2006 Chair: Pr Thorleif Anthonsen (NO)

The main objective of the Action is to develop new biocatalytic reactions with special emphasis on stereoselectivity and environmentally friendly processes. This objective will be pursued by providing new biocatalysts and new biocatalytic processes. The wide field of biocatalysis will ideally comprise researchers from areas such as microbiology, enzymology, molecular biology, structural biology and organic chemistry. It is expected that the Action will attract industrial research groups interested in production of enantiopure chiral building blocks.

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Action D26 - Integrative computational chemistry

2001 - 2006 Chair: Pr Knut Faegri (NO)

The main objective of the Action is to increase the power and scope of computational chemistry for realistic applications thus providing useful tools for the European chemical research community. To fully exploit the potential of the modern computational chemistry requires a broader collaboration across traditional boundaries. This process can be catalyzed by this Action supporting the creation of networks between computational chemists from different sectors, or between computational chemists and users of computational chemistry in various areas of application.

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Action D27 - Prebiotic Chemistry and Early Evolution

2002 - 2007 Chair: Pr Günter von Kiedrowski (DE)

The main objective of the Action is to develop the chemistry connected with the origin of life and early evolution of life on Earth, with special emphasis on self-replicating systems, prebiotic synthesis of nucleic acids and polypeptides, as well as simple protocells as early models of biological cells.

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Non-COST participation: Queensland University of Technology at Brisbane (AU), Semenov Institute of Chemical Physics (RU)

Action D28 - Natural Products as a Source for Discovery, Synthesis, and Application of New Pharmaceuticals

2002 - 2007 Chair: Pr Dieter Schinzer (DE)

The main objective of the Action is the target-orientated discovery of new natural products with an important biological profile based on new and unusual sources, e.g., secondary metabolites of bacteria or marine organisms combined with efforts to synthesize these molecules by the use of novel strategies and methods. The development of new strategies to synthesize complex natural products is the second main objective. As a result, a broad screening of analogues will be possible. Structure activity data will then be used to further refine the pharmacophore model, enabling the rational design and synthesis of more focused active compounds.

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Action D29 - Sustainable/Green Chemistry and Chemical Technology

2002 - 2007 Chair: Pr Istvan Horvath (HU)

The Action aims to develop sustainable industrial chemicals

and chemical based consumer products utilising sustainable and environmentally friendly processes. It will be achieved by (1) providing a mechanism to establish a common understanding of the current status and the future research, development, and educational needs of Sustainable/Green Chemistry and Chemical Technology for Europe; (2) establishing and managing a selection process for identifying potential industrial chemicals and chemical based consumer products that could be considered sustainable/green according to information available at the time of the selection; and (3) co-ordinating new joint research efforts for designing and developing environmentally friendly processes for the production of such sustainable/green products.

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Non-COST participation: Moscow State University (RU), National Academy of Sciences of Ukraine (UA)

Action D30 - High pressure tuning of chemical and biochemical processes

2002 - 2007 Chair: Dr Gabor Laurenczy (CH)

The main objective of the Action is to stimulate the tuning of chemical and biochemical processes through the application of high pressure as a physical variable, in order to achieve lower energy consumption, less pollution and higher selectivity in chemical and biochemical transformations, and production of new materials with better properties. The Action will build on existing knowledge on the effect of pressure on chemical and biochemical processes, in order to systematically tune the desired properties of such systems for selective applications in industrial, environmental and biological processes.

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Non-COST participation: Institute of Biophysics - Chinese Academy of Sciences (CN), Institute of Biochemistry and Cell Biology - Chinese Academy of Sciences (CN), Moscow State University (RU)

Action D31 - Organising Non-Covalent Chemical Systems with Selected Functions

2004 - 2009 Chair: Pr Christina Moberg (SE)

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.

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Action D32 - Chemistry in High-Energy Microenvironments (CHEM)

2004 - 2009 Chair: Pr David Walton (UK)

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.

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

2005 - 2009 Chair: Pr Wolfgang Sand (DE)

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.

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Action D34 - Molecular targeting and drug design in neurological and bacterial diseases

2005 - 2010 Chair: Pr Robert Crichton (BE)

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.

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Signatories: new Action (signatures in progress)

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

2005 - 2010 Chair: Pr Antonin Vlcek (UK)

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.

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Forests and Forestry Products

■ Action E23 - Biotechnology in the pulp and paper industry

2000 - 2005 Chair: Pr Liisa Viikari (FI)

The main objective of the Action is to explore and promote the development and application of biotechnical methods in pulping, bleaching and paper and board manufacturing processes by increasing knowledge of biocatalysts and their applications. Furthermore, the aim is to critically evaluate the bottlenecks and general applicability of these technologies and thereby enhancing the competitiveness of the pulp and paper industry by advancing the use of specific and environmentally benign biotechnical methods.

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■ Action E24 - Reliability of timber structures

2000 - 2005 Chair: Dr Patrick Castera (FR)

The objective is to extend established statistical methods and structural mechanics models to take into account the specific properties of wood, wood based materials and joints and thereby making it possible to analyze the reliability of timber structures and structural systems and thus improve the competitiveness of timber structures and the economy of the forest sector. The results of the Action will serve as a basis for drafting a unified RBD-code for timber structures.

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Action E25 - European network for a long-term forest ecosystem and landscape research programme

2000 - 2005 Chair: Mr Folke Andersson (SE)

The main objective of the Action is to establish a European network of sites for forest ecosystem and landscape research of relevance to sustainable forest management. A common data bank of European field experiments relevant to sustainable forest management will be established, containing comparable information about sites, data and appropriate research programmes. The Action will strengthen and stimulate this network of sites by means of a common minimum research programme.

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Action E26 - Effective solutions to reduce the impact of waste arisings from the papermaking process

2001 - 2005 Chair: Dr Arie Hooimeijer (NL)

The objective of the Action is to define and develop the options for the reduction and disposal of waste arisings from the paper and board making process. This will be achieved by determining the best approaches to reducing the generation of waste arisings in original use or in the mill and assessing the options for reuse of papermill sludge. The Action will provide benefits to the key industrial sector of pulp and paper manufacture and to the wider European community by providing further knowledge to assist the development of an effective European wide waste management policy.

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Action E27 - PROFOR-Protected Forest Areas

2002 - 2006 Chair: Dr Georg Frank (AT)

The main objective of the Action is to harmonize the wide range of Protected Forest Area categories used in European countries within the context of existing international systems of protected areas. The Action will enhance the quality and clarity of information on PFAs at both a national and a European level. The results will allow comparison of data and information on PFAs and serve as basis for international data collection. Such efforts are a direct response to the expressed needs of ongoing international processes, such as the Ministerial Conference on the Protection of Forests in Europe.

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Non-COST participation: Ministerial Conference on the Protection of Forests in Europe

Action E28 - Genosilva : European Forest Genomics Network

2002 - 2006 Chair: Ms Silvia Fluch (AT)

The main objective of the Action is to transfer knowledge and technology from the basic science of plant functional genomics to the forestry sector. The Action aims to capitalise on the substantial genome resource that has been developed for model tree species, to provide a link between gene sequence and gene function and thereby enhance our understanding of the genetic and cellular processes affecting tree growth and survival and to use this understanding to develop new tools and biotechnology to enhance forest productivity and durable forest health.

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Action E29 - Innovative Timber & Composite Elements/ Components for Buildings

2002 - 2006 Chair: Dr Vahik Enjily (UK)

The main objective of this Action is to improve manufacturing, design, construction and maintenance of innovative timber as well as composite elements and components for use in the construction of buildings. The Action aims to encourage innovation by taking into account the specific issues of development and manufacturing of innovative timber and composite elements/components to be used in buildings.

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Action E30 - Economic integration of urban consumers' demand and rural forestry production

2002 - 2006 Chair: Mr Anssi Niskanen (FI)

The main objective of the Action is to gain better understanding on the problems and possible solutions in forest based entrepreneurship leading to improved employment and income in rural areas at the European level. These include: (a) problems and solutions for economically integrated forestry-wood-processing-chains, which connect small-scale forestry production into local wood processing and further to urban consumer markets; and (b) problems and solutions for integrating the demand of urban consumers on non-wood forest products and services together with their respective rural supply.

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Action E31 - Management of Recovered Wood

2002 - 2006 Chair: Mr Gerfried Jungmeier (AT)

The main objective of this Action is the improvement of the management of recovered wood towards a higher common technical, economic and environmental standard and to advance the management of recovered wood significantly on a European

level.

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Action E32 - Characterisation of paper surfaces for improved printing paper grades

2003 - 2007 Chair: Ms Sissel Ravnsborg (NO)

The main objective of the Action is to develop and improve methods for analysis of printing paper surfaces in order to improve print quality. Further, it is of interest to develop methods that can measure ink distribution on printed surfaces and correlate this to the local topography and chemistry.

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Action E33 - Forests for Recreation and Nature Tourism (FORREC)

2004 - 2008 Chair: Mr Simon Bell (UK)

The main objective of the Action is to improve the quality of information available to policy makers and forest managers on the recreation and tourism benefits of forestry and to increase the cost-effectiveness of techniques for delivering recreation and tourism benefits from forestry. The Action aims specifically to improve knowledge of the benefits to urbanised societies,,to improve the understanding of the economic and social impacts of forest recreation and nature tourism in Europe, and to assess its potential as a tool for rural development.

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Action E34 - Bonding of Timber

2004 - 2008 Chair: Dr Manfred Dunky (AT)

The main objective of this Action is to achieve improvement in bonding timber and wood towards a higher common technical, economic and environmental standard. In particular the Action aims to take into account specific issues as evaluation and examination of the technical potentials of bonding timber and wood, improvement of the quality of the European databases on the technical, economical and statistical information concerning the overall topic of bonding timber and wood and to promote the development of appropriate systems for bonding timber and wood on a European level to optimise the use of wood resources.

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Action E35 - Fracture mechanics and micromechanics of wood and wood composites with regard to wood machining

2004 - 2008 Chair: Pr Stefanie Tschegg (AT)

The main objective of the Action is to achieve a better understanding of the relationship between wood structure at the cellular level or the structure of wood composites respectively and the mechanical as well as the fracture performance of wood machining at the macroscopic scale. The Action will provide new cooperation and research on the fracture mechanical properties of wood and the correlating structural features.

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Action E36 - Modelling and Simulation and Control in Pulp and Paper Industry

2004 - 2008 Chair: Mr Johannes Kappen (DE)

The main objective of the Action is to advance the development and application of simulation techniques in the pulp and paper manufacturing processes. The aim is to minimize environmental impact, and increase productivity and cost-competitiveness. As simulation and advanced control is not yet common in the paper industry special attention will be given on the topics of the current use of simulation software, recommendations on the exchange of know-how contained in models and on suitable software tools and requirements for further software development. It is also possible to reveal the applicability of new modelling and simulation tools that have been developed for other modern industries to the pulp and paper industry.

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Action E37 - Sustainability Through New Technologies For Enhanced Wood Durability

2004 - 2008 Chair: Dr Rolf-Dieter Peek (DE)

The main objective of the Action is to concentrate on the contribution of wood durability to sustainability through the development of systems for quality assurance and performance classification of 'modified wood and wood products' as alternatives to wood treated with traditional preservatives. By this the Action seeks to improve and consequently to increase the cost-effective use of components manufactured from sustainably produced European timber, wood-based fibre, and recycled raw materials.

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Action E38 - Woody root processes

2004 - 2008 Chair: Pr Douglas Godbold (UK)

The main objective of the Action is to enhance the knowledge base and improve methodology of measuring root processes in relation to environmental change.

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Action E39 - Forests, Trees and Human Health and Wellbeing

2004 - 2008 Chair: Dr Kjell Nilsson (DK)

The main objective of the Action is to increase the knowledge about the contribution that forests, trees and natural places make, and might make, to the health and well-being of people in Europe.

The Action aims specifically to set out the key health priorities identified within European countries and the possibility for forestry to contribute to meeting them, to engage health policy interests in the identification of information gaps in this field and to develop a network of researchers and research institutions in forestry, health, environment and the social sciences.

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Action E40 - Innovative utilisation and products of large dimensioned timber including the whole forest-wood-chain

2004 - 2008 Chair: Pr Alfred Teischinger (AT)

The main objective of the Action is to provide a scientific basis to increase the European wide and international competitiveness of products made of large dimensioned timber. In aiming at the expansion of the knowledge of properties and material characters of large dimensioned wood as well as its availability the Action will promote the development of forest management strategies enabling an economical utilisation of large dimensioned timber contributing to the economical and ecological stability of forest regions in Europe. Furthermore, the Action will focus on the improvement of the technical methods used for the exploitation-oriented processing of large dimensioned timber.

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Action E41 - Analytical tools with applications for wood and pulping chemistry

2004 - 2008 Chair: Ms Tarja Tamminen (FI)

The main objective of the Action is to develop and evaluate analytical methods related to wood, pulping and bleaching chemistry. The Action will evaluate the potential and restrictions of the presently available chemical analytical methods for wood and pulp fibre and fibre components and develop further the

presently available chemical analytical methods for wood and pulp fiber and fiber components. The Action will also evaluate the potential of the analytical methods even for non-woody lignocellulosic raw materials used by the pulp and paper industry.

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Action E42 - Growing Valuable Broadleaved Tree Species

2004 - 2008 Chair: Mr Heinrich Spiecker (DE)

The main objective of the Action is to increase the knowledge of growing valuable broadleaved tree species, with emphasis on the production of valuable wood and with the intent to promote non-wood products that can be produced in parallel with, or in addition to, the main product. In respect to wood production the goal is to maximise the share of highly valuable wood in a short production time and low investment of work, energy and capital.

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Action E43 - Harmonisation of National Inventories in Europe : Techniques for Common Reporting

2004 - 2008 Chair: Pr Erkki Tomppo (FI)

The main objective of the Action is to improve and harmonize the existing national forest resource inventories in Europe. Further objectives are to support new inventories in such a way that inventories will meet national, European and global level requirements in supplying up-to-date, harmonized and transparent forest resource information, and to promote the use of scientifically sound and validated methods in forest inventory designs, data collection and data analysis.

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Non-COST participation: Joint Research Centre (European Commission)

Action E44 - Wood Processing Strategy

2004 - 2008 Chair: Dr Joris Van Acker (BE)

The main objective of the Action is to increase the knowledge required to create a wood processing strategy in Europe. In addition, the Action aims to generate the identification of wood processing mechanisms producing solid timber products and wood based panels, to improve insight on forests and the use of the wood produced and to provide critical information on the future research needs for the forestry–wood industry chain.

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Action E46 - Improvements in the understanding and use of de-inking technology

2004 - 2008 Chair: Mr Gérard Galland

The main objective of the Action is to improve the efficiency and effectiveness of de-inking technology in line with the introduction and use of new printing methods and vehicles, increased customer expectations and environmental considerations. The expected benefits to the European pulp and paper industry will be improvements in quality and uniformity of de-inked pulp, more efficient and effective de-inking operational improvements to meet environmental requirements and development of cost effective solutions for "difficult to de-ink" inks and toners.

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Action E47: European Network for Vegetation Management: towards environmental Sustainability

2005-2009 Chair:

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.

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Action E48: The Limits of Paper Recyclability

2005-2009 Chair:

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 or future company strategies concerning raw material markets. 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.

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Signatories: new Action (signatures in progress)

■ Action E49: Processes and Performance of Wood-based Panels

2005-2009 Chair:

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 will cover fundamental research on wood-based panels production and product performance as well as concentrate on technology and information transfer.

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Signatories: new Action (signatures in progress)

■ Action E50: Cell wall macromolecules and reaction wood (CEMARE)

2005-2009 Chair:

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.

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Signatories: new Action (signatures in progress)

Miscellaneous

■ Action G7 - Artwork conservation by Laser

2000 - 2006 Chair: Dr Renzo Salimbeni (IT)

The objectives of this new Action is to develop methods and equipment for the modern unitary concept of investigation, restoration and protection of artwork and antiquities using methods and equipment which do not damage the artwork. These activities will contribute to the improvement of the equipment and methods used at reasonable cost, the analysis of the surface stability in time, and laser systems for pollution monitoring around the objects concerned.

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Non-COST participation: Research Centre "S.I.Vavilov State Optical Institute" (RU)

■ Action G8 - Non-destructive analysis and testing of museum objects

2000 - 2006 Chair: Pr Annemie Adriaens (BE)

The main objective of the Action is to achieve a better preservation and conservation of our cultural heritage by increasing the

knowledge of museum objects and by improving the synergy between art historians, archaeologists, conservators and natural scientists.

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Action G9 - Modelling Real Property Transactions

2001 - 2005 Chair: Dr Erik Stubkjaer (DK)

The objective of the Action is to improve the transparency of real property markets and to provide a stronger basis for the reduction of costs of real property transactions by preparing a set of models of real property transactions. The main benefit of the Action is that governments, professions, and holders of property rights get a better basis for reducing the costs of the transactions of the markets of real estates. Moreover, the Action's outcome in terms of models and analyses will be of great interest for the European countries in transition, currently reshaping their institutions for the administration of real properties.

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Physics

Action P7 - X-ray and Neutron Optics

2002 - 2006 Chair: Dr Thomas Krist (DE)

The main objective of the Action is to increase knowledge in the field of X-Ray and Neutron interactions with solid surfaces and interfaces, and to develop fabrication and characterisation methods for advanced innovative optical elements for applications in this extreme short wavelength range.

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Non-COST participation: Rostov State University (RU), Russian Academy of Sciences (RU)

Action P8 - Materials and Systems for Optical Data Storage and Processing

2002 - 2006 Chair: Pr Hans Joachim Eichler (DE)

This Action aims to increase knowledge required for a technological implementation of advanced approaches to optical information storage and processing improving the capacity and performance of currenly available optical storage systems.

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Action P9 - Radiation Damage in Biomolecular Systems

2003 - 2007 Chair: Pr Nigel Mason (UK)

The main objective of the Action is to obtain a detailed understanding of the fundamental interaction processes for different types of incident radiation that occur from the initial deposition of radiative energy to the formation of radiation damage in biological material.

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Action P10 - Physics of Risk

2003 - 2007 Chair: Pr Peter Richmond (IE)

The aim of this Action is to develop a greater understanding and application of modern statistical physics, mathematics and computational physics in relation to problems associated with risk such as occur in quantitative finance, food safety, health, social science and other disciplines, where these tools can enhance and improve upon current approaches to these issues.

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Non-COST participation: Australian National University (AU)

Action P11 - Physics of linear, non-linear and active photonic crystals

2003 - 2007 Chair: Pr Concita Sibilia (IT)

The objectives of the Action are to study linear and non-linear optical interactions, including quantum optical features associated with photonic crystals (PCs), and to develop and implement measurement techniques for the experimental evaluation of their potential applications in different areas.

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Non-COST participation: Victoria University of Wellington (NZ), Moscow State University (RU)

Action P12 - Structuring of Polymers

2003 - 2007 Chair: Pr Christoph Schick (DE)

The main objective of the Action is to advance the physical knowledge and knowledge-generating tools related to ordering, crystallisation, aggregation or organisation, in particular close to interfaces, of synthetic polymers of different complexities.

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■ Action P13 - Forging the missing link: From Molecular Simulations to Nanoscale Experiments

2004 - 2008 Chair: Pr Peter Nielaba (DE)

The aim of this Action is to develop novel computational tools to model matter at the nanoscale: the regime where advanced computation and modern experimental techniques meet.

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■ Action P14 - Laser-matter Physics with ultra-short pulses, high-frequency pulses and ultra-intense pulses

2004 - 2008 Chair: Pr Charles Joachain (BE)

This Action will develop a greater understanding of the physics of atoms, molecules, clusters, solids and plasmas interacting with high-intensity coherent light.

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Signatories: AT, BE, CS, CZ, DE, ES, FI, FR, HU, IT, LT, NL, PL, RO, SE, UK
Non-COST participation: Osaka University (JP), Multicharged Ions Spectra Data Centre of VNIIFTRI (RU), Prokhorov General Physics Institute, Russian Academy of Sciences (RU), University of Rochester (US)

■ Action P15 - Advanced Paramagnetic Resonance Methods in Molecular Biophysics

2005 - 2010 Chair:

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.

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Signatories: new Action (signatures in progress)

■ Action P16 - Emergent Behaviour in Correlated Matter (ECOM)

2005 - 2009 Chair:

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.

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Signatories: new Action (signatures in progress)

■ Action P17 - Electromagnetic processing of Materials (EPM)

2005 - 2009 Chair:

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.
Science Officer: Piotr Swiatek - Contact: Jie Zhu
Tel: +32 (0)2 5333804 - E-mail: jzhu@cost.esf.org
Signatories: new Action (signatures in progress)

■ Action P18 - The Physics of Lightning Flash and its Effects
2005 - 2009 Chair:
The main objective of the Action is to increase the knowledge of the physics of thelightning discharge and of its effects on natural and man-made systems.
Science Officer: Piotr Swiatek - Contact: Jie Zhu
Tel: +32 (0)2 5333804 - E-mail: jzhu@cost.esf.org
Signatories: new Action (signatures in progress)

Participation of Non-COST Country institutions

Action	Country	Institution Name
219 ter	Australia	*GSA Information Consultant - Ascot*
	United States	*Trace R&D Center - Madison*
273	Canada	*Communication Research Center*
	Japan	*Tokyo Institute of Technology and National Institute of Information & Communications Technology*
	China - Taiwan	*National Chiao Tung University*
	United States	*Lucent Technologies*
274	Canada	*Brock University*
		St. Francis Xavier University
		Université de Montréal
		Université Laval
277	Canada	*Université de Sherbrooke*
280	Canada	*Communication Research Center*
	Russian Federation	*Ministry of Telecommunication and Informatisation of the Russian Federation*
		Russian Academy of Sciences
		Vladimir State University
287	Canada	*McGill University*
346	Russian Federation	*Technical University of Moscow*
348	United States	*Montana State University*
531	Canada	*Materials and Manufacturing Ontario*
	China - Taiwan	*National Cheng Kung University*

Action	Country	Institution Name
532	Ukraine	*Institute for Problems of Materials Science*
	United States	*Oak Ridge National Laboratory*
534	China	*Design Institute of China*
		Jiatong University
		School of Civil Engineering and Architecture
		The First Highway Survey
537	China	*Qindu Hospital*
		Stomatological College
	Russian Federation	*St.-Petersburg State Institute of Technology*
625	Albania	*Seismological Institute*
	Bosnia and Herzegovinia	*University of Sarajevo*
635	Ukraine	*National Academy of Sciences of Ukraine*
		Odessa National University
719	Ukraine	*Scientific and Industrial Enterprise "Ecomedservice"*
720	China (Macao)	*Meteorological and Geophysical Service of Macao*
	Ukraine	*Innovation Center "Magic Solutions"*
722	Canada	*Canadian Meteorological Service*
724	Armenia	*Cosmic Ray Division - Yerevan Physics Institute*
	Russian Federation	*Moscow State University*
		Space Research Institute, Russian Academy of Sciences
	Ukraine	*Lviv Centre of Institute of Space Research*
727	Japan	*Kaganawa Institute of Technology*

Action	Country	Institution Name
838	Russian Federation	*Institute for Agricultural Microbiolgy*
		Research Institute of Microbiology
841	Japan	*Institute of Technology of Tokyo*
		University of Kyoto
		Waseda University
	Russian Federation	*Russian Academy of Sciences*
	United States	*Basic Sciences Center*
		University of Georgia - Athens
845	Argentina	*Instituto Nacional do Tecnología Agropecuarias - INTA*
	Eritrea	*University of Asmara*
	NGO	*World Organisation for Animal Health*
850	NGO	*UNESCO*
	Russian Federation	*Russian Academy of Sciences*
852	Australia	*Pastoral and Veterinary Institute*
B12	Russian Federation	*Russian Academy of Sciences*
B16	Canada	*Sainte-Anne-de-Bellevue QC*
		University of Toronto
B17	Canada	*Hospital for Sick Children*
		University of Guelph
	New Zealand	*University of Auckland*
B18	Canada	*Kingston General Hospital*
		SJHC
B19	Canada	*Children's and Women's Health Center of British Columbia*
		Ontario Cancer Institute - Princess Margaret Hospital
		University of British Columbia
B20	Canada	*University of Western Ontario*

Action	Country	Institution Name
B21	Canada	*National Research Council of Canada - NRCC*
		Neurological Institute Montreal
B22	Australia	*University of Technology of Sidney*
	Canada	*CHUL - Centre de Recherche en Infectiologie*
	NGO	*International Organisation for Chemical Sciences in Development*
B23	Canada	*Université de Montréal*
		University of Halifax
		University of Toronto
C13	United States	*Lawrence Berkeley National Laboratory*
D17	United States	*Stanford University*
D18	Russian Federation	*Joint Institute for Nuclear Research at Dubna*
	United States	*University of California, Berkeley*
		University of Illinois
		University of Texas at Dallas
D20	Ukraine	*Kyiv National Taras Shevchenko University*
	South Africa	*Rhodes University at Grahamstown*
D21	Russian Federation	*Russian Academy of Sciences*
	Ukraine	*National Academy of Sciences of Ukraine*
D27	Australia	*Queensland University of Technology at Brisbane*
	Russian Federation	*Semenov Institute of Chemical Physics*
D29	Russian Federation	*Moscow State University*
	Ukraine	*National Academy of Sciences of Ukraine*

Action	Country	Institution Name
D30	China	*Institute of Biophysics - Chinese Academy of Sciences*
		Institute of Biochemistry and Cell Biology - Chinese Academy of Sciences
	Russian Federation	*Moscow State University*
E27		*Ministerial Conference on the Protection of Forests in Europe*
E43	European Commission	*Joint Research Centre, Institute for Environment and Sustainability*
G7	Russian Federation	*Research Centre "S.I.Vavilov State Optical Institute"*
P7	Russian Federation	*Rostov State University*
		Russian Academy of Sciences
P10	Australia	*Australian National University*
P11	New Zealand	*Victoria University of Wellington*
	Russian Federation	*Moscow State University*
P14	Japan	*Osaka University*
	Russian Federation	*Multicharged Ions Spectra Data Centre of VNIIFTRI*
		Prokhorov General Physics Institute, Russian Academy of Sciences
	United States	*University of Rochester*

2005

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