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EUROCORES Scheme
European **Co**llaborative **Res**earch

Specific Support Action

Final Activity Report

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1 Introduction

The intricacies, breadths and dynamics of science inherently give rise to research questions that are so complex or so broad that they are best tackled and most effectively addressed by more than a single excellent researcher with a team, a single institute or even a single country. A critical mass of competencies and resources are needed in order to achieve compelling and comprehensive solutions to some of these problems. Although the critical mass of competencies for larger portions of scientific endeavours could be disciplinary in nature, it is clear that the requirement for cross-disciplinary research has significantly increased.

The EUROCORES Scheme has been developed under a fruitful contract with the European Commission under the sixth research Framework Programme. It has enabled an instrument for European researchers to enhance cooperation with the ambition of addressing researcher-led scientific questions requiring European level or international cooperation. The Scheme has appealed to some of the best scientists in Europe and beyond, and has brought together national research organisations in a cost-effective concerted approach to national funding of collaborative research.

The EUROCORES Scheme has offered and continues to offer a flexible framework for researchers to work on questions which are best addressed in large scale programmes allowing them to collaborate on research projects 'at the bench'. They also allow, when appropriate, colleagues from non-European countries, for example the United States, to participate. The Programmes encourage networking and collaboration of researchers to achieve synthesis of scientific results across the programme, to link to related programmes, and to disseminate results.

EUROCORES Programmes allow national research funding organisations in Europe and beyond to support top class research in and across all scientific areas, by matching the needs articulated by the scientific community with their strategic priorities. Funding decisions on the projects and the research funding remain with the national research funding organisations, based on international peer review operated by the ESF. The ESF also provides support for the networking of the researchers and for the scientific synthesis of research results and their dissemination. This way, the EUROCORES Scheme complements the European Commission Framework Programme and other collaborative funding schemes at European level.

The EUROCORES Scheme has been funded for 5 years and a half under a contract with the European Commission in the Sixth Framework Programme for research (FP-6). Under this 5-year contract that ended in March 2009, the cost of scientific coordination and networking for all 23 running EUROCORES programmes were supported by the European Commission and centrally managed by the EUROCORES Scheme. The research grants for each of the participating Individual Projects (IP) was directly granted by a participating ESF Member Organisation (national research funding or performing organisations and academies).

By the end of the FP-6 contract in 2008, it had become very clear that the ESF Member Organisations had strong commitments to the continuation of EUROCORES. Indeed the ESF MOs decided that the Scheme should continue in the absence of a new EC funding in FP-7 and that they would not only continue to fund the research component of their projects as they had done over the last 8 years, but they would also

contribute to the required additional networking and coordination costs centrally through the ESF.

The planning and implementation of the transition from EC-funded to a fully MO-funded Scheme has been challenging but most successful. Three different but very much related factors have contributed to the great success of this delicate handover:

1- First strong ownership, engagement and commitment expressed by the ESF Member Organisations and their willingness to replace the EC funding that was used during the contract as a central common pot for all for the Networking and Coordination costs of the various programmes.
2- Secondly, solid commitment and responsiveness from the ESF management and staff in support of the Scheme that has collectively enabled continuous evolution of the scheme from prior to the EC contract, throughout the contract and post EC-contract. The Scheme is now in an excellent operational shape.
3- Last but not least, the achievements and successes of about 30 Programmes that have been created as a result of EUROCORES. Excellent new programmes have been created bringing together outstanding scientists from Europe and beyond. Impressive results have been achieved and reported and the reputation of the scheme has spread continuously.

It is obvious that without the EC-contract none of the abovementioned items would have been achieved. The EUROCORES Scheme has attracted participation of almost all of the ESF member organisations as well as research organisations in Canada, Israel and the US. There are solid indications that the Scheme has reached a level of maturity required for its future.

1.1 About European Science Foundation (ESF)

The European Science Foundation (ESF) is an independent, non-governmental organization, the members of which are 80 national funding agencies, research-performing agencies, academies and learned societies from 30 countries.

The strength of ESF lies in the influential membership and in its ability to bring together the different domains of European science in order to meet the challenges of the future. Since its establishment in 1974, the ESF, which has its headquarters in Strasbourg with offices in Brussels and Ostend, has assembled a host of organizations that span all disciplines of science, to create a common platform for cross-border cooperation in Europe.

ESF is dedicated to promoting collaboration in scientific research, funding of research and science policy across Europe. Through its activities and instruments ESF has made major contributions to science in a global context.

ESF's Budget in 2008 was 52 M€ and employed 104 staff. ESF's scientific instruments and programmes are grouped under three main categories of Strategy, Synergy and Management as illustrated in Figure 1.

Figure 1: Science Instruments Managed by ESF

The ESF is committed to identifying the best European research and researchers while working on behalf its principal stakeholders – ESF's Member Organisations and thereby Europe's scientific community. To this end, ESF manages, coordinates, and administers numerous activities and programmes across the instruments illustrated in Figure 1. The outcome of these contributions as a whole include: publishing position papers and Science Policy Briefings on a wide range of issues, organising workshops and conferences to develop and spread the European science agenda. In doing so, every year hundreds of research proposals for projects and awards are solicited, processed and peer reviewed by the ESF. Over three decades of operations, the ESF has continuously evolved from being an organisation using contributions from its Member Organisations to promote scientific networking in Europe towards being a platform for these Organisations to develop joint strategies.

1.2 ESF's Science Structure

The main thrust of ESF's science activities is supported by five Scientific Standing Committees, five Expert Boards and Committees and its overarching Science Advisory Board (SAB):

The five Standing Committees are:

- European Medical Research Councils (EMRC),
- Humanities (SCH),
- Life, Earth and Environmental Sciences (LESC),
- Physical and Engineering Sciences (PESC) and
- Social Sciences (SCSS);

The five Expert Boards and Committees are:

- Marine Board–ESF,
- European Polar Board (EPB),
- European Space Sciences Committee (ESSC),
- Committee on Radio Astronomy Frequencies (CRAF) and
- Nuclear Physics European Collaboration Committee (NuPECC);

The ESF's Member Organisations nominate members of the abovementioned bodies. The ESF operates under the strategic guidance of its Member Organisations through a Governing Council and a General Assembly.

2 About EUROCORES

In this Section, the main features of the EUROCORES Scheme at the time of the writing of this final report are provided. The evolution of the Scheme from its beginning in 2003 that marked the start of the contract with the European Commission has been reported in 5 periodic activity reports as outlined below:

- Status at the award of the contract (October 2003):
- Status at Reporting Period 1 (November 2004):
- Status at Reporting Period 2 (November 2005):
- Status at Reporting Period 3 (November 2006):
- Status at Reporting Period 4 (November 2007):
- Status at Reporting Period 5 (May 2009):

A brief overview of each of these periodic reports is provided at the end of this document in Appendix A: Summary of the Status Reports.

2.1 Main objectives of EUROCORES

The declared aim of EUROCORES is to promote cooperation between Europe's national funding agencies by providing a mechanism for collaborative funding of research in Europe on selected priority topics. The initial request for 20 million EUR over 5 years starting in 2003, was to support the ESF for the implementation of the EUROCORES scheme, corresponding to approximately 20-25 individual EUROCORES programmes over 5 years. The Scheme has now about 40 Programmes at various stages of development as shown in the following Sections.

EUROCORES has significantly evolved through the use of the funds made available by the EC contracts. It has provided a valuable testing ground for joint funding schemes (including common calls, common peer review and decision making). It has been built on existing national structures and maximised their value through collaboration while leaving funding 'responsibility' for the research grants with the national agencies.

The EUROCORES Scheme has reached the required level of maturity and efficacy for creating the critical mass necessary for scientific excellence by enabling researchers in different European countries (and beyond) to develop collaboration and scientific synergy. The scheme provides a flexible framework which allows national research funding organisations to support top class European research in and across all scientific areas.

The scheme stimulates research which is:

- Innovative
- Of the highest quality
- Investigator-driven
- Collaborative, and
- Multidisciplinary

2.2 EUROCORES Values

The EUROCORES Scheme promotes the following values:

1. Science-base/Scientists-driven: The main feature of EUROCORES is its reliance on scientists and investigators for identifying emerging areas for which collaborations at a European level or beyond can lead to significant scientific added value.

2. Flexibility: In addition to focusing on the core of its mandate in mobilising investigator driven collaborative research, EUROCORES also provides a flexible cooperative framework to its Member Organisation for initiating new programmes of strategic priorities that may be shared and expressed by a number of these organisations.

3. Joint decision-making: Common funding and joint management of the Scheme by participating Member Organisations.

4. Common peer-review of highest quality in a two step procedure with both external referees and an independent Review Panel for each programme.

5. Independence from political agendas at national, regional or European levels.

6. High quality coordination and administration: Efficiency, transparency and excellence in scientific coordination and networking of individual Programmes provided by highly qualified scientific officers and experienced administrators.

2.3 Current EUROCORES Programme Structure

Within the EUROCORES Scheme there are ongoing Collaborative Research Programmes whose topics are selected through annual call for theme proposals. Successful themes define the scope of research and collaborations and determine the main thrust of the activities. Each EUROCORES programme consists of a number of Collaborative Research Projects (CRPs). Different CRPs in a given programme focus on various topics or sub-topics identified in the theme proposal and its subsequent call for Outline Proposals in that programme. Each CRP includes a number of Individual Projects (IPs), each led by a Principal Investigator (PI). The PIs in a CRP work on a common work-plan and towards common goals proposed in their Outline Proposal and consequently in their Final Proposal. The key added value of EUROCORES is evident through enabling synergies and networking opportunities across various CRPs within a given programme and, if applicable, among CRPs across different programmes. EUROCORES Programme Coordinators play invaluable roles in identifying, and mobilising their programmes towards this goal. Without dedicated and qualified coordinators and left on their own initiatives, the scientists participating in a programme would have to invest additional time and attention to identifying, and materialise innovative opportunities for collaboration, networking and dissemination across CRPs, various programmes and more

broadly. Figure 2 illustrates the overall structure of the EUROCORES Scheme. Figure 2: Programme Structure of the EUROCORES Scheme. There are three main phases in the lifetime of a typical EUROCORES Programme

Phase 1: Theme selection
Phase 2: Project selection
Phase 3: Research, Networking and Dissemination

Once a year, ESF solicits new ideas from the scientific community with a view to creating large-scale European Collaborative Research (EUROCORES) programmes in and across all scientific domains. EUROCORES themes are "bottom-up" proposals for the creation of new collaborative research programmes (CRPs) dealing with broad and complex topics which are best addressed through multinational cooperation. Theme proposals are NOT themselves research funding proposals, but rather the first step in the creation of large-scale thematic research programmes.

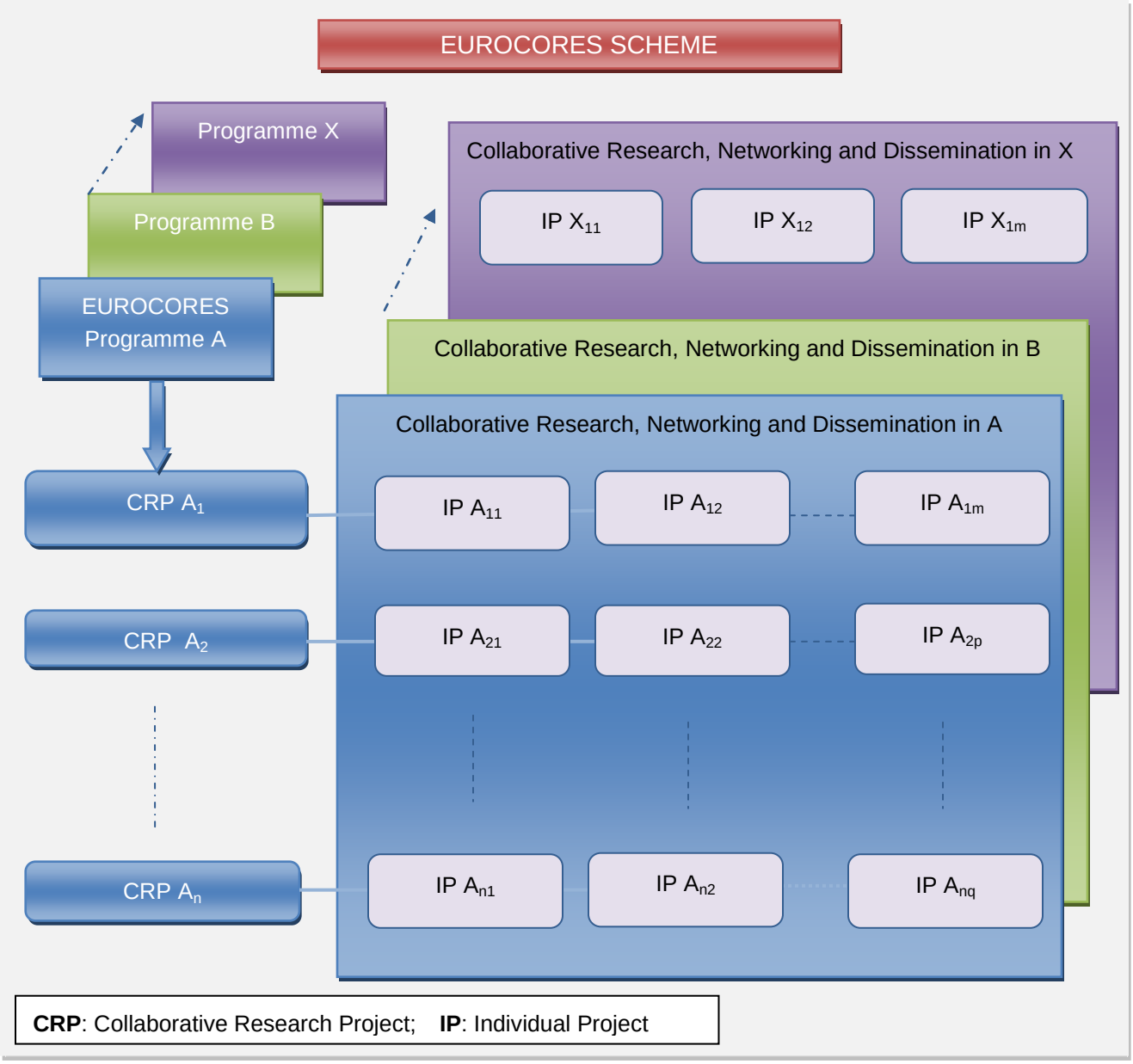


Figure 2: Programme Structure of the EUROCORES Scheme

Theme proposals are peer reviewed, and ranked by the corresponding ESF Standing Committee(s). ESF Science Advisory Board will make a final selection from the top ranked proposals in each domain and will make recommendations for the launch of a number of top-ranked proposals into new programmes (normally between 4 to 7 programmes per year). The ESF Governing Council will approve the launch of the viable programmes based on the recommendations of the ESF Chief Executive. Viability is determined based on the level of interest for participation expressed by the required number of Member Organisations such that the programme when launched will have about 30 Individual Projects (IPs).

EUROCORES themes are "bottom-up" proposals for the creation of new collaborative research programmes dealing with broad and complex topics which are best addressed through multinational cooperation. Through its annual call for theme proposals, ESF solicits new ideas from the scientific community with a view to creating large-scale European Collaborative Research (EUROCORES) programmes in and across all scientific domains. Theme proposals are NOT themselves research funding proposals, but rather the first step in the creation of large-scale thematic research programmes.

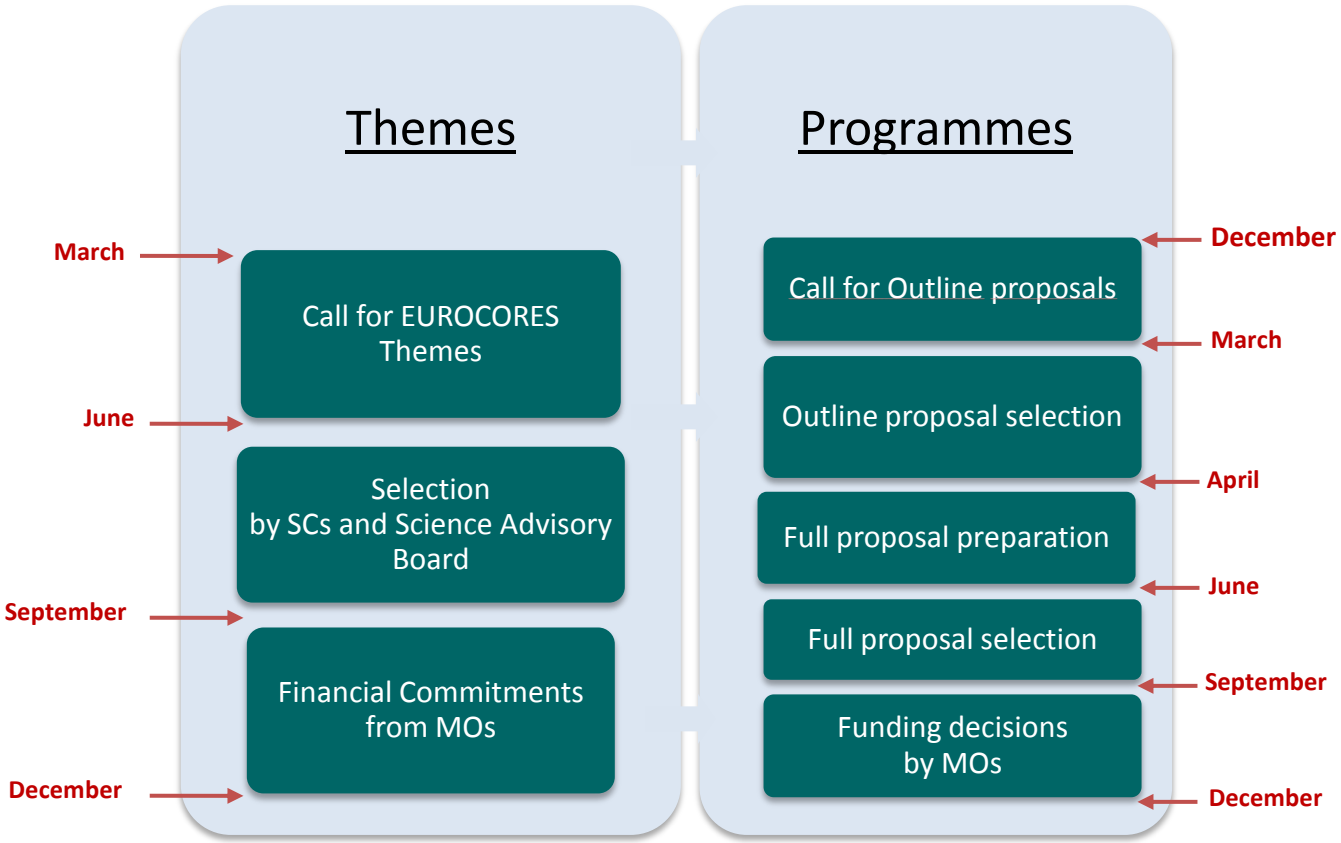


Figure 3: EUROCORES Main Events and Timeline

The Call for theme proposals marks the beginning of Phase 1, inviting new ideas which, if successful, will advance to Phase 2. At the beginning of Phase 2, calls for outline proposals will be launched based on the selected themes. Theme proposers will contribute to the drafting of the Call for outline proposals, under which they can compete along with other eligible scientists in the field. The theme proposals submitted should therefore contain the scientific core of a subsequent call for outline proposals.

During Phase 2, collaborative research projects will go through a two-stage solicitation and selection including international peer review. Based on the ranking of the joint peer review, the funding agencies participating in the call will allocate their committed funds to the individual projects relevant to them on the rank-ordered list.

Funded Collaborative Research Projects (CRPs) in a given EUROCORES Programme will undertake their collaborative research, networking and dissemination activities during Phase 3. Each CRP selected via a two-stage process may involve 4-7 Individual Projects. The current time line of the EUROCORES Scheme focusing on Theme selection and Project Selection is illustrated in Figure 3. In this figure the Research and Networking phase is not shown. The latter starts with a Kick-Off Meeting (or a launch conference) about three months after the completion of the funding decisions and it lasts three years.

Once the CRPs of a EUROCORES Programme start their research phase, the programme is expected to implement networking activities across the funded CRPs through workshops, conferences, schools, specialised courses, short-term visits etc. Networking and dissemination activities are the key characteristics and the main objectives of the EUROCORES Programme. They are meant to encourage and facilitate scientific collaboration and diffusion across the Collaborative Research Projects (CRPs) within a given domain or if appropriate across different domains and programmes.

2.4 Governance of the EUROCORES Scheme

As a result of the 5 years of managing the EUROCORES Scheme under the EC Contract and following the strong will of the ESF Member Organisation expressed to take full ownership of the Scheme, a new Governance Structure for the Scheme has been developed as described below. The main new item is the creation of the EUROCORES Scheme Management Committee with the overall responsibility for the Scheme as a formal representation of the participating Member Organisations. The governing bodies and committees involved at different stages of the governance of the Scheme and their interactions with the ESF are illustrated in Figure 4. The management structure for a typical EUROCORES Programme will be described separately.

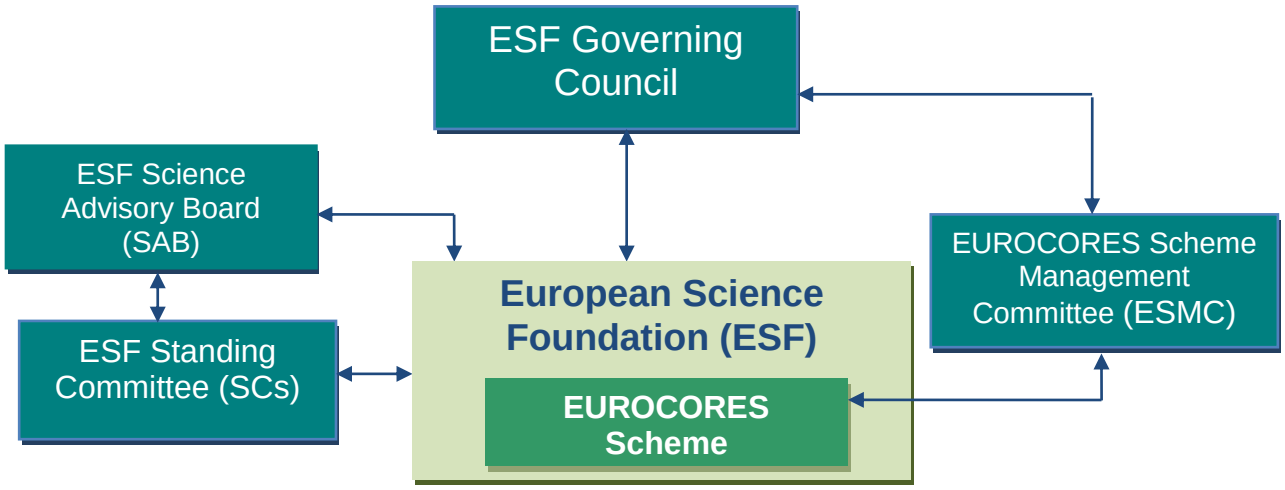


Figure 4: Current Governance Structure of the EUROCORES Scheme

- The Governing Council is the main decision making and governing body for all ESF Instruments including EUROCORES.
- Within the ESF office, the EUROCORES Scheme is managed through contributions of various offices and personnel. Figure 5 illustrate these groups and their interactions for the coordination and management of the Scheme.
- The ESF Standing Committees have the overall responsibility of assessing and ranking theme proposals submitted in response to the call. They are also responsible for the quality assurance for the running programmes within their corresponding science Unit at the ESF.
- The ESF Science Advisory Board (SAB): Standing Committees provide their recommendations on the ranking of theme proposals in their remit to the ESF Chief Executive and to the SAB.

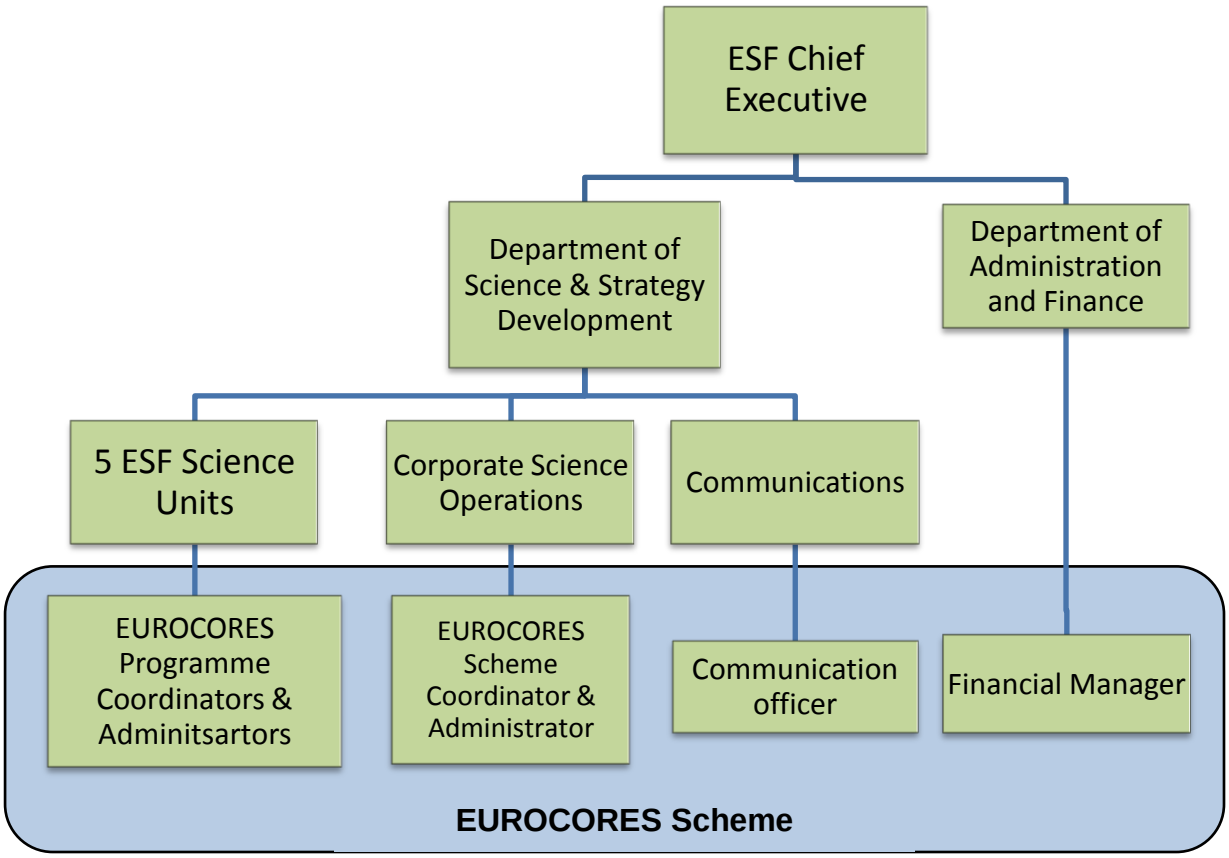


Figure 5: Coordination and management of the Scheme within ESF Organisational Structure

The EUROCORES Scheme Management Committee

With the closing of the EC Contract for EUROCORES, the Scheme relies entirely on the commitments and participation of the MOs for the financing of both the collaborative research as well as the coordination and networking components. It is therefore necessary to formalize the ownership of the MOs into the management structure of the scheme in the form of a new dedicated advisory body to complement the ESF's governance including the final ratifications of the Governing Council. With the conclusion of the EUROCORES contract and hence removal of its contractual framework and obligations, a new decision

making structure has been put in place such that high level operational and policy related issues can be discussed towards making overall consensus in support of the Scheme.
The ownership of the Scheme and its management by the MOs has therefore been refined and consolidated through the EUROCORES Scheme Management Committee (ESMC). Approved by the Governing Council, the ESMC is created by transforming what used to be called the annual EUROCORES Workshops. Up to the end of 2008, six annual EUROCORES Workshops were held and reported as part of the periodic reports. The seventh workshop marks the first annual meeting of the ESMC.

The Terms of Reference (ToR) for the ESMC have been prepared and discussed in the first meeting of the committee in June 2009. The final version of the ToR will be confirmed in the second meeting of the committee to be held in November 2009. The ESMC shall normally meet once a year. It consists of one mandated representative from each participating Member Organisation. Observers can also be nominated both from Member Organisations and other credible and relevant non-Members with strong intention for participating in the Scheme. The ESMC will act as the overall Management Committee for the whole Scheme.

Individual EUROCORES Programmes Governance and Management

Each Individual EUROCORES Programme is governed with the contributions of three main governing committees described below. In addition, an ESF Science Officer and an Administrator provide the coordination support to the programme.

Review Panel (RP)

A dedicated international scientific panel with 7-12 leading experts on the topics covered in the programme. The members of the Review Panel are independent and do not represent their country nor national funding agencies, although suggestion for nomination of the panel comes from the participating member organisations. The Panel plays a key scientific role in determining the quality of the selected proposal and the achievements of the programme.

The Review Panel is responsible for the selection of outline proposals, as well as the selection and ranking of full proposals. They are also responsible for the mid-term and final-evaluation of the programme. The membership is open and voluntary and lasts for the duration of the programme.

Programme Management Committee (MC)

This committee is the main decision-making body for the overall management of a given programme. The committee represents the interests of the participating EUROCORES Funding Organisations (EFOs). Each Organisation-normally an ESF Member Organisation-has one representative in the committee. The ESF Programme coordinator is also a member of the MC. The committee is formed with the launch of the call for outline proposals and meets at specific milestones of the programme for decision making and monitoring. The committee's first meeting takes place soon after the Review Panel conducts their Full Proposal selection and ranking. The MC members will make their funding decisions based on the rank-ordered list produced by the Review Panel. At the start of the Research and Networking phase, the committee is provided with a Networking Work-plan that is produced for each programme by its Scientific Committee. This plan outlines the overall networking and dissemination activities that the community would envisage during the life of the programme. The plan is prepared by the Scientific Committee assigned to each programme. It can be modified by the committee as the research progresses and as new

issues and ideas are identified. The MC is also responsible for endorsing the mid-term and final evaluation of the programme that will be conducted by the RP.

Scientific Committee (SC)

At the launch of the Research and Networking phase of a EUROCORES programme, a Scientific Committee is constituted with the mandate of discussing, initiating, enabling, and monitoring scientific networking and dissemination activities within the programme and across its various Collaborative Research Projects (CRPs). The committee consists of one representative from each of the funded CRPs plus the EUROCORES Programme Coordinator (EPC) representing the ESF. The CRP representatives in the SC are the Project Leaders of the CRP and represent all Principal Investigators involved in the programme. The SC may invite observing members from outside of the programme if necessary.

At the beginning of the networking phase of the programme, the SC with the help of the EPC drafts a Networking and Dissemination work-plan that forms the baseline for the allocation of networking funds across various types of activities. The work-plan is submitted to the Management Committee of the programme and may be included in the overall reporting to the Scheme Management Committee (ESMC).

3 Main Achievements

2009 marked a new beginning for the EUROCORES Scheme under the full ownership and governance of the ESF Member Organisations. The FP6 contract that funded the Scheme for 5 years was a very important investment leading to significant scientific contributions and results across 40 multi-national collaborative research programmes involving about 160 research groups. It has also enabled the development of a unique operational capability and know-how at the ESF.

In its new phase, the Scheme relies entirely on the commitments and participation of the MOs for its financing as well as its management. It is formidable to reporting here on the scientific achievements of the programmes that have been created under the Scheme. The overall accomplishments of the scheme as an instrument will be described in the following Sections.

3.1 Evolution of the Scheme

As mentioned before, the EUROCORES Scheme has gone through 6 years of continuous improvement and enhancements. Numerous areas of improvements and lessons learned have been identified and utilised during the last 6 years in order to improve the Scheme. The initial target in the EC contract was to create about 30 EUROC ORES Programmes through the support of the Commission. There are now more than 40 programmes in various phases of operations as discussed in the following Sections.

In addition to the periodic reporting provided to the Commission and the normal monitoring of the contract, the evolution of the Scheme has been steered and monitored with close participation of the EUROCORES Funding Organisations (EFOs). This has been achieved through annual workshops bringing together responsible members of staff from the ESF and the representatives of the EFOs and possibly other relevant observing members such as European ministries, non ESF Member Organisations, International funding organisations (e.g., US NSF).

The annual workshops of the Scheme are listed below:

- November 2004 – First EUROCORES Workshop
- March 2005 – Second EUROCORES Workshop
- June 2006 – Third Workshop (with Research Performing Organisations)
- October 2006 – Fourth Workshop
- May 2007 – Fifth Workshop September 2008
- First meeting of the EUROCORES Scheme Management Committee (ESMC) – June 2009

What would have been the Seventh annual workshop for EUROCORES in September 2009 became the first meeting of its Management Committee (ESMC). The first workshop was dedicated to discussing the ways of improving the scheme by discussing the National and European processes and standards. The implementation of networking was also discussed as the key mechanism for producing synergy and added value for science in Europe and thereby reducing fragmentation.

Various modalities were tested for the Scheme at the beginning of its life with a major reorganisation that emerged in 2004 and was approved in 2005 where the new procedures were presented and approved. These new procedures approved by the ESF Governing Council in April 2005 included items such as:

- A common annual and open Call for new EUROCORES themes to be turned into programmes. The first Call for EUROCORES themes was published in March 2004.
- A new timeline for the EUROCORES decision making process
- Requesting a funding indication at the time of decision by EFOs to participate
- Quality assurance by the ESF through the establishment of the EUROCORES Committee (that was later replaced by the ESF Science Advisory Board in Mid 2007 onwards according to the new ESF governance), including:
    - Selection of new EUROCORES themes after assessment by the ESF Standing Committees based on expert assessments
    - Viability check of the new EUROCORES themes before publication of the Call for proposals. This viability check was done taking into consideration the level of financial commitments received from the EFOs as well as the quality of the call for proposals.

In 2007, ESF initiated an independent review of the EUROCORES Scheme by an international panel. In general it was concluded that EUROCORES was being appreciated as a useful instrument for both the EFOs and the scientists. However there were procedural areas that were identified as needing improvement. This included the funding models being used, the time line and the quality assurance in peer review. In this report three alternative models were suggested, including what was later called the Topical EUROCORES or TOP-CORES. The Implementation of the Scheme Review recommendations started in 2008. Procedurally, the time scale has been significantly improved and streamlined and means of assuring quality of the procedure at various stages have also been incorporated. With access to ESF Member Organisation Forum on Peer Review and other internal initiatives, the peer review used for project selection in EUROCORES has also been enhanced. The consistency of the procedures across scientific domains has also been a driver for improvements. By the end of 2008, the Scheme acquired:

- A bottom-up and transparent process for the Selection of new EUROCORES themes
- A consistent and reliable process for the selection of outline proposals and full proposals across all domains

- A shorter funding decision process
- Streamlined networking procedures and guidelines

With the EC contract, the EUROCORES Scheme was enabled to employ qualified programme coordinators with relevant scientific background and experiences to be able to add value to the programmes assigned to them. Supported by experienced administrators, the EUROCORES Programme Coordinators (EPCs) bring value to the programmes along two major lines of activity:

1- Coordination and management of the EUROCORES Programmes

These include common practices in managing large scale research programmes such as:

- Liaison between the ESF, the Management Committees, the Review Panels and the Scientific Committees of the programmes they coordinate (normally about 4 at a given time)
- Publication of the Call for Proposals, including all administrative and dissemination support
- Setting up of the international peer review at various stages
- Monitor the progress in the Collaborative Research Projects (CRPs)
- Work in close cooperation with the Management committee and Review Panel
- Communication and dissemination of the results
- Web based resources and support
- Participation in the overall coordination and management of the Scheme

2- Promotion and enabling of scientific networking activities

One of the key contributions of the EPCs is the promoting and mobilisation of networking activities across the CRPs of a given programme or if applicable across different programmes. Past experiences of the Scheme show that the degree of willingness to initiate and establish cross-CRP networking activities is quite varied from one science community to another. The role of the EPCs is therefore a crucial one in mobilising and promoting these activities when appropriate. These activities have agreat potential for the creation of added value in science. It helps

- Creating a transversal dimension to the collection of CRPs, thereby enhancing the exchange of knowledge and synergy.
- Building on complementing strengths and points of view in the different Collaborative Research Projects;
- Training of early career scientists in emerging domains

Examples of networking activities are conferences, workshops, summer-schools, specialised training courses, Conference sessions and symposia and others.

3.2 Main results

At the time of writing of this report, the EUROCORES Scheme had generated 52 programmes at various stages of development. There will be 5 to 9 more programmes added to this by January 2010 and with similar numbers expected each year thereafter. Figure 6, below provides a snapshot of all the 52 programmes with their current status indicated. The 52 programmes created so far, have involved more than 65 different funding agencies from over 30 countries. 23 of these programmes are currently in their research and networking phase, bringing together more than 110 million Euros of national research funding. The programmes have so far generated more than 600 peer-reviewed publications.

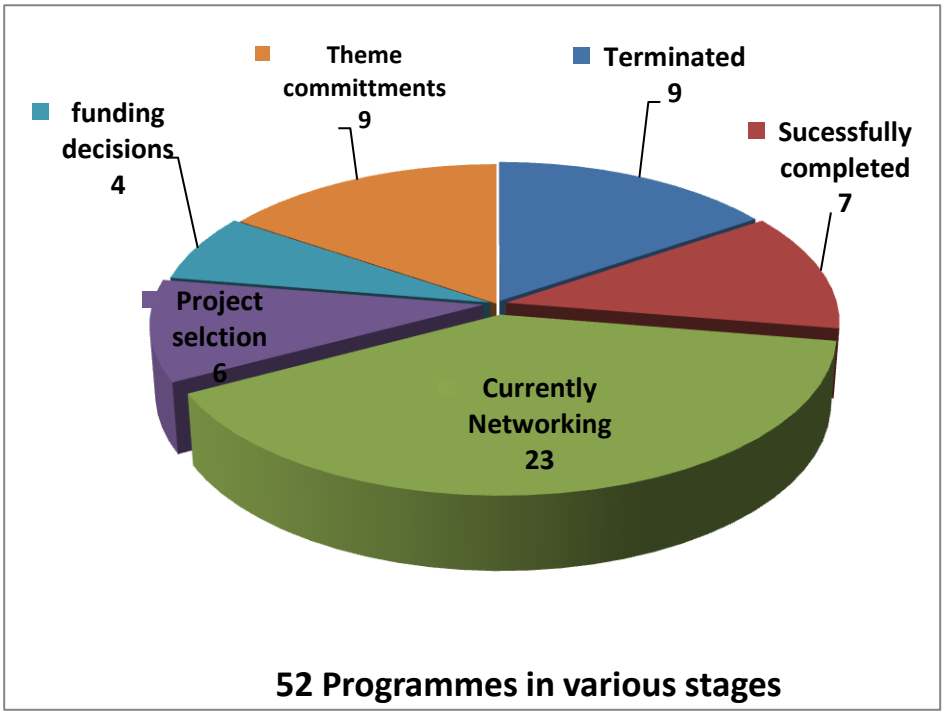


Figure 6: Break down of number of programmes in various stages

In the following Sections a general description of the various programmes and their status at the time writing of this report will be provided as well as key statistics on the characteristics of the projects within these programmes. Furthermore, the highlights of the scientific achievements of these programmes will be illustrated briefly. Some programme-specific success stories written by Programme Coordinators are provided In Appendix B: Sample Success Stories from EUROCORES Programmes.

3.2.1 Overview of all EUROCORES Programmes to date

Programmes that completed their activities before 31 March 2009:

1. On the Origin of Man, Language and Languages (OMLL)
2. Imaging, monitoring and modelling the physical, chemical and biological processes in the European passive continental Margins (EUROMARGINS)
3. Self-Organised Nano-Structures (SONS I)
4. Dynamic Nuclear Architecture and Chromatin Function (EuroDYNA)
5. EuroCLIMATE
6. Development of a Stem Cell Tool Box (EuroSTELLS)
7. European Mineral Sciences Initiative (EuroMinScI)

Programmes in their Research and Networking Phase:

1. Pan-European Clinical Trials (ECT)
2. Science of Protein Production (EuroSCOPE)
3. Challenges of Biodiversity Science (EuroDIVERSITY)

4. Smart Structural Systems Technologies (S3T)
5. Histories from the North – environments, movements, narratives (BOREAS)
6. Consciousness in a Natural and Cultural Context (CNCC)
7. European Collaborative Research Projects in the Social Sciences Call 2005 (ECRP I)
8. Fundamentals of NanoElectronics (FoNE)
9. Self-Organised Nano Structures Call 2005 (SONS II)
10. Biodiversity and Ecology of Deep-See Ecosystems (EuroDEEP)
11. European Collaborative Research Projects in the Social Sciences Call 2006 (ECRP II)
12. Cold Quantum Matter (EuroQUAM)
13. Quality control of Gene Expression – RNA Surveillance (RNA Quality)
14. Inventing Europe. Technology and the Making of Europe, 1850 to the Present (Inventing Europe)
15. The evolution of cooperation and trading: from microbes to man (TECT)
16. Challenges of Marine Coring (EuroMARC)
17. European Collaborative Research Projects in the Social Sciences Call 2007 (ECRP III)
18. Stress and Mental Health (EuroSTRESS)
19. Logical Modelling in Interaction, Communication, Cognition and Computation (LogICCC)
20. Cross-national and Multi-level Analysis of Human Values, Institutions and Behaviour (HUMVIB)
21. 4-D Topography Evolution in Europe: Uplift, Subsidence and Sea Level Change - The Geosciences of Coupled Deep Earth - Surface Processes (TOPO-EUROPE)
22. Friction and Adhesion in Nanomechanical Systems (FANAS)
23. European QUAntum StandARds and Metrology (EuroQUASAR)

Programmes in Funding Decision Phase:

1. Higher Education and Social Change (EuroHESC)
2. Better Analyses Based on Endangered Languages (EuroBABEL)
3. How cells shape and utilize their membranes (EuroMEMBRANE)
4. European Collaborative Research Projects in the Social Sciences Call 2008 (ECRP IV)

Programmes in Project Selection Phase:

1. Maximizing the Impact of Graphene Research in Science and Innovation (EuroGRAPHENE)
2. Ecological and evolutionary functional genomics (EuroEEFG)
3. European Comparisons in Regional Cohesion, Dynamics and Expressions (EuroCORECODE)
4. Synthetic Biology: Engineering Complex Biological Systems (EuroSYNBIO)
5. Origin of the elements and nuclear history of the Universe (EuroGENESIS)
6. European Collaborative Research Projects in the Social Sciences Call 2009 (ECRP V)

Programmes that have been terminated before reaching research phase:

1. Genetic Epidemiology (EuroGEAR)
2. European solar terrestrial and atmospheric research (E-STAR)
3. Ecological Impact, Diversity and Molecular Biology of Cyanobacteria (EuroCYANO)
4. Coping with Risk: Vulnerability, Risk Assessment and Decision Making in an Uncertain Europe (EuroCORIS)
5. The impact of biochemicals and infochemicals on trophic dynamics and nutrient cycling in planktonic food webs (DYNAPLAN)
6. A study of the interaction of genetic and lifestyle factors on the incidence of coronary heart disease

(EuroHEART)
7. Chemical Control at the Nanoscale (EuroNANOCHEM),
8. Biogenic Volatile Organic Compounds in the Carbon Cycle – Climate System: Present, Past, and Future Projections (EuroVOC4)
9. European collaborative research on cooling in acute ischemic stroke (EuroCOOLS)

Programmes with undetermined status at the time of writing this report:

1. Bio-inspired Engineering of Sensors, Actuators & Systems (EuroBIOSAS)
2. Evaluating the safety of human Assisted Reproduction Technologies: a multidisciplinary approach (EuroSafeArt)
3. Understanding and Misunderstanding: Cognition, Communication and Culture

3.2.2 Direct and Indirect Benefits Resulted from the Contract

Direct benefits enabled by18 M€ of EC funding under FP6 contract can be summarised as follows:

- From the 30 Programmes that have reached their Networking and Dissemination phase:
  - **1,770** Outline Proposals have been submitted
  - **752** Full proposals have been received consisting of:
    - 2,894 Individual Projects (IPs) and
    - 630 Associated Projects (APs)
  - Leading to 213 Funded Consortia (CRPs)
  - Including 993 Funded IPs and about 281 APs
  - Overall success rates:
    - For theme proposals it has been 13-14% depending on the outcome of 2009 call
    - For project Outline Proposals it has been 43% at the Outline Proposals stage, and
    - For Full proposals it has been 13%

- Scientific Networking and Dissemination results:
  - Examples (last 18 months only):
    - 2.9 M€ Networking and
    - 620 K€ Dissemination
  - Until end of 2008:
    - More than 45 Conferences
    - About 140 Workshops
    - Numerous summer schools and training courses

- The programmes have leveraged 150-160 M€ of multi-nationally funded collaborative research With impressive scientific output:
  - 33 Patents
  - More than 5,000 Scientific publications
    - Of which 3108 are peer reviewed
    - 1,232 in Conference Proceedings
    - 755 Books (chapters, editors, authors)
    - 4,393 Oral presentations and invited talks
    - 907 Posters

Indirect benefits enabled through the EUROCORES Scheme:

- Management of EUROCORES has entailed:
  - The formation of 42 Management Committees across the various programmes with each having an average of 10-15 members representing the participating Member Organizations.
    → Hence a valuable arena for MO interactions and joint activities
  - Formation of 42 International Review Panels each having an average 10-15 scientists as members
  - **Conducting > 2500 external expert assessments**
    → Hence, creation of a unique source of ESF competency and strategic asset for Peer Review and Evaluation

Dissemination

A full Section is devoted to reporting on the dissemination activities of the Scheme (see Section 3.2.5)
Typical leaflets, and brochures produced by various programme are illustrated in Figure 7 and Figure 8.

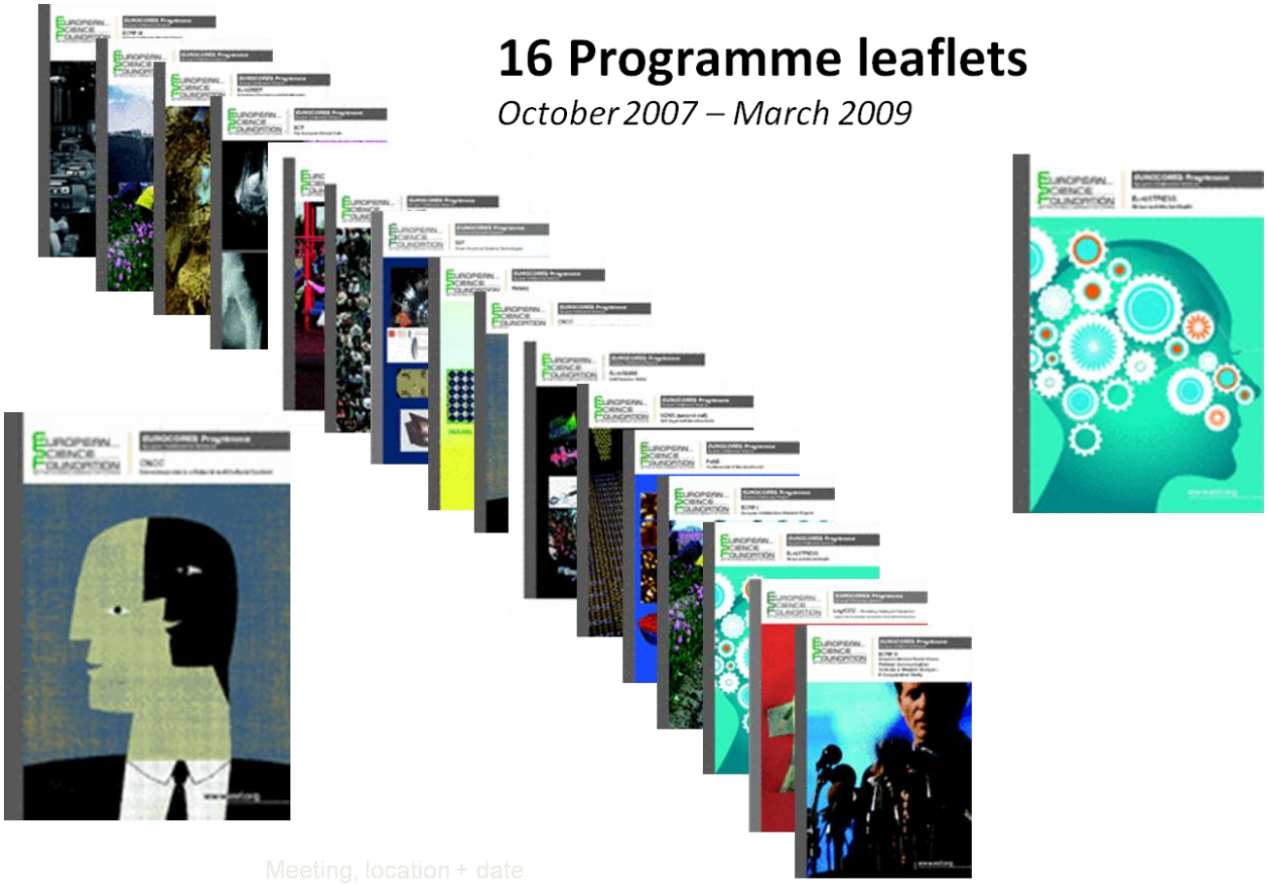


Figure 7: Typical Programme leaflets

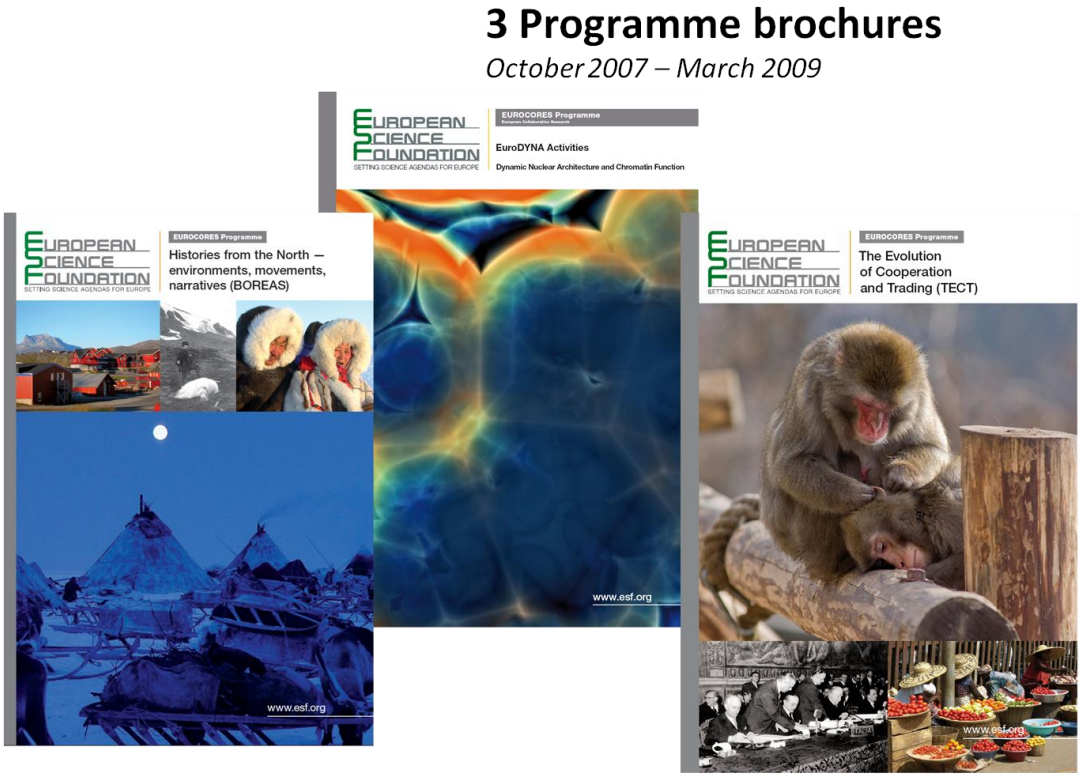


Figure 8: Typical Programme Brochures

3.2.3 Evolution of theme proposals over the last 5 years

Since the launch of the first call for Theme proposals in 2005, the Scheme has attracted 237 theme proposals, as shown in Figure 9 below. Also shown in this figure is the number of theme proposals that were turned into actual EUROCORES programmes each year. More than 2100 scientists representing all fields of science from across European countries and beyond have participated as co-proposers of these themes.

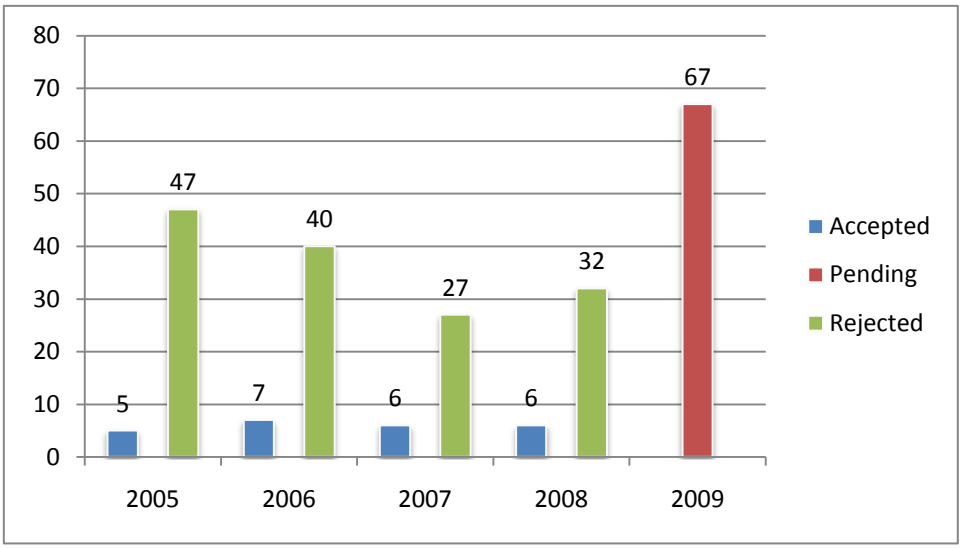


Figure 9-Status of Submitted EUROCORES Theme Proposals during 2005-2009

At the time of writing of this report, the selection of 2009 themes was not completed and hence cannot be reported. It is envisaged that for 2009, about 6 to 9 themes will be recommended for launch.

3.2.4 Key statistics on the results of the various programmes

Details of the various programmes mentioned above are provided in Table 1 below.

Table 1: Key statistics for Programmes in various stages

	Number of outline proposals	No. of IPs	No. of APs	Number of CRPs reviewed	No. of IPs	No. of APs	Number of funded CRPs	No. of IPs	No. of APs	Amount of funding (in M €)
Programmes before 2005										
OMLL	140	140	N/A	70	N/A	N/A	20	43		6
EUROMARGINS	61	165	N/A	24	125	2	14	76	2	13.6
SONS I	146	657	N/A	57	267	18	16	73	8	
ECT	165	N/A	N/A	6	N/A	N/A	2	14	6	2.3
EuroDYNA	57	202	14	35	172	7	9	39	3	7.2
EuroCLIMATE	102	666	106	35	196	51	9	50	14	6
EuroSCOPE	17	69	10	10	45	8	3	14	7	2
EuroSTELLS	33	185	15	7	44	6	3	15	6	3.2
EuroMinScI	48	266	63	21	152	29	9	43	21	2.5
EuroDIVERSITY	300	1600	679	53	331	85	10	62	33	9.3
ECRP I	N/A			49		4	8	32		4.6
EuroGEAR (Terminated)	9	38	20	3	15	16	N/A			
S3T	55	238	14	23	87	28	7	25	14	3.1
FoNE	31	159	25	16	91	19	5	25	2	4.7
SONS II	56	268	40	24	122	28	7	39	11	7.3
BOREAS	28	129	53	12	51	18	7	27	12	5.7
CNCC	34	152	43	17	74	16	5	25	8	4.3
EuroMARC	26	146	41	14	86	12	7	37	3	7.5
ECRP II	N/A			26		10	5	26	4	4.8
EuroDEEP	11	52	11	9	41	11	4	17	7	3
New Programmes										
Call for themes 2005										
EuroQUAM	24	128	24	17	102	23	5	38		6.4
RNAQuality	12	65	8	5	27	2	3	16		3.5
Inventing Europe	23	123	40	13	60	43	4	19	19	3.4
TECT	21	110	49	9	44	26	5	21	18	3.2
Sum	*80*	*426*	*121*	*555*	*2132*	*462*	*167*	*776*	*198*	
Call for themes 2006										
ECRP III	N/A						2	8	2	1.5
EuroSTRESS	11	47	15	7	31	4	4	13	5	4.2
EuroQUASAR	7	44	12	5	33	9	3	17	10	3.6
FANAS	18	94	8	12	69	6	7	36	8	7.1
TOPO-Europe	47	305	198	23	165	53	10	61	13	13.9
LogICCC	34	155	46	15	70	19	8	29	19	6.4
HumVIB	28	125	36	14	67	10	6	24	7	4.1

	Number of outline proposals	No. of IPs	No. of APs	Number of CRPs reviewed	No. of IPs	No. of APs	Number of funded CRPs	No. of IPs	No. of APs	Amount of funding (in M €)
Sum	*145*	*770*	*315*	*76*	*435*	*101*	40	188	64	40.8
Call for themes 2007										
EuroBABEL	37	144	59	19	83	20				
EuroHESC	22	117	14	9	50					
EuroMEMBRANE	35	109	38	17	82	19	6	29	19	
ECRP IV	N/A			27	112	28				
Sum	*94*	*370*	*111*	*72*	*327*	*67*	*6*	*29*	*19*	*0*
Call for themes 2008										
EuroGRAPHENE	23	119	12							
EuroEEFG	59	271	40							
EuroCORECODE	15	64	20							
EuroSYNBIO	24									
EuroGENESIS	5	26	19							
EuroCOOLS (Terminated)	6									
ECRP V	N/A			49						
Sum										
Total	**1770**	**7354**	**1847**	**752**	**2894**	**630**	**213**	**993**	**281**	**154.4**
Average										
Overall success rate				**42.5%**			**12.6%**			

3.2.5 Collaboration landscape enabled by EUROCORES

The unique opportunity that EUROCORES Scheme has given to the European investigators for exploring and establishing scientific collaborations with their peers in Europe and elsewhere has provided the ESF with vast amounts of information that could be analysed and utilised to infer strategy and policy related trends and patterns. At the request of one of the MOs participating in the Scheme, a complete analysis of the collaboration landscape enabled by the Scheme at the levels of Theme proposals, and Outline Proposals are being conducted. At the time of writing of this final report, the results for the Theme proposals can be presented in the form of a "***Collaboration Matrix***" as discussed below.

GENERATING THE COLLABORATION MATRIX

In order to gain insight about the collaboration structure between the countries in EUROCORES, the notion of "Collaboration Matrices" is introduced. These are arrays of numbers providing number of collaborations between country pairs in a given period. These matrices can be defined based on various key parameters, for example:

- For a specific year or over several years
- Status of the collaboration:
  - **Intended**: collaboration as suggested in either Theme proposals or Outline Proposals
  - **Recommended**: consortia that were recommended for funding by international review panel

- **Funded**: consortia that were actually received funding

The Intended Collaboration Matrices generated from the Theme Proposals for years 2005-2009 and the matrix covering that whole period are shown in the following pages. But first the way the entries of these matrices are determined will be explained.

Let t=1,2;3..,T denotes the proposal category, for example Theme Proposals, and let n(t) denotes the number of co-proposers (Principal Investigators in case of Outline Proposals) in proposal t. Then, the total number of collaborations for a given period will be given by:

$$\sum_{t=1}^{T} C\binom{n(t)}{2}$$

where $C\binom{n(t)}{2}$ is the combinations of 2 elements from the set with $n(t)$ elements.

A Simple Illustrative Example

Table 1 shows Theme Proposals and their collaborative parties. For example, Theme-1 consists of three co-proposers, or Principal Investigators (PI) from three different countries. All possible pairs of collaborations for each proposal are given in Table 2. Finally, the collaboration pairs in Table 2 are distributed to form a Collaboration Matrix given in Table 3. For this simple example, T=3, n(1)=3, n(2)=4, n(3)=3 and n(4)=4. And hence, the total number of collaborations will be

$$C\binom{3}{2} + C\binom{4}{2} + C\binom{3}{2} + C\binom{4}{2} = 18.$$

Theme	PI	Country
Theme-1	PI-1	Country-1
	PI-2	Country-2
	PI-3	Country-3
Theme-2	PI-4	Country-1
	PI-5	Country-2
	PI-6	Country-3
	PI-7	Country-4
Theme-3	PI-8	Country-1
	PI-9	Country-2
	PI-10	Country-1
Theme-4	PI-11	Country-2
	PI-12	Country-3
	PI-13	Country-4
	PI-14	Country-4

Table 2-Theme Proposals for a given year

Themes	All possible pairs of collaboration	
Theme-1	PI-1	PI-2
	PI-1	PI-3
	PI-2	PI-3
Theme-2	PI-4	PI-5
	PI-4	PI-6
	PI-4	PI-7
	PI-5	PI-6
	PI-5	PI-7
	PI-6	PI-7
Theme-3	PI-8	PI-9
	PI-8	PI-10
	PI-9	PI-10
Theme-4	PI-11	PI-12
	PI-11	PI-13
	PI-11	PI-14
	PI-12	PI-13
	PI-12	PI-14
	PI-13	PI-14

Table 3-Collaborations in each Theme Proposal

	Country-1	Country-2	Country-3	Country-4
Country-1	(PI-8, PI-10)	(PI-1, PI-2) (PI-4, PI-5) (PI-8, PI-9) (PI-9, PI-10)	(PI-1, PI-3) (PI-4, PI-6)	(PI-4, PI-7)
Country-2	(PI-1, PI-2) (PI-4, PI-5) (PI-8, PI-9) (PI-9, PI-10)		(PI-2, PI-3) (PI-5, PI-6) (PI-11, PI-12)	(PI-5, PI-7) (PI-11, PI-14) (PI-11, PI-13)
Country-3	(PI-1, PI-3) (PI-4, PI-6)	(PI-2, PI-3) (PI-5, PI-6) (PI-11, PI-12)		(PI-6, PI-7) (PI-12, PI-13) (PI-12, PI-14)
Country-4	(PI-4, PI-7)	(PI-5, PI-7) (PI-11, PI-14) (PI-11, PI-13)	(PI-6, PI-7) (PI-12, PI-13) (PI-12, PI-14)	(PI-13, PI-14)

Table 4-Collaborations Matrix – an illustrative example

Evidently the given matrix is symmetric and the data representing the number of collaboration between two given countries is repeated twice (once in the upper triangular and again in the lower triangular blocks separated diagonally). The total number of collaborations for a given country including co-participation links among scientists from that same country is provided on the last column and the last row. In the following Matrices various examples are provided.

Further analysis and interpretation of the data provided in these matrices will be most valuable for national organisations, the EU research managers and the scientists. Collaboration landscape (intended) as a result of co-proposing Themes for every year during 2005-2009 are shown in Figures 10 to 14.

The data is given along each row (and the corresponding column) in decreasing order of the number of collaborations linked to the given country. However, the mentioned row and column consists of two such ordered lists of countries separated into groups. The first group corresponds to the main ESF MOs and the second group corresponds to the rest of the countries or groups of countries. Figure 15 gives the Collaborations Matrix through the whole period of 2005-2009. Figures 16 to 18 illustrate the Collaboration Matrices for intended, recommended and funded Full Proposals, over the entire period of 2001-2007 respectively.

	UK	DE	IT	FR	NL	CH	ES	NO	PT	HU	AT	BE	GR	SE	FI	CZ	DK	PL	IE	Other MOs	US	Non MOs EU	CA	IL	Total
UK	**30**	65	37	56	51	38	20	16	9	10	8	11	6	18	12	8	14	9	6	8	10	1	4	1	**448**
DE	65	**22**	42	55	40	35	18	14	13	15	11	8	8	13	6	9	9	8	5	11	12	3	3	2	**427**
IT	37	42	**51**	58	13	16	30	22	13	10	10	20	21	4	13	7	6	4	5	26	4	4	1	2	**419**
FR	56	55	58	**13**	30	26	18	14	17	7	8	11	9	12	8	7	10	5	2	10	8	2	2	1	**389**
NL	51	40	13	30	**13**	21	17	6	6	5	12	6	1	7	11	4	1	4	3	2	6	0	2	0	**261**
CH	38	35	16	26	21	**12**	7	2	13	6	7	2	2	8	2	6	5	8	1	1	1	0	5	0	**224**
ES	20	18	30	18	17	7	**2**	6	7	1	3	6	5	3	7	2	1	3	2	5	2	0	0	0	**165**
NO	16	14	22	14	6	2	6	**4**	1	8	2	3	5	1	5	4	5	1	3	7	6	2	0	2	**139**
PT	9	13	13	17	6	13	7	1	**8**	1	4	0	3	1	2	3	2	3	0	3	1	2	1	0	**113**
HU	10	15	10	7	5	6	1	8	1	**3**	7	1	6	1	0	5	1	1	1	6	6	4	1	3	**109**
AT	8	11	10	8	12	7	3	2	4	7	**5**	1	0	2	3	4	1	2	0	8	0	3	1	0	**102**
BE	11	8	20	11	6	2	6	3	0	1	1	**2**	3	3	5	0	6	0	0	5	0	0	0	0	**93**
GR	6	8	21	9	1	2	5	5	3	6	0	3	**1**	1	2	3	0	1	0	6	4	2	0	2	**91**
SE	18	13	4	12	7	8	3	1	1	1	2	3	1	**1**	0	2	4	2	0	2	1	0	1	0	**87**
FI	12	6	13	8	11	2	7	5	2	0	3	5	2	0	**0**	0	1	1	1	3	1	0	0	0	**83**
CZ	8	9	7	7	4	6	2	4	3	5	4	0	3	2	0	**0**	0	1	0	3	3	2	1	1	**75**
DK	14	9	6	10	1	5	1	5	2	1	1	6	0	4	1	0	**3**	1	1	0	1	1	0	0	**73**
PL	9	8	4	5	4	8	3	1	3	1	2	0	1	2	1	1	1	**0**	0	0	0	0	1	0	**55**
IE	6	5	5	2	3	1	2	3	0	1	0	0	0	0	1	0	1	0	**1**	3	0	0	0	0	**34**
Other MOs	8	11	26	10	2	1	5	7	3	6	8	5	6	2	3	3	0	0	3	**4**	2	1	0	1	**117**
US	10	12	4	8	6	1	2	6	1	6	0	0	4	1	1	3	1	0	0	2	**1**	2	0	2	**73**
Non MOs EU	1	3	4	2	0	0	0	2	2	4	3	0	2	0	0	2	1	0	0	1	2	**0**	0	1	**30**
CA	4	3	1	2	2	5	0	0	1	1	1	0	0	1	0	1	0	1	0	0	0	0	**0**	0	**23**
IL	1	2	2	1	0	0	0	2	0	3	0	0	2	0	0	1	0	0	0	1	2	1	0	**0**	**18**
Total	**448**	**427**	**419**	**389**	**261**	**224**	**165**	**139**	**113**	**109**	**102**	**93**	**91**	**87**	**83**	**75**	**73**	**55**	**34**	**117**	**73**	**30**	**23**	**18**	

Figure 10- Collaboration Matrix of Theme Proposals: 2005

	UK	DE	FR	NL	IT	CH	ES	SE	BE	FI	DK	PT	HU	PL	AT	IE	NO	GR	CZ	Other MOs	IL	US	Non MOs EU	Total
UK	**45**	68	66	63	53	40	28	28	21	19	21	15	11	14	10	5	7	12	4	30	5	6	3	**574**
DE	68	**20**	48	35	34	25	23	27	18	19	16	7	15	8	10	5	7	3	4	16	8	5	2	**423**
FR	66	48	**12**	31	30	24	21	14	18	11	8	14	8	5	2	11	4	4	2	6	12	3	3	**357**
NL	63	35	31	**24**	9	32	12	8	11	14	8	6	5	3	10	5	2	3	5	1	2	2	0	**291**
IT	53	34	30	9	**14**	18	18	10	9	9	5	10	4	2	4	3	2	4	1	16	11	2	4	**272**
CH	40	25	24	32	18	**7**	8	2	13	4	4	5	3	2	1	3	1	2	0	6	8	1	2	**211**
ES	28	23	21	12	18	8	**3**	9	11	9	4	9	5	3	5	3	3	4	2	10	6	2	4	**202**
SE	28	27	14	8	10	2	9	**9**	3	10	6	0	5	2	0	2	7	3	2	6	0	0	0	**153**
BE	21	18	18	11	9	13	11	3	**9**	7	2	2	3	1	0	0	1	4	0	7	3	1	1	**145**
FI	19	19	11	14	9	4	9	10	7	**2**	4	3	4	0	4	1	3	1	2	3	3	2	1	**135**
DK	21	16	8	8	5	4	4	6	2	4	**1**	0	3	4	3	3	4	1	1	7	0	1	0	**106**
PT	15	7	14	6	10	5	9	0	2	3	0	**4**	1	1	1	4	0	0	0	3	7	1	4	**97**
HU	11	15	8	5	4	3	5	5	3	4	3	1	**1**	3	1	2	3	0	0	2	0	1	0	**80**
PL	14	8	5	3	2	2	3	2	1	0	4	1	3	**0**	1	0	1	2	0	7	0	1	0	**60**
AT	10	10	2	10	4	1	5	0	0	4	3	1	1	1	**4**	0	0	0	2	0	0	0	0	**58**
IE	5	5	11	5	3	3	3	2	0	1	3	4	2	0	0	**1**	2	0	0	2	4	0	0	**56**
NO	7	7	4	2	2	1	3	7	1	3	4	0	3	1	0	2	**0**	0	0	0	0	0	0	**47**
GR	12	3	4	3	4	2	4	3	4	1	1	0	0	2	0	0	0	**0**	0	3	0	0	0	**46**
CZ	4	4	2	5	1	0	2	2	0	2	1	0	0	0	2	0	0	0	**0**	0	0	0	0	**25**
Other MOs	30	16	6	1	16	6	10	6	7	3	7	3	2	7	0	2	0	3	0	**18**	5	4	1	**153**
IL	5	8	12	2	11	8	6	0	3	3	0	7	0	0	0	4	0	0	0	5	**4**	0	3	**81**
US	6	5	3	2	2	1	2	0	1	2	1	1	1	1	0	0	0	0	0	4	0	**0**	0	**32**
Non MOs EU	3	2	3	0	4	2	4	0	1	1	0	4	0	0	0	0	0	0	0	1	3	0	**0**	**28**
Total	**574**	**423**	**357**	**291**	**272**	**211**	**202**	**153**	**145**	**135**	**106**	**97**	**80**	**60**	**58**	**56**	**47**	**46**	**25**	**153**	**81**	**32**	**28**	

Figure 11- Collaboration Matrix of Theme Proposals: 2006

	DE	UK	IT	FR	CH	ES	BE	NL	GR	SE	DK	AT	IE	CZ	FI	PL	NO	PT	HU	Other MOs	US	IL	Africa	Non MOs EU	Other	Total
DE	**23**	45	45	43	29	22	10	14	14	14	13	17	11	13	5	6	7	4	3	26	13	7	5	3	4	**396**
UK	45	**9**	34	28	18	20	10	15	7	11	8	4	8	8	7	3	3	4	3	12	4	3	1	1	0	**266**
IT	45	34	**9**	29	9	16	7	10	6	10	3	6	6	12	4	6	2	5	3	18	5	6	1	0	4	**256**
FR	43	28	29	**5**	10	16	6	8	6	7	6	6	3	7	5	4	2	5	3	13	4	4	1	3	4	**228**
CH	29	18	9	10	**17**	10	2	8	5	6	9	10	6	0	1	3	8	3	3	9	10	2	2	1	1	**182**
ES	22	20	16	16	10	**6**	15	6	10	5	3	3	7	2	4	3	1	3	1	10	2	2	1	0	0	**168**
BE	10	10	7	6	2	15	**19**	8	10	1	8	6	1	2	5	1	1	2	0	12	2	3	1	0	0	**132**
NL	14	15	10	8	8	6	8	**3**	1	7	7	3	0	2	3	2	2	1	1	2	2	1	0	0	0	**106**
GR	14	7	6	6	5	10	10	1	**2**	3	4	0	2	0	4	1	2	2	0	11	4	3	2	0	0	**99**
SE	14	11	10	7	6	5	1	7	3	**0**	4	1	1	0	2	2	1	2	2	5	2	2	1	0	0	**89**
DK	13	8	3	6	9	3	8	7	4	4	**0**	2	1	0	1	1	2	1	0	3	3	1	1	0	0	**81**
AT	17	4	6	6	10	3	6	3	0	1	2	**4**	0	3	0	0	1	1	0	1	1	0	0	2	2	**73**
IE	11	8	6	3	6	7	1	0	2	1	1	0	**3**	0	0	1	1	0	0	6	3	2	1	0	2	**65**
CZ	13	8	12	7	0	2	2	2	0	0	0	3	0	**2**	0	2	0	0	1	2	0	0	0	0	0	**56**
FI	5	7	4	5	1	4	5	3	4	2	1	0	0	0	**0**	1	1	2	1	4	1	1	0	1	0	**53**
PL	6	3	6	4	3	3	1	2	1	2	1	0	1	2	1	**0**	1	2	1	6	2	1	0	0	2	**51**
NO	7	3	2	2	8	1	1	2	2	1	2	1	1	0	1	1	**0**	1	0	4	4	1	1	0	0	**46**
PT	4	4	5	5	3	3	2	1	2	2	1	1	0	0	2	2	1	**0**	1	4	1	1	0	0	0	**45**
HU	3	3	3	3	3	1	0	1	0	2	0	0	0	1	1	1	0	1	**0**	1	0	0	0	0	0	**24**
Other MOs	26	12	18	13	9	10	12	2	11	5	3	1	6	2	4	6	4	4	1	**15**	13	7	3	3	6	**196**
US	13	4	5	4	10	2	2	2	4	2	3	1	3	0	1	2	4	1	0	13	**1**	3	2	1	2	**85**
IL	7	3	6	4	2	2	3	1	3	2	1	0	2	0	1	1	1	1	0	7	3	**0**	1	0	2	**53**
Africa	5	1	1	1	2	1	1	0	2	1	1	0	1	0	0	0	1	0	0	3	2	1	**0**	0	0	**24**
Non MOs EU	3	1	0	3	1	0	0	0	0	0	0	2	0	0	1	0	0	0	0	3	1	0	0	**0**	1	**16**
Other	4	0	4	4	1	0	0	0	0	0	0	2	2	0	0	2	0	0	0	6	2	2	0	1	**1**	**31**
Total	**396**	**266**	**256**	**228**	**182**	**168**	**132**	**106**	**99**	**89**	**81**	**73**	**65**	**56**	**53**	**51**	**46**	**45**	**24**	**196**	**85**	**53**	**24**	**16**	**31**	

Figure 12- Collaboration Matrix of Theme Proposals: 2007

	UK	DE	IT	FR	CH	ES	SE	NL	BE	GR	DK	NO	AT	FI	HU	PL	CZ	IE	PT	US	Other MOs	IL	CA	Asia	Africa	Non MOs EU	Other	Total
UK	**127**	125	69	75	52	49	47	47	25	37	15	9	23	24	10	9	17	3	4	43	25	13	30	2	1	1	3	**885**
DE	125	**40**	70	68	50	48	34	30	22	25	16	13	11	16	12	9	5	9	2	25	26	16	6	12	6	1	18	**715**
IT	69	70	**20**	54	22	32	18	19	16	10	9	8	4	5	6	8	2	2	2	10	8	5	2	2	1	0	3	**407**
FR	75	68	54	**13**	22	30	20	15	8	8	8	7	4	5	7	9	2	4	2	8	7	10	2	2	1	1	3	**395**
CH	52	50	22	22	**23**	18	20	16	4	6	13	11	8	5	7	4	1	3	3	17	8	12	2	4	2	0	6	**339**
ES	49	48	32	30	18	**3**	14	17	12	7	4	6	4	5	7	4	2	2	2	8	10	6	2	2	1	0	3	**298**
SE	47	34	18	20	20	14	**4**	18	6	7	9	7	4	5	4	3	2	2	3	11	7	9	2	4	2	0	6	**268**
NL	47	30	19	15	16	17	18	**13**	8	3	12	11	7	3	10	0	2	0	1	6	5	2	2	0	0	0	0	**247**
BE	25	22	16	8	4	12	6	8	**16**	7	12	3	9	2	1	2	3	1	0	5	4	6	2	2	1	0	3	**180**
GR	37	25	10	8	6	7	7	3	7	**2**	4	3	3	5	0	1	3	2	0	9	8	4	4	4	2	0	6	**170**
DK	15	16	9	8	13	4	9	12	12	4	**1**	4	5	1	1	2	2	1	0	3	2	7	0	2	1	0	3	**137**
NO	9	13	8	7	11	6	7	11	3	3	4	**1**	2	1	4	2	1	1	0	3	3	6	0	2	1	0	3	**112**
AT	23	11	4	4	8	4	4	7	9	3	5	2	**0**	2	2	1	3	0	0	3	2	2	2	0	0	0	0	**101**
FI	24	16	5	5	5	5	5	3	2	5	1	1	2	**0**	1	0	1	1	0	4	5	1	2	2	1	1	3	**101**
HU	10	12	6	7	7	7	4	10	1	0	1	4	2	1	**0**	2	1	0	1	0	4	4	0	0	0	0	0	**84**
PL	9	9	8	9	4	4	3	0	2	1	2	2	1	0	2	**0**	1	0	1	0	1	5	0	0	0	0	0	**64**
CZ	17	5	2	2	1	2	2	2	3	3	2	1	3	1	1	1	**0**	0	0	2	2	2	2	0	0	0	0	**56**
IE	3	9	2	4	3	2	2	0	1	2	1	1	0	1	0	0	0	**0**	0	2	2	1	0	2	1	0	3	**42**
PT	4	2	2	2	3	2	3	1	0	0	0	0	0	0	1	1	0	0	**0**	2	1	0	0	0	0	0	0	**24**
US	43	25	10	8	17	8	11	6	5	9	3	3	3	4	0	0	2	2	2	**3**	6	2	4	4	2	0	6	**188**
Other MOs	25	26	8	7	8	10	7	5	4	8	2	3	2	5	4	1	2	2	1	6	**2**	3	2	4	2	0	6	**155**
IL	13	16	5	10	12	6	9	2	6	4	7	6	2	1	4	5	2	1	0	2	3	**5**	0	2	1	0	3	**127**
CA	30	6	2	2	2	2	2	2	2	4	0	0	2	2	0	0	2	0	0	4	2	0	**1**	0	0	0	0	**67**
Asia	2	12	2	2	4	2	4	0	2	4	2	2	0	2	0	0	0	2	0	4	4	2	0	**2**	2	0	6	**62**
Africa	1	6	1	1	2	1	2	0	1	2	1	1	0	1	0	0	0	1	0	2	2	1	0	2	**0**	0	3	**31**
Non MOs EU	1	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	**0**	0	**4**
Other	3	18	3	3	6	3	6	0	3	6	3	3	0	3	0	0	0	3	0	6	6	3	0	6	3	0	**6**	**93**
Total	**885**	**715**	**407**	**395**	**339**	**298**	**268**	**247**	**180**	**170**	**137**	**112**	**101**	**101**	**84**	**64**	**56**	**42**	**24**	**188**	**155**	**127**	**67**	**62**	**31**	**4**	**93**	

Figure 13- Collaboration Matrix of Theme Proposals: 2008

	UK	DE	IT	ES	NL	FR	SE	CH	FI	AT	DK	BE	NO	IE	HU	CZ	GR	PL	PT	Other MOs	IL	US	Non MOs EU	Total
UK	**104**	107	100	84	70	78	79	47	69	55	53	27	32	18	7	10	11	17	6	26	3	4	1	**1008**
DE	107	**22**	58	53	55	54	33	35	21	26	27	38	15	8	10	12	5	5	5	15	10	2	0	**616**
IT	100	58	**20**	53	31	35	25	37	22	30	23	25	15	5	7	7	7	6	4	11	3	3	3	**530**
ES	84	53	53	**25**	27	47	17	22	10	19	19	17	10	8	2	6	4	1	7	9	2	5	1	**448**
NL	70	55	31	27	**21**	26	20	18	15	11	27	23	12	8	13	3	3	9	6	8	2	6	0	**414**
FR	78	54	35	47	26	**15**	30	21	15	9	7	11	7	10	7	5	2	3	4	9	1	1	0	**397**
SE	79	33	25	17	20	30	**13**	17	25	19	7	4	9	4	3	3	4	5	2	14	1	1	0	**335**
CH	47	35	37	22	18	21	17	**8**	17	19	11	15	2	4	6	5	7	2	2	12	3	0	2	**312**
FI	69	21	22	10	15	15	25	17	**7**	15	11	5	10	3	2	1	4	5	1	5	3	1	0	**267**
AT	55	26	30	19	11	9	19	19	15	**7**	10	13	5	1	2	5	2	3	0	5	2	2	0	**260**
DK	53	27	23	19	27	7	7	11	11	10	**12**	12	9	0	3	2	4	3	0	7	1	3	1	**252**
BE	27	38	25	17	23	11	4	15	5	13	12	**18**	7	6	4	4	2	1	2	9	4	0	0	**247**
NO	32	15	15	10	12	7	9	2	10	5	9	7	**1**	2	3	2	1	1	2	3	3	0	0	**151**
IE	18	8	5	8	8	10	4	4	3	1	0	6	2	**0**	0	1	1	1	1	2	1	1	0	**85**
HU	7	10	7	2	13	7	3	6	2	2	3	4	3	0	**0**	1	1	1	2	1	2	1	0	**78**
CZ	10	12	7	6	3	5	3	5	1	5	2	4	2	1	1	**0**	1	0	0	2	1	0	0	**71**
GR	11	5	7	4	3	2	4	7	4	2	4	2	1	1	1	1	**0**	1	0	6	1	0	1	**68**
PL	17	5	6	1	9	3	5	2	5	3	3	1	1	1	1	0	1	**0**	0	0	0	2	0	**66**
PT	6	5	4	7	6	4	2	2	1	0	0	2	2	1	2	0	0	0	**0**	0	2	0	0	**46**
Other MOs	26	15	11	9	8	9	14	12	5	5	7	9	3	2	1	2	6	0	0	**7**	2	0	1	**154**
IL	3	10	3	2	2	1	1	3	3	2	1	4	3	1	2	1	1	0	2	2	**1**	0	0	**48**
US	4	2	3	5	6	1	1	0	1	2	3	0	0	1	1	0	0	2	0	0	0	**0**	0	**32**
Non MOs EU	1	0	3	1	0	0	0	2	0	0	1	0	0	0	0	0	1	0	0	1	0	0	**0**	**10**
Total	**1008**	**616**	**530**	**448**	**414**	**397**	**335**	**312**	**267**	**260**	**252**	**247**	**151**	**85**	**78**	**71**	**68**	**66**	**46**	**154**	**48**	**32**	**10**	

Figure 14- Collaboration Matrix of Theme Proposals: 2009

	UK	DE	IT	FR	NL	ES	CH	SE	BE	DK	FI	AT	NO	GR	HU	PT	PL	CZ	IE	Other MOs	US	IL	CA	Non MOs EU	Asia	Africa	Other	Total
UK	**315**	410	293	303	246	201	195	183	94	111	131	100	67	73	41	38	52	47	40	101	67	25	34	7	2	2	3	**3181**
DE	410	**127**	249	268	174	164	174	121	96	81	67	75	56	55	55	31	36	43	38	94	57	43	9	9	12	11	22	**2577**
IT	293	249	**114**	206	82	149	102	67	77	46	53	54	49	48	30	34	26	29	21	79	24	27	3	11	2	2	7	**1884**
FR	303	268	206	**58**	110	132	103	83	54	39	44	29	34	29	32	42	26	23	30	45	24	28	4	9	2	2	7	**1766**
NL	246	174	82	110	**74**	79	95	60	56	55	46	43	33	11	34	20	18	16	16	18	22	7	4	0	0	0	0	**1319**
ES	201	164	149	132	79	**39**	65	48	61	31	35	34	26	30	16	28	14	14	22	44	19	16	2	5	2	2	3	**1281**
CH	195	174	102	103	95	65	**67**	53	36	42	29	45	24	22	25	26	19	12	17	36	29	25	7	5	4	4	7	**1268**
SE	183	121	67	83	60	48	53	**27**	17	30	42	26	25	18	15	8	14	9	9	34	15	12	3	0	4	3	6	**932**
BE	94	96	77	54	56	61	36	17	**64**	40	24	29	15	26	9	6	5	9	8	37	8	16	2	1	2	2	3	**797**
DK	111	81	46	39	55	31	42	30	40	**17**	18	21	24	13	8	3	11	5	6	19	11	9	0	2	2	2	3	**649**
FI	131	67	53	44	46	35	29	42	24	18	**9**	24	20	16	8	8	7	4	6	20	9	8	2	3	2	1	3	**639**
AT	100	75	54	29	43	34	45	26	29	21	24	**20**	10	5	12	6	7	17	1	16	6	4	3	5	0	0	2	**594**
NO	67	56	49	34	33	26	24	25	15	24	20	10	**6**	11	18	4	6	7	9	17	13	12	0	2	2	2	3	**495**
GR	73	55	48	29	11	30	22	18	26	13	16	5	11	**5**	7	5	6	7	5	34	17	10	4	3	4	4	6	**474**
HU	41	55	30	32	34	16	25	15	9	8	8	12	18	7	**4**	6	8	8	3	14	8	9	1	4	0	0	0	**375**
PT	38	31	34	42	20	28	26	8	6	3	8	6	4	5	6	**12**	7	3	5	11	5	10	1	6	0	0	0	**325**
PL	52	36	26	26	18	14	19	14	5	11	7	7	6	6	8	7	**0**	4	2	14	5	6	1	0	0	0	2	**296**
CZ	47	43	29	23	16	14	12	9	9	5	4	17	7	7	8	3	4	**2**	1	9	5	4	3	2	0	0	0	**283**
IE	40	38	21	30	16	22	17	9	8	6	6	1	9	5	3	5	2	1	**5**	15	6	8	0	0	2	2	5	**282**
Other MOs	101	94	79	45	18	44	36	34	37	19	20	16	17	34	14	11	14	9	15	**46**	25	18	2	6	4	5	12	**775**
US	67	57	24	24	22	19	29	15	8	11	9	6	13	17	8	5	5	5	6	25	**5**	7	4	3	4	4	8	**410**
IL	25	43	27	28	7	16	25	12	16	9	8	4	12	10	9	10	6	4	8	18	7	**10**	0	4	2	2	5	**327**
CA	34	9	3	4	4	2	7	3	2	0	2	3	0	4	1	1	1	3	0	2	4	0	**1**	0	0	0	0	**90**
Non MOs EU	7	9	11	9	0	5	5	0	1	2	3	5	2	3	4	6	0	2	0	6	3	4	0	**0**	0	0	1	**88**
Asia	2	12	2	2	0	2	4	4	2	2	2	0	2	4	0	0	0	0	2	4	4	2	0	0	**2**	2	6	**62**
Africa	2	11	2	2	0	2	4	3	2	2	1	0	2	4	0	0	0	0	2	5	4	2	0	0	2	**0**	3	**55**
Other	3	22	7	7	0	3	7	6	3	3	3	2	3	6	0	0	2	0	5	12	8	5	0	1	6	3	**7**	**124**
Total	**3181**	**2577**	**1884**	**1766**	**1319**	**1281**	**1268**	**932**	**797**	**649**	**639**	**594**	**495**	**474**	**375**	**325**	**296**	**283**	**282**	**775**	**410**	**327**	**90**	**88**	**62**	**55**	**124**	

Figure 15- Overall Collaboration Matrix of Theme Proposals: 2005 to 2009

	DE	UK	FR	I-NL	ES	IT	CH	SE	AT	BE	DK	FI	NO	CZ	IE	PL	PT	HU	GR	Other MOs	US	CA	IL	Non MOs EU	Asia	Africa	Other	Total
DE	**403**	434	470	438	265	203	220	101	166	136	106	52	92	58	52	70	33	30	8	148	76	11	32	14	13	3	24	**3658**
UK	434	**226**	284	244	225	175	131	149	150	81	73	68	71	57	70	56	26	39	9	77	112	14	4	3	5	0	13	**2796**
FR	470	284	**229**	188	185	177	82	82	62	94	35	42	35	42	28	38	37	25	11	59	86	9	19	14	15	5	14	**2367**
NL	438	244	188	**112**	134	74	116	96	55	94	82	60	55	34	35	32	26	23	13	100	51	9	6	5	4	0	5	**2091**
ES	265	225	185	134	**117**	131	66	75	40	63	46	26	34	43	45	27	42	32	10	49	69	7	10	2	9	0	36	**1788**
IT	203	175	177	74	131	**90**	48	46	46	50	18	22	20	20	15	17	18	6	6	28	39	7	7	1	1	0	2	**1267**
CH	220	131	82	116	66	48	**65**	41	73	38	26	17	21	18	19	10	11	6	1	52	20	4	8	8	1	0	1	**1103**
SE	101	149	82	96	75	46	41	**47**	24	21	46	76	50	16	28	17	9	13	4	44	37	13	1	4	3	0	13	**1056**
AT	166	150	62	55	40	46	73	24	**46**	15	16	19	20	24	7	18	5	7	5	26	28	2	1	2	1	0	0	**858**
BE	136	81	94	94	63	50	38	21	15	**46**	16	21	16	24	14	15	7	6	2	31	25	6	2	6	2	2	4	**837**
DK	106	73	35	82	46	18	26	46	16	16	**16**	21	29	6	11	5	8	6	2	20	19	8	3	3	2	0	4	**627**
FI	52	68	42	60	26	22	17	76	19	21	21	**23**	24	23	7	6	3	6	4	35	25	12	0	5	5	0	1	**603**
NO	92	71	35	55	34	20	21	50	20	16	29	24	**38**	7	10	4	13	3	3	22	21	11	1	3	0	0	0	**603**
CZ	58	57	42	34	43	20	18	16	24	24	6	23	7	**11**	9	14	6	12	4	22	10	4	1	1	4	0	0	**470**
IE	52	70	28	35	45	15	19	28	7	14	11	7	10	9	**12**	11	7	13	2	13	8	2	2	6	1	0	1	**428**
PL	70	56	38	32	27	17	10	17	18	15	5	6	4	14	11	**12**	3	7	0	24	2	0	3	1	1	0	2	**395**
PT	33	26	37	26	42	18	11	9	5	7	8	3	13	6	7	3	**6**	1	1	12	12	0	2	1	1	0	4	**294**
HU	30	39	25	23	32	6	6	13	7	6	6	6	3	12	13	7	1	**4**	0	6	19	3	0	0	2	0	0	**269**
GR	8	9	11	13	10	6	1	4	5	2	2	4	3	4	2	0	1	0	**1**	1	3	0	0	0	0	0	1	**91**
Other MOs	148	77	59	100	49	28	52	44	26	31	20	35	22	22	13	24	12	6	1	**80**	25	11	8	7	4	0	4	**908**
US	76	112	86	51	69	39	20	37	28	25	19	25	21	10	8	2	12	19	3	25	**58**	34	11	13	11	0	13	**827**
CA	11	14	9	9	7	7	4	13	2	6	8	12	11	4	2	0	0	3	0	11	34	**4**	0	6	0	0	0	**177**
IL	32	4	19	6	10	7	8	1	1	2	3	0	1	1	2	3	2	0	0	8	11	0	**6**	0	2	0	3	**132**
Non MOs EU	14	3	14	5	2	1	8	4	2	6	3	5	3	1	6	1	1	0	0	7	13	6	0	**6**	1	0	0	**112**
Asia	13	5	15	4	9	1	1	3	1	2	2	5	0	4	1	1	1	2	0	4	11	0	2	1	**1**	1	4	**94**
Africa	3	0	5	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**0**	0	**11**
Other	24	13	14	5	36	2	1	13	0	4	4	1	0	0	1	2	4	0	1	4	13	0	3	0	4	0	**24**	**173**
Total	**3658**	**2796**	**2367**	**2091**	**1788**	**1267**	**1103**	**1056**	**858**	**837**	**627**	**603**	**603**	**470**	**428**	**395**	**294**	**269**	**91**	**908**	**827**	**177**	**132**	**112**	**94**	**11**	**173**	

Figure 16- Intended Collaboration Matrix resulted from submitted Full Proposals: 2001-2007

	DE	UK	FR	NL	ES	IT	SE	CH	AT	BE	DK	FI	NO	CZ	PL	IE	HU	PT	GR	US	Other MOs	IL	CA	Asia	Non MOs EU	Africa	Other	Total
DE	**241**	252	296	232	155	136	52	117	104	58	59	24	30	37	38	33	22	16	6	56	99	23	5	13	4	3	15	**2126**
UK	252	**128**	195	132	140	104	66	52	85	47	49	31	37	35	35	27	29	15	5	65	28	3	8	5	2	0	4	**1579**
FR	296	195	**161**	120	120	114	56	41	40	62	26	30	20	26	24	19	17	20	8	63	41	11	1	15	8	5	5	**1544**
NL	232	132	120	**71**	84	42	56	57	36	41	46	34	26	19	17	21	14	10	9	24	57	4	4	2	0	0	2	**1160**
ES	155	140	120	84	**81**	76	32	39	26	40	24	12	15	29	22	29	26	19	8	54	30	9	1	9	0	0	26	**1106**
IT	136	104	114	42	76	**59**	11	29	34	28	11	9	9	13	10	9	4	9	5	27	17	6	3	1	0	0	1	**767**
SE	52	66	56	56	32	11	**30**	15	9	8	29	49	34	7	6	12	6	2	1	25	16	1	9	2	3	0	8	**545**
CH	117	52	41	57	39	29	15	**28**	31	12	11	4	8	11	9	13	4	6	0	12	33	7	1	1	1	0	1	**543**
AT	104	85	40	36	26	34	9	31	**22**	7	10	14	11	19	13	2	4	2	5	21	19	1	2	1	1	0	0	**519**
BE	58	47	62	41	40	28	8	12	7	**26**	12	16	5	13	11	9	3	4	2	14	13	2	3	2	6	2	0	**446**
DK	59	49	26	46	24	11	29	11	10	12	**9**	12	15	3	0	4	3	6	1	17	11	1	5	1	1	0	3	**369**
FI	24	31	30	34	12	9	49	4	14	16	12	**20**	14	14	1	3	2	2	3	18	18	0	9	0	5	0	0	**344**
NO	30	37	20	26	15	9	34	8	11	5	15	14	**21**	2	0	2	2	9	1	13	6	0	8	0	2	0	0	**290**
CZ	37	35	26	19	29	13	7	11	19	13	3	14	2	**5**	10	4	6	1	3	3	13	1	1	0	0	0	0	**275**
PL	38	35	24	17	22	10	6	9	13	11	0	1	0	10	**7**	8	6	1	0	2	18	3	0	1	1	0	0	**243**
IE	33	27	19	21	29	9	12	13	2	9	4	3	2	4	8	**9**	11	2	1	4	6	2	1	1	6	0	0	**238**
HU	22	29	17	14	26	4	6	4	4	3	3	2	2	6	6	11	**4**	1	0	14	4	0	2	1	0	0	0	**185**
PT	16	15	20	10	19	9	2	6	2	4	6	2	9	1	1	2	1	**4**	0	9	8	1	0	1	1	0	4	**153**
GR	6	5	8	9	8	5	1	0	5	2	1	3	1	3	0	1	0	0	**1**	2	1	0	0	0	0	0	0	**62**
US	56	65	63	24	54	27	25	12	21	14	17	18	13	3	2	4	14	9	2	**36**	13	11	21	11	11	0	12	**558**
Other MOs	99	28	41	57	30	17	16	33	19	13	11	18	6	13	18	6	4	8	1	13	**56**	5	8	1	5	0	0	**526**
IL	23	3	11	4	9	6	1	7	1	2	1	0	0	1	3	2	0	1	0	11	5	**5**	0	2	0	0	3	**101**
CA	5	8	1	4	1	3	9	1	2	3	5	9	8	1	0	1	2	0	0	21	8	0	**3**	0	2	0	0	**97**
Asia	13	5	15	2	9	1	2	1	1	2	1	0	0	0	1	1	1	1	0	11	1	2	0	**0**	1	1	4	**76**
Non MOs EU	4	2	8	0	0	0	3	1	1	6	1	5	2	0	1	6	0	1	0	11	5	0	2	1	**4**	0	0	**64**
Africa	3	0	5	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	**0**	0	**11**
Other	15	4	5	2	26	1	8	1	0	0	3	0	0	0	0	0	0	4	0	12	0	3	0	4	0	0	**13**	**101**
Total	**2126**	**1579**	**1544**	**1160**	**1106**	**767**	**545**	**543**	**519**	**446**	**369**	**344**	**290**	**275**	**243**	**238**	**185**	**153**	**62**	**558**	**526**	**101**	**97**	**76**	**64**	**11**	**101**	

Figure 17- Collaboration Matrix resulted from Full Proposals-Recommended for funding: 2001-2007

	DE	FR	UK	NL	ES	IT	SE	CH	BE	AT	DK	FI	NO	CZ	PL	IE	HU	PT	GR	US	Other MOs	CA	IL	Non MOs EU	Asia	Other	Total
DE	**151**	210	155	174	110	101	46	96	40	61	39	22	24	24	33	29	22	9	6	43	74	5	7	4	10	9	**1504**
FR	210	**136**	150	95	83	70	46	35	47	24	20	28	15	20	17	19	13	12	8	49	32	1	8	8	7	5	**1158**
UK	155	150	**59**	88	67	49	54	30	37	44	30	21	29	24	24	19	20	9	4	45	17	8	0	2	2	4	**991**
NL	174	95	88	**46**	59	33	43	41	32	19	32	21	21	16	16	16	11	5	9	16	50	3	3	0	1	0	**850**
ES	110	83	67	59	**65**	44	26	27	32	23	18	11	12	24	21	24	22	13	8	45	24	1	9	0	9	26	**803**
IT	101	70	49	33	44	**32**	8	19	22	16	8	7	6	9	9	4	4	9	5	13	12	3	6	0	0	1	**490**
SE	46	46	54	43	26	8	**20**	12	8	6	26	30	27	4	4	12	6	2	1	16	15	8	1	3	1	8	**433**
CH	96	35	30	41	27	19	12	**23**	8	24	8	3	8	6	9	5	4	5	0	10	29	1	5	1	1	1	**411**
BE	40	47	37	32	32	22	8	8	**20**	3	11	14	4	12	11	7	3	3	2	14	6	3	2	6	0	0	**347**
AT	61	24	44	19	23	16	6	24	3	**9**	5	7	4	12	8	2	3	1	3	18	14	1	0	1	1	0	**309**
DK	39	20	30	32	18	8	26	8	11	5	**9**	11	14	2	0	4	3	3	1	15	7	5	1	1	1	3	**277**
FI	22	28	21	21	11	7	30	3	14	7	11	**13**	10	13	1	3	1	1	3	14	13	8	0	5	0	0	**260**
NO	24	15	29	21	12	6	27	8	4	4	14	10	**20**	2	0	2	2	7	1	7	5	7	0	2	0	0	**229**
CZ	24	20	24	16	24	9	4	6	12	12	2	13	2	**3**	8	4	5	0	3	3	8	1	0	0	0	0	**203**
PL	33	17	24	16	21	9	4	9	11	8	0	1	0	8	**5**	8	6	0	0	2	16	0	3	1	1	0	**203**
IE	29	19	19	16	24	4	12	5	7	2	4	3	2	4	8	**6**	10	2	1	4	5	1	2	6	1	0	**196**
HU	22	13	20	11	22	4	6	4	3	3	3	1	2	5	6	10	**4**	1	0	9	4	2	0	0	0	0	**155**
PT	9	12	9	5	13	9	2	5	3	1	3	1	7	0	0	2	1	**3**	0	9	4	0	1	1	1	4	**105**
GR	6	8	4	9	8	5	1	0	2	3	1	3	1	3	0	1	0	0	**1**	2	1	0	0	0	0	0	**59**
US	43	49	45	16	45	13	16	10	14	18	15	14	7	3	2	4	9	9	2	**29**	11	20	7	11	8	12	**432**
Other MOs	74	32	17	50	24	12	15	29	6	14	7	13	5	8	16	5	4	4	1	11	**43**	8	1	5	1	0	**405**
CA	5	1	8	3	1	3	8	1	3	1	5	8	7	1	0	1	2	0	0	20	8	**3**	0	2	0	0	**91**
IL	7	8	0	3	9	6	1	5	2	0	1	0	0	0	3	2	0	1	0	7	1	0	**4**	0	2	3	**65**
Non MOs EU	4	8	2	0	0	0	3	1	6	1	1	5	2	0	1	6	0	1	0	11	5	2	0	**4**	1	0	**64**
Asia	10	7	2	1	9	0	1	1	0	1	1	0	0	0	1	1	0	1	0	8	1	0	2	1	**0**	4	**52**
Other	9	5	4	0	26	1	8	1	0	0	3	0	0	0	0	0	0	4	0	12	0	0	3	0	4	**11**	**91**
Total	**1504**	**1158**	**991**	**850**	**803**	**490**	**433**	**411**	**347**	**309**	**277**	**260**	**229**	**203**	**203**	**196**	**155**	**105**	**59**	**432**	**405**	**91**	**65**	**64**	**52**	**91**	

Figure 18- Collaboration Matrix resulted from funded Full Proposals- 2001-2007

3.2.6 Highlights of dissemination

Using and disseminating the generated knowledge, i.e. the research and outreach output, is a central element of the EUROCORES Scheme. Indeed very impressive results have been achieved in a relatively short period of time. This has been a result of the framework created by the EUROCORES contract, by being able to attract excellent scientists willing to explore research collaboration and networking on complex and broad topics. ESF programme coordinators have had a crucial role in enabling new opportunities, mobilising their scientific communities and providing the high quality support they have required. Example success stories on specific programmes written by the Programme Coordinators are provided in Appendix B: Sample Success Stories from EUROCORES Programmes.

Below the highlights and key achievements of the Scheme and its Programmes in various categories over the last 5 years are provided. For the complete report on dissemination including programme specific achievements refer to the accompanying "*Final plan for using and disseminating the knowledge".*

Scientific Output of Programmes in Figures

The following are the key figures for the **overall scientific output** of the EUROCORES programmes as of January 2009.

Type of scientific output	Amount
Scientific publications	**5096**
• **Of which peer reviewed**	3108
• **Proceedings and other**	1232
• **Books (chapters, editors, authors)**	755
Oral presentations	**4393 (mainly invited talks)**
Posters	**907**
Patents	**33**

The Web

ESF Homepage

The ESF homepage is the main portal for retrieving information on any ESF activity. Therefore, EUROCORES exploits this channel for both the Scheme and the Programmes in a sensible way and offers accurate information that is accessible, understandable and up-to-date.

- EUROCORES Scheme Pages
- EUROCORES Programme Pages
- Discussion fora for EUROCORES programme members
- ESF's "Focus On" pages with strong EUROCORES input
- Usage of News section and Media Centre
- Usage of Calls section and banners for EUROCORES Theme and Programme Calls
- EUROCORES mailing list

Public lectures and Workshops

Example:
2008 Geosciences Information for Teachers (GIFT) Workshop, Vienna, Austria, 13-16 April 2008

Press Releases

Press releases in numbers:

Year	2003	2005	2006	2007	2008	2009
Number	1	1	9	27	24	1

As press releases are focused on research outcomes, some press activity will continue beyond the scope of this report, as papers are published and the research funding is credited. The following three examples of news stories attained a very high media interest and were picked up by both the print and electronic media:

12. January 2009 10:52 – ECRP
Defying the Integration Models – the Second Generation in Europe

20. May 2008 13:12- EuroCLIMATE
Ocean acidification – another undesired side effect of fossil fuel-burning

20. June 2007 10:38 – OMLL
ESF EUROCORES Programme OMLL helps uncover ancient human behaviour

Newspaper Articles

EUROCORES science and scientists were featured in leading print media all over Europe and overseas. Thus, key achievements of EUROCORES were widely disseminated and circulated, underlining the relevance of EUROCORES science for society. The following three highlights represent a small fraction of the articles publicising EUROCORES:

Daily Telegraph, "World's first cloned horse has foal", 30 April 2008. (EuroSTELLS)

The New York Times, "Linking of languages may speak volumes", 27 September, 2005. (OMLL)

Frankfurter Allgemeine Zeitung, NANOPARMA featured in "Rutschen ohne Reibung", Natur & Wissenschaft section, N2, 8 October 2008. (FANAS)

TV and Radio Appearances

Examples:
ORF2 *Kreuz & Quer*, "The brain and myself" by Kurt Langbein, 2 September 2008, 22:30h. (RNAQuality)

SAT.1 *Planetopia* (Science magazine), contribution of J. Perner, January 2008. (CNCC)

National Geographic Television, "The origins of modern humans" (filmed at Blombos Cave), Producer John Rubin, May 2005. (OMLL)

Publications

The EUROCORES Scheme highlights brochure
Presenting a concise overview of key achievements of the EUROCORES programmes.

EuroCLIMATE DVD
This DVD provides a snapshot of some of the EuroCLIMATE activities and main achievements. Five EuroCLIMATE projects interested in marine markers, namely PaleoSalt, ISOTRACE, CHALLACEA, DECLAKES and MERF, are presented here. EuroCLIMATE also includes other important projects such as DECVEG, CASIOPEIA, TREE14, and RESOLuTION dealing with continental indicators and ice cores data.

Conferences

EUROCORES was represented at many conferences reaching a wide scientific audience, including:

EGU General Assembly (2004, 2005, 2006, 2007, 2008)
EMRS Spring Meeting (2006, 2007, 2008)
Euroscience Open Forum (2004, 2006, 2008)
MRS Fall Meeting (2008)

Other Outreach Activities

In addition to press **publicity,** the relevance of EUROCORES science for society was highlighted at a number of public outreach events and exhibition. Examples include:

Royal Society Summer Science exhibition 2008 "Wonder in Carbon Land", 30 June -3 July 2008.
(FoNE)

Exhibition "Pris au Piege - Captured in a Trap - Tools of the Nanoworld", participation and financial support in the framework of "Un chercheur, une manip" at Palais de la Découverte, Paris, 6 October-15 December 2008 and showcasing exhibition at "Village Scientifique Européenne", Grand Palais, Paris, 14-16 November 2008.
(EuroQUAM)

ESF Collaborative Research Tool Kit

Based on the extensive science management experience especially gained in managing EUROCORES, the European Science Foundation has developed the 'Collaborative Research Tool Kit', a unique support tool for national and international research programmes. ESF's experience includes the management of more than 30 European Collaborative Research (EUROCORES) Programmes, the European Young Investigator Award (EURYI) Scheme, ESF Research Networking Programmes and COST Actions. ESF has vast experience dealing with various procedures, cultures, languages and regulations at the European level. The 'Collaborative Research Tool Kit' offers support to national research funding and research performing organisations engaging in collaborative research programmes. It is flexible and can be tailored to meet the different needs of its users.

The Tool Kit has been implemented for a first pilot application for the EUROPOLAR ERA-NET and the implementation and running of their POLARCLIMATE Call for proposals.

List of selected ESF Publications for EUROCORES

2009

(January – March)

• **European Collaborative Research Projects (ECRP) III leaflet on The Politics of Attenti West European Politics in Times of Change**	March
• **Development of a Stem Cell Tool Box (EuroSTELLS)** Final Report	March
• **Stress and Mental Health (EuroSTRESS)** leaflet	February
• **Cross-National and Multi-Level Analysis of Human Values, Institutions and Behaviou**	February
• **(HumVIB)** leaflet	

2008

• **European Collaborative Research Projects (ECRP) Report on Scheme Evaluation anc Science Policy Assessment**	December
• **EUROCORES Insight 5.** EUROCORES newsletter	November
• **Modelling Intelligent Interaction – Logic in the Humanities, Social and Computational**	September
• **Sciences (LogICCC)** leaflet	
• **Smart Structural Systems Technologies (S3T)** leaflet	September
• **EUROCORES at a glance - key achievements**	July
• **EUROCORES** postcard	July
• **EUROCORES Insight 4.** EUROCORES newsletter	July
• **Cold Quantum Matter (EuroQUAM)** leaflet	June
• **Friction and Adhesion in Nanomechanical Systems (FANAS)** leaflet	June
• **Consciousness in a Natural and Cultural Context (CNCC)** leaflet	June
• **The Evolution of Cooperation and Trading (TECT)** report	June
• **Self-Organised Nanostructures (SONS 2)** leaflet	May
• **Fundamentals of Nanoelectronics (FoNE)** leaflet	May
• **EUROCORES Insight 3.** EUROCORES newsletter	April
• **ESF Collaborative Research Tool Kit**	March
• **European Collaborative Research Projects (ECRP) I** leaflet	February
• **European Collaborative Research Projects (ECRP) I leaflet on New Migration Dynami**	February
• **European Collaborative Research Projects (ECRP) II leaflet on Political Communication Cultures in Western Europe**	February

• **Ecosystem Functioning and Biodiversity in the Deep Sea (EuroDEEP)** leaflet	January
• **Pan-European Clinical Trials (ECT)** leaflet	January

2007
(October – December)

• **OMLL (Origins of Man, Language and Languages) Highlights** report	December
• **About EUROCORES.** EUROCORES Scheme corporate brochure	November
• **The Evolution of Cooperation and Trading (TECT)** leaflet	November
• **Inventing Europe** report	November
• **Histories from the North — environments, movements, narratives (BOREAS)** report	October

4 Conclusions and Future Perspectives for EUROCORES

4.1 Concluding Remarks

With the inception of the EUROCORES Scheme at the ESF in 2001 followed by its impressive growth and enhancements enabled through the EC-FP6 contract during 2003-2008, the Scheme has reached flourishing maturity. The five years of continuous funding for the coordination, networking and management of the Scheme have been a valuable investment resulting in concrete and measurable impacts not only on the effectiveness and reliability of the Scheme but also on scientific collaboration and synergies it has enabled across Europe. The EUROCORES Scheme has begun to gain credibility through the unique opportunity it provides to the Scientists in Europe and to the ESF Member Organisations. It has indeed outperformed its envisaged role as *being a testing ground for the possibilities of joining national funding mechanisms to fight fragmentation and to support transnational research projects addressing scale and scope in researcher-led science*.

With the closing of the FP6 contract, the ESF Member Organisations have recommended that the Scheme should continue. To make this possible, they have agreed to provide the additional funds that were previously maintained through the EC contract on top of the research grants they already provide. The EUROCORES Scheme is therefore being transformed from its contractual existence to one that is independent and fully owned and managed by the European funding agencies and research councils. This achievement is a very strong indication of the effectiveness and value of the *testing ground* it has provided. The EUROCORES Scheme is now enjoying a robustness and acceptance necessary to move from being a testing ground to a tool fulfilling concrete and real needs.

January 2009 marked a new beginning for the EUROCORES Scheme under the full ownership and governance of the ESF Member Organisation. The FP6 contract that funded the Scheme for 5 years was a very important investment leading to significant scientific contributions and results across 40 multi-national collaborative research programmes involving about 160 research groups. It has also enabled the development of a unique operational capability and know-how at the ESF.

In its new phase, the Scheme relies entirely on the commitments and participation of the MOs for its financing as well as its management. As explained in the various Sections of this final report, it is evident that the investments made through this contract have been a successful endeavour giving rise to a dynamic, flexible and reliable instrument with the potential of becoming a point of reference or an instrument of choice to promote scientific synergy and knowledge in Europe and internationally.

The instrument has made significantly contribution in the arena of collaborative research and joint scientific initiatives involving large number European organisations. It has also allowed the ESF to develop a strong corporate heritage and staff competency in deploying and managing large scale collaborative programmes. Last but not least, the intense scrutiny of all stake holders in EUROCORES has continuously given rise to very high expectations for credible and high quality peer review and evaluation standards and practices at the ESF. This has in turn helped in the creation of a core competency at the ESF which is now increasingly in demand both internally and externally. The ESF has embarked on providing the mentioned competency to its Member Organisations as well as other relevant organisations in Europe in the form of custom made support packages and contracts.

4.2 Remaining challenges and opportunities

Despite the overall success reported in this final report on the development and results of the EUROCORES Scheme, key challenges remain for further analysis and potential remedies. The spirit of continuous improvement that has helped the evolution of the Scheme over the last 5 years has been fostered by two different but related sources:

a) ESF's strive for excellence across all its operations including in this flagship instrument for research collaboration
b) Rigorous scrutiny and support provided by the main stake-holders of the scheme, namely the participating research funding and research performing organisations

At this transition period, the Scheme faces a number of challenges and opportunities. Some of these are outlined below:

Governance

- The transition of the Scheme from the EC contract to the full ownership and management by the MOs has been both a complex challenge and a unique opportunity for further optimising and consolidating EUROCORES as the instrument of choice for the European national research funding organisations.
- The abovementioned transition has meant increased investment for the participating organisation for the running programmes that had started under the contract. Securing the payments across all running programmes has been complex and has demanded continuous attention and efforts. The transition is now concluded with about 90% of all the contributions confirmed.
- The creation of the EUROCORES Scheme Management Committee as the overarching programme management body is the first concrete step in adapting the governance structure of the scheme to its new life. This will complement and support the high-level interventions of the ESF Governing Council to ensure an optimal ownership and engagement of the participating organisations in the Scheme at the level of operational and strategic levels. The engagement and interest shown by the members of the committee from the start of its life is very encouraging.

Operations

- Although, the Scheme has been continuously improving through the EC contract, and is now possess the required level of maturity and robustness, there are numerous areas that would benefit from further analysis and possibly improvements. These are outlined below:
    - Further consistency and harmonisation of processes and procedures across programmes and across participating organisations.
    - Peer Review consistency and burden
        - Incorporating more sophisticated approaches to multi-disciplinary assessment procedures.
    - Putting in normal practice the Quality Assurance forms
    - Further harmonisation, efficiency and scope for dissemination of the achievements
    - Achieving more coherence and synergy among the three modules of ECRP, EUROCORES and TOP-CORES.
    - Rationalize the role of the networking work-plans

    - Design and implement new reporting framework for the MOs in place of the EC reporting obligations.
- To be able to characterize the effectiveness and usefulness of the Scheme:
    - Conduct impact assessment of the EUROCORESS programmes
    - Conduct assessment of the usefulness of the Networking component in the Scheme
- Conduct another independent evaluation of the EUROCORES programmes
- With inputs from the MOs, consider opening the Scheme up to more Organisations outside of the ESF membership such as international funding agencies, other national organisations, regional governments and administrations, charities and possibly industry.
- Analyse the measure needed for dealing with Intellectual Property Rights for collaborations under the Scheme.

Funding

- Aim for the creation of large-scale programmes with adequate funding such that scientific impacts can be more noticeable.
- Further optimize the joint funding of the Scheme by the participating organisations.
- Aim for securing solid financing by ensuing interests of the National funding organisations are met
- Meet the requirements of Research Performing Organisations in the Scheme. These are by nature different from the funding organisations and thus need particular attention.
- Maximize number of programmes launched per year, while minimizing the risk of excessive funding dispersion.
- Analyse funding competition against other ESF instruments needing contributions of the same organisations.

Dissemination and Promotion

- Once the harmonisation of the scheme is concluded, promote the new scheme as widely as possible.
- Attracting top scientists and high quality teams are the foremost requirements for the credibility and success of the scheme.
- Disseminate and outreach for effective branding and promotion.

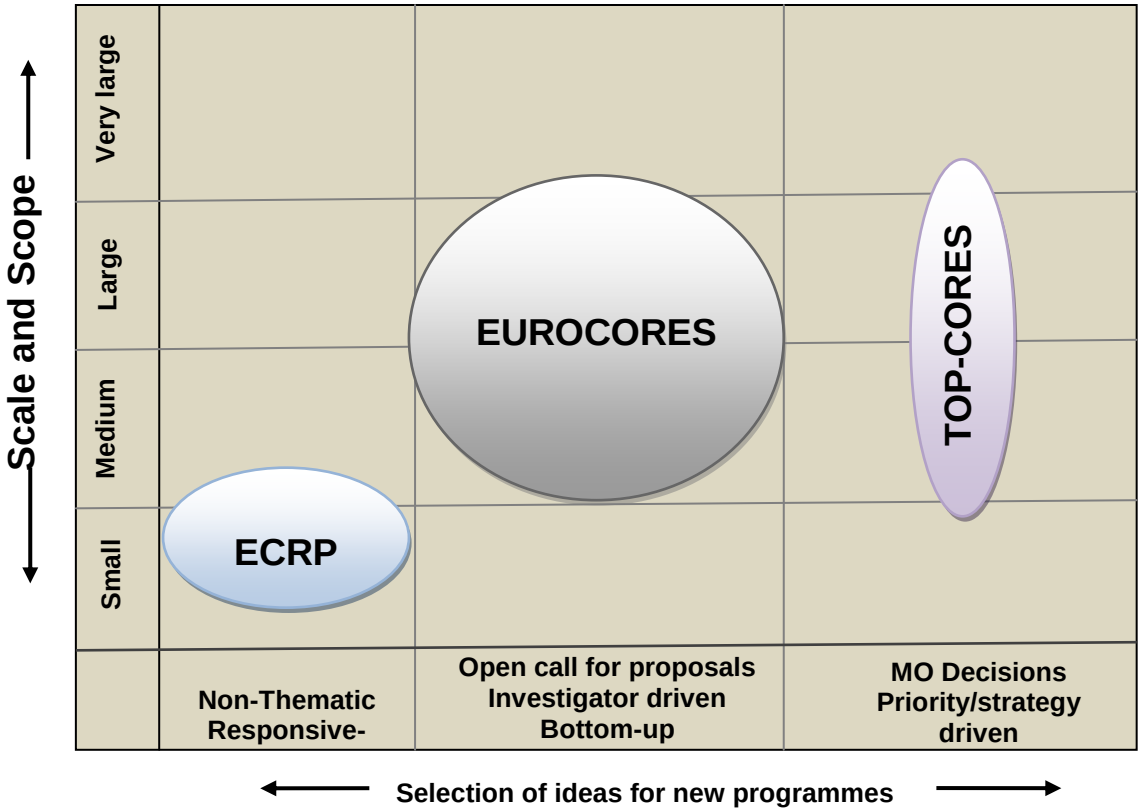
4.3 A new proposed conceptual framework

ESF's collaborative research portfolio comprises EUROCORES and ECRP. Up to now, these two instruments have been managed within the EUROCORES Scheme but have been considered separate from each other.

This has had the following consequences:

- Lack of visibility and coherence in the ESF collaborative research instruments
- Confusion stemming from the names that have been given to the three variants and from the differences in timescale and other implementation aspects

Transition from the EC to the MO-funded Scheme provides a unique opportunity for further optimizing the scheme and for considering the full spectrum of these collaborative research mechanisms more coherently. If an operational implementable model for the Topical EUROCORES (or TOP-CORES) is also to be included, it makes great sense to put all the three elements as synergistic modules of a comprehensive and flexible framework for coordination and management of multi-national collaborative research.



DESCRIPTION OF THE MAIN CHARACTERISTICS PROPOSED

The new Scheme should aim at:

- Defragment, coordinate and when appropriate harmonize funding schemes
- Achieve coherence in branding and packaging
- Aim for ease of choice and administrative burden for scientists
- Rationalize peer review *burden*

Parameters to Consider:

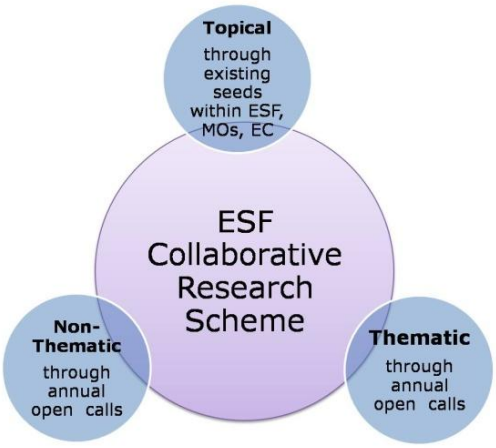
- Complementarity of various modules
- Safeguarding of the Schemes' operational procedures as much as possible
- Connection to ESF's other instruments, i.e., continuity and cross fertilization
- Mechanisms to introduce/integrate existing seeds, programmes, and communities
- Aim for unified processes and procedures

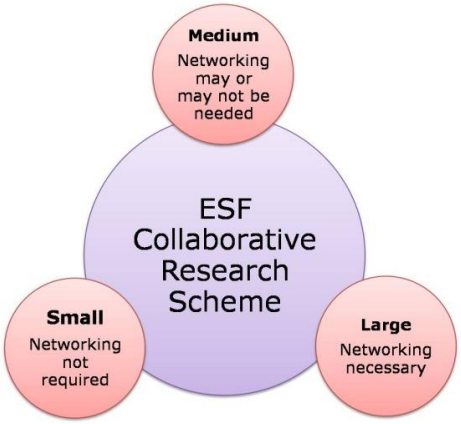
- Clear and sound provisions for channelling of proposals and ideas to modules they best fit

The two Figures below provides a further detailed comparison of the current EUROCORES Scheme with the ECRP and the pilot implementation mode for the TOP-CORES model that were presented to the Governing Council in October 2008.

- Optimize the scheme i.e., Rationalisation/harmonisation along two dimensions:
  Scope: Among others, it determines how new ideas, or themes should be captured

  Scale: Among others, it determines the need for, and potential added value of the Networking component





Scope: Generation of ideas

Scale: Size of the programmes

- Need for a full-spectrum analysis of the portfolio of the scheme:
  - European Collaborative Research Projects (ECRP)
  - EUROCORES proper
  - Topical EUROCORES or TOP-CORES

- Further clarify and enhance the Scheme's:
  - Boundary conditions and Strategic positioning, and
  - Operational modalities

Underlying Optimality Criteria

- Maximize the coverage of the Scheme without overlapping with national portfolios
- Defragment, coordinate and when appropriate harmonize funding schemes
- Achieve coherence in branding, packaging and processing
- Aim for ease of choice and administrative burden for scientists
- Rationalize peer review burden

Parameters to consider

1. Complementarity of various modules
2. Potential competition and risks of excessive funding dispersion
3. Safeguarding of the Schemes' operational procedures as much as possible
4. Connection to ESF's other instruments, i.e., continuity and cross fertilization
5. Mechanisms to introduce/integrate existing seeds, programmes, and communities into the scheme lifecycle
6. Achieve unified processes and procedures
7. Effective channelling of proposals and ideas to modules they best fit
8. Equip the Scheme with higher levels of corporate memory and "intelligence" such that new patterns, and trends, are proactively harvested

Appendix A: Summary of the Status Reports

In the following sub-sections, the main highlights of the evolution and development of the EUROCORES Scheme will be provided starting from the contract and through synopses of 5 status reports and the associated deliverables. The actual results achieved collectively by the EUROCORES Scheme and its individual Programmes are provided in Section 2 of this final report.

Status at the award of the contract (October 2003)

The main highlights of the contract are provided below.

According to the contract at the beginning, EUROCORES topics for new programmes were to be considered by the ESF Scientific Standing Committee to assess their scientific case. Assessment criteria at that stage were:

- the likely interest in the research community
- the nature of the topic, whether it is challenging
- the potential to development of scientific critical mass
- the potential to result in high quality research proposals
- European added value
- timeliness

The ESF Board formally had to discuss and formally endorse the proposal. At that level selection criteria were:

- European added value
- Development of critical mass
- The potential interest of national funding agencies and national research organisations within a variable geometry framework.

The Work Packages defined in the contract are shown in the table below:

WP1	Managing the EUROCORES Scheme
WP2	Implementation and Co-ordination Phase
WP3	Project Selection Phase
WP4	Programme and Call Specification Phase and Scientific Scope Definition Phase

Table 1: Work Package definition at the beginning of the contract

At the time of the award of the contract, ESF had aimed for mobilising research programmes well in excess of 10 m EUR for each in terms of national funding. The average duration of the EUROCORES projects was said to have been 3-4 years while the EUROCORES programme itself would start earlier and finish later. At this time, ESF had already instigated the EUROCORES processes in 15 topics, using them to further refine the EUROCORES methodologies. In addition, two topics were in the new phases of development with more topics having been expected. The distribution of these programmes across the 4 work packages is shown in Figure 1. In the contract it was stipulated that by the end of FP6, once EUROCORES has reached a steady state, there would be between 20 and 30 in operation at any one

time. The titles of these programmes are shown below. All of these with the exception of EUROCORES 9, 12 and 14 continued into full development:

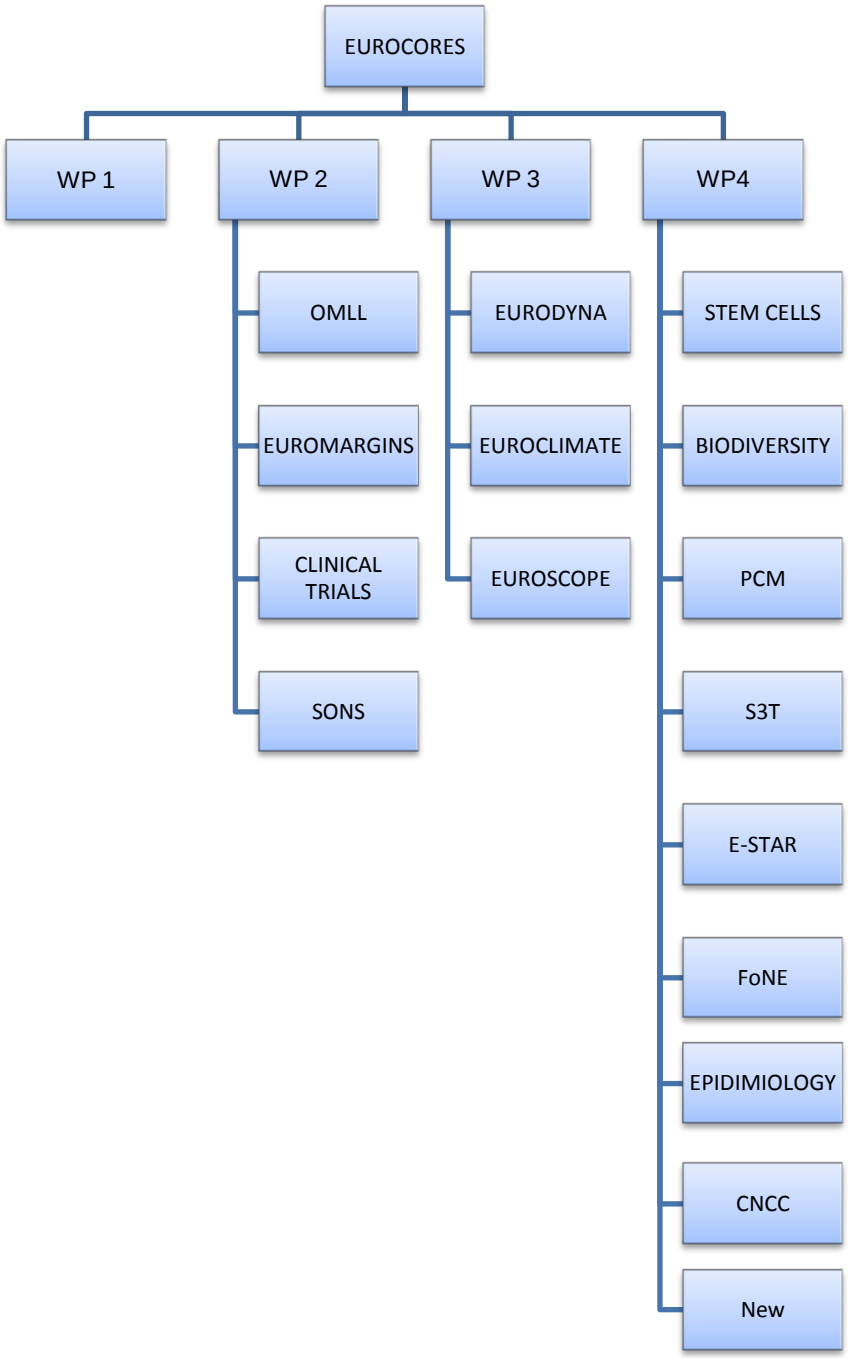


Figure 1: Programme status at the beginning of the contract in 2003

Task EUROCORES 1 - Origin of Man, Language and Languages (OMLL)
Task EUROCORES 2: EUROMARGINS

Task EUROCORES 3: Pan-European Clinical Trials (ECT)
Task EUROCORES 4: Self-Organised Nanostructures (SONS)
Task EUROCORES 5: Dynamic Nuclear Architecture and Chromatin Function (EuroDYNA)
Task EUROCORES 6: EuroCLIMATE
Task EUROCORES 7: Science of Protein Production for Functional and Structural Analysis (EuroSCOPE)
Task EUROCORES 8: Development of a stem cell tool box (non-human) (EuroSTELL)
Task EUROCORES 9: Physics and Chemistry of Minerals (PCM)
Task EUROCORES 10: Understanding biodiversity for biological conservation and restoration in terrestrial ecosystems: towards an ecological evaluation of changes (BIODIVERSITY)
Task EUROCORES 11: Smart Structural Systems Technologies (S3T)
Task EUROCORES 12: European solar terrestrial and atmospheric research (E-STAR)
Task EUROCORES 13: Fundamentals of Nanoelectronics (FONE)
Task EUROCORES 14: Genetic Epidemiology (later became EuroGEAR)
Task EUROCORES 15: Consciousness in a Natural and Cultural Context (CNCC)

In addition to monitoring and management of the programmes at Work-Packages, 2, 3 and 4, the contract had specific items as part of its Work-Package 1. These are summarised next. As of development of the Scheme (WP-1), the following items are worth revieweing.

Task 1.1: Hiring a EUROCORES Scheme Co-ordinator to ensure the co-ordinated running of the EUROCORES scheme.
Task 1.2: Ensuring the coordination of the EUROCORES scheme through the training of the Programme Co-ordinators hired for the individual EUROCORES.

Task 1.3: Development of a web-site for the EUROCORES scheme; also, providing individual space for information on each of the EUROCORES Programmes.

Task 1.4: Ensure the information distribution on EUROCORES especially, to the national funding agencies from countries that will join the European Union (accession states) and other adherents to the sixth Framework Programme, as well as to agencies outside ESF membership in current EU and EEA States.

Task 1.5: Every effort will be made to speed up the process, especially those stages which require reference to participating agencies, i.e. in obtaining statements of intent to participate and, particularly, in the stage between the review process and commitment of funding to research groups by participating agencies.

Task 1.6: Overall budget control at contract, work-package and Programme levels with the direct involvement of the Director of Science and Strategy (one month per year as direct cost to the contract) for supervision of EUROCORES and for monitoring and reviewing the process. The Director will be assisted by a EUROCORES Scheme Coordinator who will monitor procedures within each EUROCORES topic, ensure a general alignment of procedures, provide advice to ESF scientific secretariats and act as a reference point for EUROCORES for advice to the scientific community in general.

Status at Reporting Period 1 (November 2004)

Five of the main items that were reported at the first Reporting Period are highlighted below:

1- Status of the running programmes:

There were 19 EUROCORES programmes and suggestions in various phases of development. For 11 EUROCORES programmes the Call for proposals had been published, with 4 of them in the project implementation phase (OMLL, EUROMARGINS, SONS and ECT). This represented the coordination of about 33 Mio Euros of national funding.

For seven programmes (EURODYNA, EuroCLIMATE, EuroSCOPE, EuroSTELLS, EuroMinScI, EuroDIVERSITY and S3T) the Call for proposals had been published and project proposals were invited. The EUROCORES suggestions EuroGEAR, E-STAR, FoNE and CNCC were at the negotiation level prior to publishing their Call for proposals. Three new EUROCORES suggestions (EuroDEEP, BOREAS and EuroCODE) have been received and were being further developed into EUROCORES programmes.

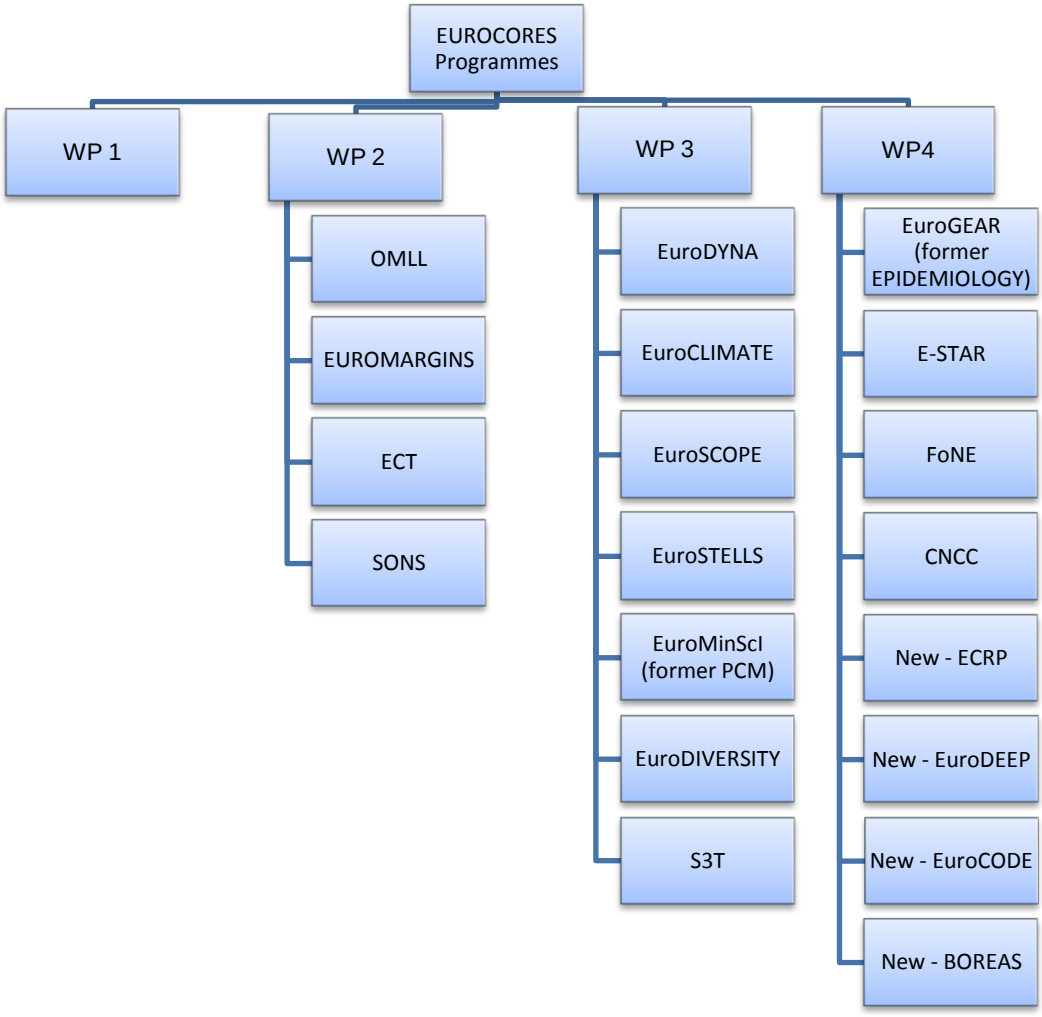


Figure 2: Programme Status in Reporting Period 1, November 2004

2- European Collaborative Research Projects (ECRP) in the Social Sciences:

Also, as another main item in this reporting period, the suggestion for the inclusion in the Scheme of the European Collaborative Research Projects (ECRP) in the Social Sciences was accepted by the then ESF Executive Board. ECRP continued to grow within the Scheme and focused on the remits of Social Sciences only. At the writing of the final report, ESF has made conscious and focused efforts in promoting the ECRP to other science domains such that the portfolio of the scheme is further enriched.

3- Development of solicitation of EUROCORES Themes through open call for proposals:

The ESF is working on the development of an improved and more structured approach to the EUROCORES Scheme. Such an improved EUROCORES Scheme will be a vital preparation to strengthening the coordination of national research programmes.

The positive input from several ESF Member Organisations indicate an increased willingness to take responsibility to improve the existing EUROCORES Scheme.

The ESF Executive Board recommended that the following components should be part of an improved and more systematic approach towards the EUROCORES Scheme:

- A high level EUROCORES Committee under the ESF Executive Board responsible for the overall quality control of EUROCORES suggestions
- Once a year competition for new EUROCORES ideas
- Agreed process for arriving at financial commitments from participating organisations
- Highest standard peer review with independent top level Review Panels
- Strong science management for running of EUROCORES programmes

The responsibilities envisaged for the EUROCORES Committee later became part of the mandate of the ESF Science Advisory Board (SAB).

4- EUROCORES workshop

It was reported that as further steps to an improved EUROCORES Scheme a EUROCORES workshop will be held on 3rd November 2004 in Amsterdam. Management Committee members of the various EUROCORES programmes, as well as scientists having participated in the various stages of EUROCORES programmes were invited to this meeting to discuss the best approaches to EUROCORES programme development and implementation. The proposal for new the EUROCORES procedures was also part of the agenda for the workshop. The follow up from the workshop, was presented at the Governing Council in April 2005 for an improved EUROCORES Scheme and procedure, considering best practices from various EUROCORES programmes and including guidelines for the submission of EUROCORES suggestions.

5- **Hiring of the EUROCORES Scheme Coordinator**

Status at Reporting Period 2 (November 2005)

Several new items were incorporated in the Scheme by the time of the reporting period 2.
The Scheme was updated to become known as the New Scheme with the following changes:

Description of Work

A new Work-Package 5, 'development of the new Scheme', was added in the revised annex to the contract.

WP1	Managing the EUROCORES Scheme
WP2	Research Phase (formerly: Implementation and Co-ordination Phase)
WP3	Project Selection Phase
WP4	Programme and Call Specification Phase and Scientific Scope Definition Phase
WP5	The Development of the New EUROCORES Scheme (new)

Table 2: Work Package definition at the Reporting Period 2

With these changes, the order of the Work Packages implied that each EUROCORES suggestion starts in WP4, in the so-called "Programme and Call Specification Phase and Scientific Scope Definition Phase". Under the new Scheme, however, this will be done by the EUROCORES Committee, mandated by the ESF Executive Board. After preparatory meetings with representatives from Member Organisations, an insight of their formal commitment (and therefore the potential size and scope of the new Programme) can be received. A viability check is necessary to ensure the programmes meet the objectives of the EUROCORES Scheme before the call for proposals can be published. EUROCORES Programmes should have a substantial size (ideally around € 10 mln) and a good representation of the most important players in the specific scientific field.

As soon as the Call for Outline Proposals is published it moves into WP3 and becomes a EUROCORES programme. This is normally the moment that a Programme Coordinator is officially appointed for the Programme, although already employed EUROCORES Programme Coordinators (in charge of other programmes), have been responsible for the EUROCORES Programme development even before launching the call for outline proposals. As soon as the national funding for the Collaborative Research Project has been secured, the respective EUROCORES Programme moves to WP2, which is the Research Phase. See the diagram below for a graphical presentation of the work-packages (status November 2005).

Under the old EUROCORES Scheme, 20 EUROCORES programmes and programme proposals in various phases of development or implementation were developed. For 16 EUROCORES programmes, a Call for proposals was published involving 57 different funding organisations, with 7 EUROCORES programmes in the **research phase** (OMLL, EUROMARGINS, SONS, ECT, EuroDYNA, EuroCLIMATE, EuroSTELLS).

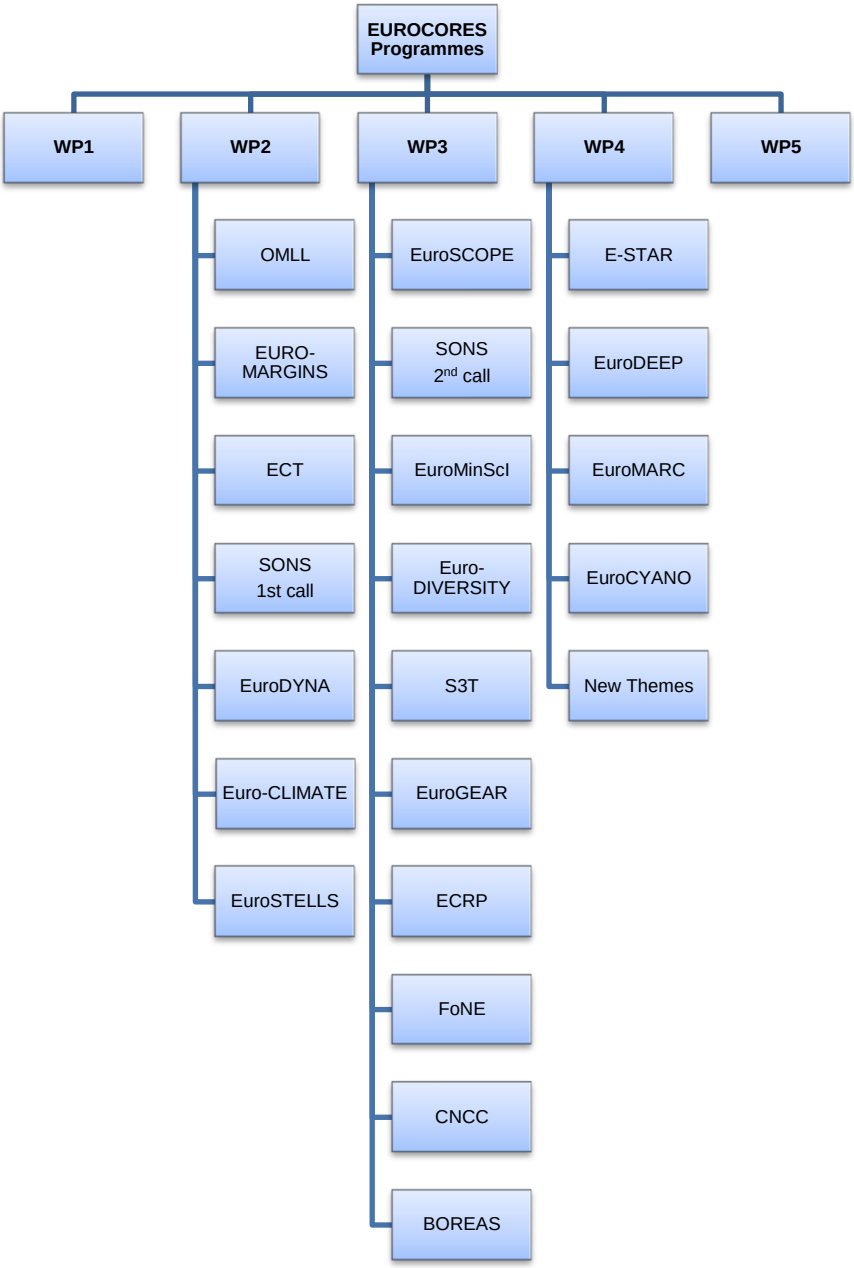


Figure 3: Programme Status in Reporting Period 2, November 2005

Name of Programme	Call publication date	Number of outline proposals received	Number of full proposals received	Number or referees approached	Number of running projects	Number of agencies involved	Number of countries	Amount of research budget
OMLL	01/03/01	n.a.	140	875	20	15	12	5,7 mln
Euro-MARGINS	18/07/01	61	23	155	14	11	10	13,7 mln
ECT	09/06/01	70	4	201	2	10	8	2,3 mln
SONS 1	16/04/02	146	57	564	16	24	20	11,6 mln
Euro-DYNA	15/11/02	57	35	271	9	11	10	7,2 mln
Euro-CLIMATE	10/07/03	103	35	444	9	14	12	4,2 mln
Euro-STELLS	01/03/04	33	7	72	3	10	10	Tbc
Total		**470**	**301**	**2382**	**73**			**Minimum € 45 mln**

Table 3: Overview of Programmes in the Research Phase in Reporting Period 2

Name of Programme	Call publication date	Number of outline proposals received	Number of full proposals received	Number of referees approached	Projects recommend-ded for funding	Number of agen-cies partici-pating	Number of countries	Expected start of research phase
Euro-SCOPE	01/10/03	20	10	68	6	11	10	Jan 06
Euro-MinScI	15/07/04	48	21	133	13	12	11	Jan 06
Euro-Diversity	20/07/04	300	53	530	22	19	16	Spring 06
S3T	15/09/04	55	23	190	16	20	15	Mid 06
Euro-GEAR	30/11/04	9	3			11	11	
ECRP	15/02/05	n.a.	51 (49 eligible)	493	n.a.	23	20	Jan – March 06
FoNe	01/04/05	31	16	285	16	16	16	April 06
BOREAS	03/05/05	28	12	n.a.	n.a.	9	9	End 06
CNCC	01/06/05	34	17	n.a.	n.a.	23	20	End 06
SONS - 2	23 May 05	56	24	413	15	16	14	April 06

Table 4: Overview of Programmes in the Project Selection Phase in Reporting Period 2

For 10 programmes (EuroSCOPE, EuroMinScI, EuroDIVERSITY, S3T, EuroGEAR, ECRP, FoNE, BOREAS, CNCC and SONS 2nd Call) the Call for proposals was published and project proposals were

invited. Of these programmes, by the end of September 2005, three Calls were still open for applications (BOREAS, EuroGEAR and SONS2). Three Programmes started the reviewing phase (CNCC, FoNe, ECRP) and four were in the negotiation phase with participating funding agencies (EuroSCOPE, EuroMinScI, EuroDIVERSITY and S3T, based on the recommendations made by the respective review panels. Two Programmes (including the Second call of SONS) have deadlines beyond the reporting period (fall 2005).

Furthermore, 4 EUROCORES programme proposals, namely E-STAR, EuroDEEP, EuroMARC and EuroCYANO, were being further developed into EUROCORES programmes and under negotiation with funding organisations before the Call for Outline Proposals could be published. These were expected to be launched in the beginning of 2006.

New Themes under New Scheme

In this reporting period the New EUROCORES Scheme was introduced. As a result 5 new themes were selected as a result of open call for theme proposal. Following the Call for Themes with a deadline of June 15 2005 under the new EUROCORES Scheme, 52 new Themes were submitted within the different remits of Physical and Engineering Sciences, Life and Environmental Sciences, Social Sciences, Medical Sciences and Humanities. The ESF Standing Committees carried out the international peer review, after which the EUROCORES Committee selected five new Themes to be developed into new EUROCORES programmes. Preparatory Workshops with representatives from ESF Member Organisations and the scientific communities concerned were held in November and December 2005 to prepare the Call for Outline Proposal for these new Programmes.

Five EUROCORES themes selected as a result of the first call:

1. Coping with Risk: Vulnerability, Risk Assessment and Decision Making in an Uncertain Europe (EUROCORIS)
2. Cold Quantum Matter (EuroQUAM)
3. The evolution of cooperation and trading: from microbes to man (TECT)
4. Quality control of Gene Expression – RNA Surveillance (RNA Quality)
5. Inventing Europe. Technology and the Making of Europe, 1850 to the Present (Inventing Europe)

Improving the mechanism

Following an analysis with the involvement of representatives from member organizations and scientists, areas for improvement of the scheme had been identified. The total process time from the idea for a theme to the last decision of the funding of projects was one of the main issues raised in the analysis. The ESF worked intensively on the development of an improved and more structured approach to the EUROCORES scheme.

The New Scheme features reported were:

- shorter decision periods;
- harmonized procedures across Programmes
- stronger commitment from the funding organisations involved.
- Constituting the EUROCORES Committee charged by the ESF Executive Board to oversee the quality of the scheme.

Input from ESF Member Organisations

The positive and constructive input from a large number of ESF Member Organisations received during this period indicated an increased willingness to take responsibility to improve the existing EUROCORES Scheme. Following an inventory questionnaire and two consultation workshops based on the analysis of the collected information, the ESF Governing council approved the new procedures in its meeting of April 2005. The resulting improved timeline is shown in Figure .

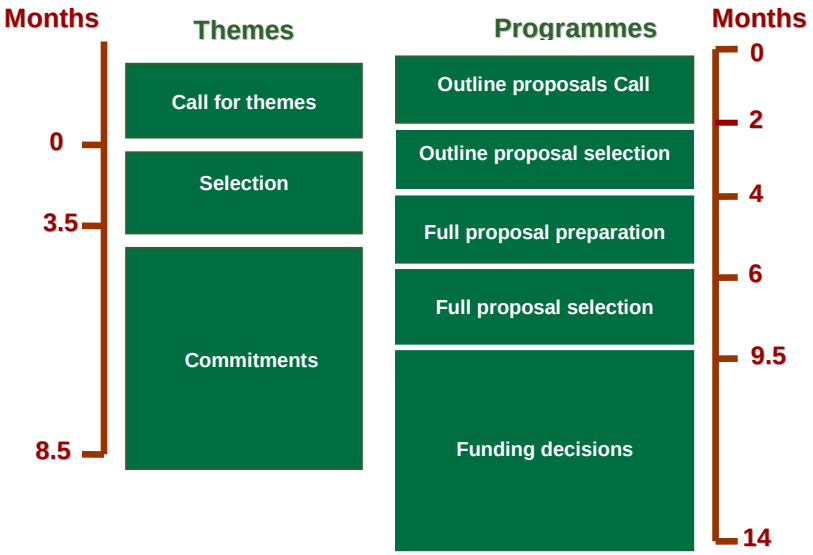


Figure 4: New timeline for the Scheme proposed in this reporting period 2

Status at Reporting Period 3 (November 2006)

In this reporting period, a slight change to the Work-Package definition was amended. Specifically, Work-Package 4 was renamed "Theme Selection Phase" instead of "Programme and Call Specification Phase and Scientific Scope Definition Phase"

With inclusion of the 'development of the new Scheme', in the revised annex to the contract, the Work Packages of the current EUROCORES contract are defined as follows:

WP1	Managing the EUROCORES Scheme
WP2	Research Phase (former: Implementation and Co-ordination Phase)
WP3	Project Selection Phase
WP4	Theme Selection Phase (formerly: Programme and Call Specification Phase and Scientific Scope Definition Phase)
WP5	The Development of the New EUROCORES Scheme

Table 5: Work Package definition at the Reporting Period 3

According to the new work-package definitions, each EUROCORES theme starts in WP4, in the so-called "Theme Selection Phase". Previously in this phase, the ESF Standing Committees and Executive Board decided upon the new EUROCORES themes.

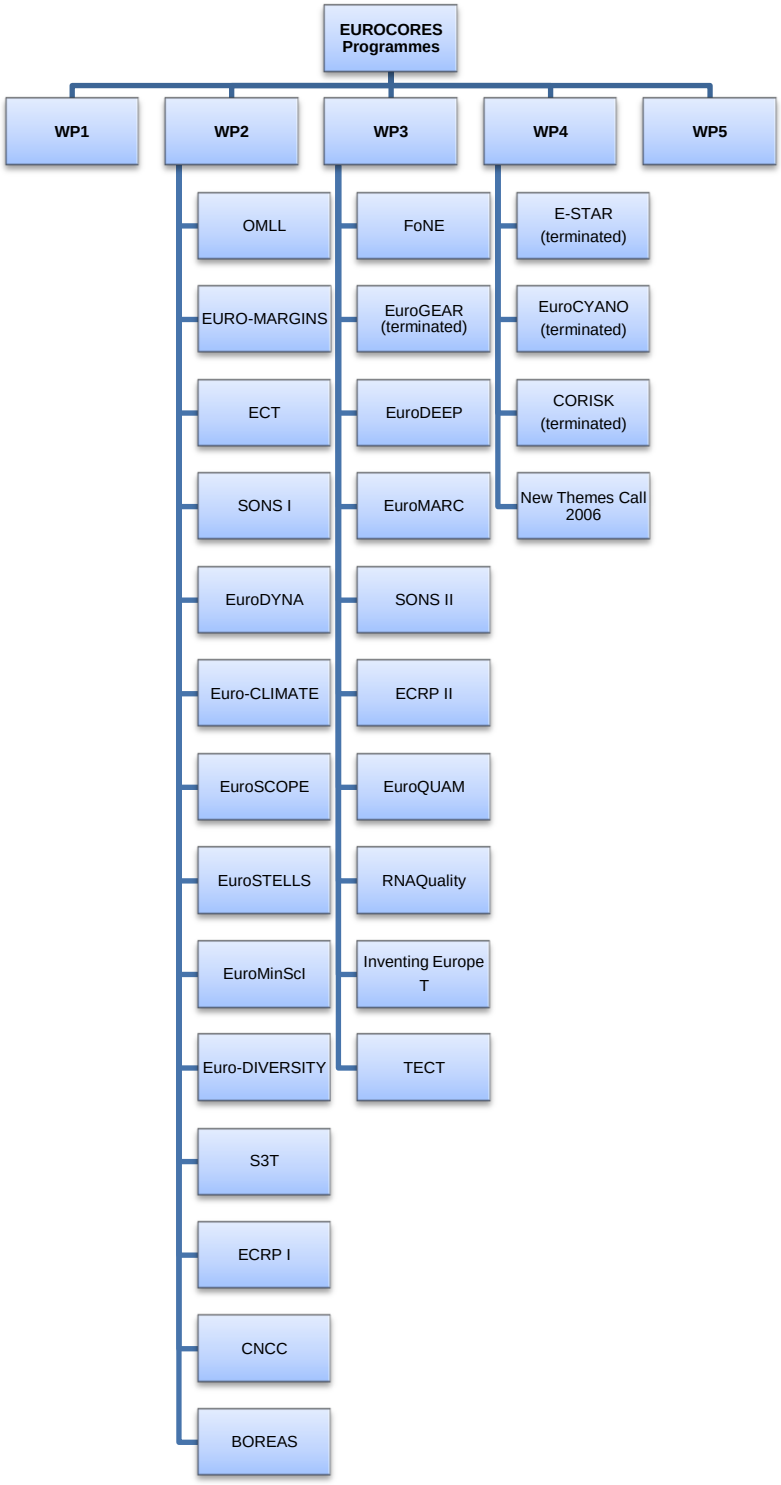


Figure 5: Programme Status in Reporting Period 3, November 2006

Under the new Scheme, however, this will be carried out by the EUROCORES Committee, mandated by the ESF Executive Board. After preparatory meetings with representatives from Member Organisations, an insight of their formal commitment (and therefore the potential size and scope of the new Programme) can be obtained. A viability check is necessary to ensure the programmes meet the objectives of the EUROCORES Scheme before the call for proposals can be published. The envisaged viable size of the programmes was set at around € 10 Mio.

As soon as the Call for Outline Proposals is published, the theme moves into WP3 and becomes a EUROCORES Programme. This is normally the moment that a Programme Coordinator is officially appointed for the Programme. The most important elements in WP3 are the peer review process, the ranking by the review panel, and the negotiation with the Funding Agencies on their formal financial contribution (based on the ranking).

Programmes in Work package 2	Call publication date	Number of outline proposals	Number of full proposals	Number or referees approached	Number of (CRPs)	Number of (IPs)	Number of agencies	Number of countries	research budget (Mio Euro)
OMLL	01/03/2001	n.a.	140	875	20	43	15	12	5,7
EURO-MARGINS	18/07/2001	61	23	155	14	76	11	10	13,7
ECT	09/06/2001	70	4	201	2	24	10	8	2,3
SONS I	16/04/2002	146	57	564	16	72	24	20	11,6
EuroDYNA	15/11/2002	57	35	271	9	39	11	10	7,2
Euro-CLIMATE	10/07/2003	103	35	444	9	50	14	12	3,7
EuroSCOPE	01/10/2003	20	10	68	6	15	11	10	2
EuroSTELLS	01/03/2004	33	7	72	3	21	10	10	3,2
EuroMinScI	15/07/2004	48	21	133	13	60	12	11	2,4
Euro-DIVERSITY	20/07/2004	300	53	530	22	124	19	16	6,9
S3T	15/09/2004	55	23	190	16	29	20	15	4
ECRP I	15/02/2005	n.a.	49	493	8	28	23	20	4,6
CNCC	01/06/2005	34	17	185	5	n.a.	23	20	n.a.
BOREAS	03/05/2005	28	12	83	7	n.a.	9	9	n.a.
Total		**955**	**486**	**4264**	**150**	**581**	**212**	**183**	**67,3**

Table 6: For Programmes in Work Package 2 (Research Phase) in the reporting period 3

Work-package 3	Call publication date	outline proposals	Ffull proposals	Number of referees	CRPs recom-mended for funding	Number of agencies participating	Number of countries	Expected start of research phase
FoNE	01/04/2005	31	16	285	16	16	16	Nov-06
EuroGEAR	30/11/2004	9	3		1	11	11	terminated
EuroDEEP	13/03/2006	11	9	n.a.	n.a.	11	9	Mid 2007
EuroMARC	21/12/2005	26	14	n.a.	n.a.	12	11	Mid 2007

Work-package 3	Call publication date	outline proposals	Ffull proposals	Number of referees	CRPs recom-mended for funding	Number of agencies participating	Number of countries	Expected start of research phase
SONS II	23/05/2006	56	24	413	15	16	14	April 06
ECRP II	02/02/2006	n.a.	26	299	n.a.	23	20	April 07
EuroQUAM	31/03/2006	24	18	n.a.	n.a.	16	15	April 07
RNAQuality	31/03/2006	12	5	n.a.	n.a.	17	14	April 07
Inventing-Europe	31/03/2006	23	14	n.a.	n.a.	18	16	April 07
TECT	10/04/2006	21	12	n.a.	n.a.	17	15	April 07
Total		**213**	**141**	**997**	**32**			

Table 7: For Programmes in Work Package 3 (Project Selection) in the reporting period 3

Programmes Terminated in this Reporting Period:

The EuroGEAR Programme (in WP 3 at this period) was terminated in February 2006 by a decision of the ESF Executive Board due to insufficient quality of the project proposals in the EuroGEAR Programme.

The EUROCORES programme proposals E-STAR, EuroCYANO, and EuroCORIS (all in WP-4) were terminated by a decision of the ESF Executive Board in November 2005, (EuroCYANO), January (EUROCORIS) and February 2006 (E-STAR).

As part of the call for theme proposal in 2006, seven EUROCORES themes were selected:

1- Stress and Mental Health (EuroSTRESS)
2- Logical Modelling in Interaction, Communication, Cognition and Computation (LogICCC)
3- Cross-national and Multi-level Analysis of Human Values, Institutions and Behaviour (HUMVIB)
4- The impact of biochemicals and infochemicals on trophic dynamics and nutrient cycling in planktonic food webs (DYNAPLAN)
5- 4-D Topography Evolution in Europe: Uplift, Subsidence and Sea Level Change - The Geoscience of Coupled Deep Earth - Surface Processes (TOPO-EUROPE)
6- Friction and Adhesion in Nanomechanical Systems (FANAS)
7- European QUAntum StandARds and Metrology (EuroQUASAR)

In this period, major efforts were made towards:

- Achieving shorter decision periods;
- Further harmonising procedures across all EUROCORES Programmes;
- Securing stronger and firmer commitments from the funding organisations involved.

Status at Reporting Period 4 (November 2007)

In this reporting period in addition to the normal progress report on the four work-packages, the results of the international evaluation of the EUROCORES Scheme were also presented.

The EUROCORES Scheme Review

In RP 4, from November 2006 until February 2007, a Review of the EUROCORES Scheme was conducted under the chairmanship of Dr. Reinhard Grunwald, DFG. In three meetings held in Bonn, Berlin and Strasbourg, the Committee discussed the problems and potential improvements of the EUROCORES Scheme.
The Scheme Review Panel observed that the EUROCORES Scheme is generally seen as a useful instrument by the scientific community already familiar with the instrument. However, at the same time the EUROCORES Scheme is not well known in the broader science community. National funding organisations are generally positive towards the Scheme but agree that there is a need for further improvements of the Scheme and its procedures, especially the procedures for the agreement on funding.
The Review Panel therefore agreed to recommend modifications in the procedures and proposed 3 model procedures for discussion and decision by the Governing Council. For all 3 models the following assumptions were made:

- **Creation of a (virtual) common pot**, containing 25% of the total commitments of national funding agencies in order to ensure a basic funding of selected projects
- Peer review carried out by the ESF is binding for funding agencies.

Model A: Including elaborate EUROCORES theme proposals already identifying potential partners and projects with no open Call for Collaborative Research Projects altogether taking not more than 9 months for a decision.

Model B: Improvement of the current EUROCORES Scheme including the creation of a theme consortium but keeping an open Call for Collaborative Research Project proposals, reducing the total time of the process to 15 months.

Model C: ESF running the common Call for national funding organisations which want to collaborate in areas of strategic importance, and the establishment of (virtual) common pot for the funding of projects.

Implementation of the EUROCORES Scheme Review Report

The EUROCORES Scheme Review report was discussed at the Governing Council in April 2007. In the report the three models (See above) for the future evolution of the Scheme were presented. The Governing Council suggested that the workshop with Member Organisations on 22 May should develop more detailed proposals for the three models. The workshop also dealt with the proposal suggested by the Scheme Review Panel to create a 25% Common Pot.
At the EUROCORES workshop on 22 May agreement was found for the implementation of the revised EUROCORES Scheme and the implementation of the ESF Collaborative Research Tool Kit. Further discussion on the implementation of the Juselius Model and the establishment of a 25% common pot in the new EUROCORES Programmes was felt to be necessary. Therefore, two Task Forces were established to develop proposals to be presented to the ESF Governing Council in September 2007 in Helsinki.
The proposals which were developed during the workshop and in the Task Forces and consequently submitted to the ESF Governing Council in September in Helsinki were the following:

Improved EUROCORES Scheme

Agreement was reached in the workshop on the 'Improved EUROCORES Scheme' in which the total time of the theme and project selection until the funding decisions to be reduced to 6.5 months for the theme selection, including reaching MO commitments, plus 9.5 months for the call for proposals and peer review, followed by a maximum of 3 months during which the participating funding agencies reach agreement on the funding of the projects.

ESF Collaborative Research Tool Kit

Agreement was also reached in the workshop on the model in which ESF is running a common Call for National Funding Organisations which want to collaborate in areas of strategic importance, for example in ERA-NETs. The Tool Kit is a flexible instrument allowing National Funding Organisations to incorporate their strategic and operational needs. The minimum conditions apply to the quality assurance, which should follow ESF standards, and the full funding of the work done by ESF. It is a fully à la carte instrument. ESF is planning to offer the Tool Kit to its MOs who are among others involved in ERA-NETs preparing for Common Calls.

TOP-CORES ('Juselius model')

This model is a one step process with an open Call (or with a strategic proposal of a group of MOs, for example Research Performing Organisations), followed by international peer review, altogether taking no more than 9 months. Proposals should be more elaborate, already identifying potential partners and outline proposals for projects. A detailed description of the model, for TOP-CORES was delivered under D39 of the periodic report for this period. It was felt that this model could well be used by Research Performing Organisations wishing to engage in transnational collaboration. Alternatively, topics could be identified for example through ESF Forward Looks.

Common Pot mechanisms

The Task Force to elaborate the recommendation for creating a Common Pot with 25% of the total research funding found that there was little enthusiasm for such Common Pot mechanisms. Several participants in the EUROCORES workshop stressed that they foresaw problems with national research money crossing borders. In the meantime ESF has conducted simulations of a 25% Common Pot mechanism on some of the existing EUROCORES. It appears that a 25% Common Pot has no significant advantages over the current funding mechanism in terms of numbers of projects funded. Only a 100 % common pot shows real advantages. However such a 100 % common pot requires strong commitment of high level in National Funding Organisations since in those National Funding Organisations there are major reservations. One problem to be solved with a full Common Pot is the avoidance of strategic behaviour, resulting in free rides.

The Task Force did come up with a mechanism which they called Open Funding. This would require a higher financial flexibility of the National Funding Organisations than is currently the case. The basic principle is that Funding Organisations agree on the overall budget for a Programme, for example by summing the earmarked national contributions. At the same time each participating Organisation agrees to fund all projects recommended for funding by the Review Panel, until the agreed total Programme budget is reached. This could mean that some Organisations of successful national research communities would eventually have to contribute more than originally earmarked. The detailed report of the Task Force on Common pot has been submitted in D39 of the periodic report.

Decision by the ESF Governing Council

The Governing Council at its meeting in September in Helsinki approved the implementation of the Improved EUROCORES Scheme and the ESF Collaborative Research Tool Kit. They also agreed that the ESF should develop a Call for proposals within TOP-CORES. For the recommendations of the Task Force on Common pot, the Governing Council agreed that the Open Funding system should be tested on some selected EUROCORES Programmes as pilot projects but they also agreed that the long-term goal should remain the establishment of 100 % common pot for the EUROCORES Programmes.

The results of the improved EUROCORES Scheme implemented in Reporting Period 2 (2005):

In RP 2, new EUROCORES procedures were introduced and in RP 3 the effect of these new procedures were seen for the EUROCORES Programmes which were in WP4 and WP3 since all the EUROCORES Programmes selected via the new procedures moved at the same speed from WP4 to WP3.

In RP 4, the full effect of the new procedures introduced in 2005 can be observed, as all Programmes selected via the new procedures have moved into WP2 as expected. The only variation being, that while funding decisions for the projects in these Programmes actually have been taken in April/May as foreseen, the organisation of networking activities has taken slightly longer than originally envisaged. Instead of being able to hold Scientific Committee meetings directly subsequent to the funding decisions, another 2 months had to be added for the organisation of the first meetings, so that the first meetings (either as launch events or Scientific Committee meetings) were organised between May and July 2007.

Another change reported in this period was the conversion of the replacement of the EUROCORES Committee by the newly formed ESF Science Advisory Board (SAB).

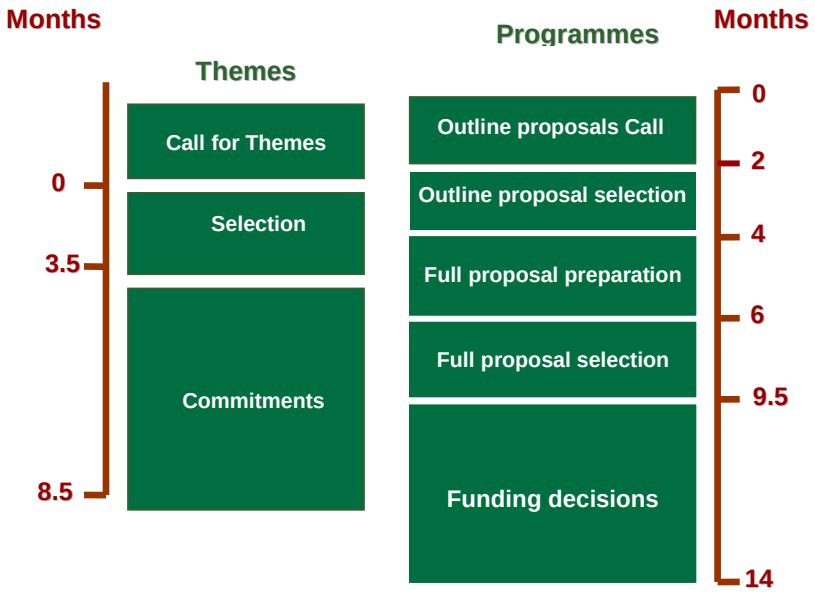


Figure 6: Confirmed timeline for the new EUROCORES Procedure

Name of Programme in Work package 2	Call publication date	Number of outline proposals received	Number of full proposals received	Number or referees approached	Number of running projects (CRPs)	Number of running projects (IPs)	Number of agencies involved	Number of countries participating	Amount of research budget (Mio Euro)
OMLL	01/03/2001	n.a.	140	875	20	43	15	12	5.7
EURO-MARGINS	18/07/2001	61	23	155	14	76	11	10	13.7
ECT	09/06/2001	70	4	201	2	24	10	8	2.3
SONS I	16/04/2002	146	57	564	16	72	24	20	11.6
EuroDYNA	15/11/2002	57	35	271	9	39	11	10	7.2
Euro-CLIMATE	10/07/2003	103	35	444	9	50	14	12	3.7
EuroSCOPE	01/10/2003	20	10	68	6	14	11	10	2
EuroSTELLS	01/03/2004	33	7	72	3	21	10	10	3.2
EuroMinScI	15/07/2004	48	21	133	13	58	12	11	2.4
Euro-DIVERSITY	20/07/2004	300	53	530	22	81	19	16	6.9
S3T	15/09/2004	55	23	190	16	29	20	15	4
FoNE	01/04/2005	31	16	285	5	25	16	16	4.7
ECRP I	15/02/2005	n.a.	49	493	8	33	23	20	4.6
CNCC	01/06/2005	34	17	185	5	27	23	20	n.a.
EuroDEEP	13/03/2006	11	9	100	4	22	11	9	n.a.
BOREAS	03/05/2005	28	12	83	7	36	9	9	n.a.
SONS II	23/05/2006	56	24	413	7	40	16	14	7.3
ECRP II	02/02/2006	n.a.	26	299	5	26	23	20	4.7
EuroQUAM	31/03/2006	24	18	150	5	38	16	15	n.a.
RNA Quality	31/03/2006	12	5	80	3	16	17	14	n.a.
Inventing Europe	31/03/2006	23	14	104	4	21	18	16	3.3
TECT	10/04/2006	21	12	148	5	31	17	15	3.3
Total		**1133**	**610**	**5843**	**188**	**822**	**346**	**302**	**90.6**

Table 8: For Programmes in Work Package 2 (Research Phase) in the reporting period 4

Work-package 3	Call publication date	Number of outline proposals received	Number of full proposals received	Number of referees approached	CRPs recom-mended for funding	Number of agencies participating	Number of countries	Expected start of research phase
EuroMARC	21/12/2005	26	14	n.a.	n.a.	12	11	October 2007
EuroSTRESS	13/03/2007	11	7	n.a.	n.a.	15	14	May 2008
EuroQUASAR	13/03/2007	7	5	n.a.	n.a.	12	12	May 2008
FANAS	13/03/2007	18	12	n.a.	n.a.	17	16	May 2008
TOPO-EUROPE	13/03/2007	47	23	n.a.	n.a.	23	22	May 2008
LogICCC	13/03/2007	34	15	n.a.	n.a.	18	17	May 2008
HumVIB	13/03/2007	28	14	n.a.	n.a.	19	18	May 2008
ECRP III	01/02/2007	n.a	23	194	n.a	23	20	n.a
Total		**171**	**113**	**194**	**0**			

Table 9: For Programmes in Work Package 3 (Project Selection) in the reporting period 4

The six selected EUROCORES themes in this period were:

1- A study of the interaction of genetic and lifestyle factors on the incidence of coronary heart disease (EuroHEART)
2- Higher Education and Social Change (EuroHESC)
3- Better Analyses Based on Endangered Languages (EuroBABEL)
4- How cells shape and utilize their membranes (EuroMEMBRANE)
5- Biogenic Volatile Organic Compounds in the Carbon Cycle – Climate System: Present, Past, and Future Projections (EuroVOC4)
6- Chemical Control at the Nanoscale (EuroNANOCHEM)

Some of the main challenges faced and reported at the end of this reporting period were:

Decisions on funding in National Funding Organisations
Consistency and speed in dealing with the funding decisions by all National Funding Organisations. Although this seemed to be much faster in general it remains difficult for the ESF office to receive final information on the actual amounts of funding being released to the scientists. For some of the EUROCORES Programmes developed through the new EUROCORES procedures, the situation has been that National Funding Organisations, even though they provided the information on which proposals they would be funding by April, in some cases, the funding was not released by September 2007.

Funding viability for the EUROCORES programmes
It has been difficult to adhere with the intended large-scale nature of the funded EUROCORES Programmes. For the Programmes developed under the new EUROCORES procedures (TECT, Inventing Europe, EuroQUAM and RNAQuality), the situation occurred that not even all funding committed by National Funding Organisations to a specific EUROCORES Programme could be used up, so that committed funding was lost.

End of the EC EUROCORES contract and introduction of a new funding system
A major challenge was reported to be the management of the end of the support through the EC contract and the transition to a new EUROCORES funding scheme in which the networking and coordination costs by the ESF will be carried by the National Funding Organisations participating in the EUROCORES Programmes. This creates challenges at several levels, one being that National Funding Organisations are not prepared to carry such costs, especially not for EUROCORES Programmes already running. In some cases there also seem to be legal boundaries for paying such coordination and networking costs to another organisation.

Another major challenge in that respect is the reassurance of staff currently working on EUROCORES Programmes for continuous employment to ensure the continuity of activities in the EUROCORES Programmes. The ESF is limited to proposing short-term contracts with a fixed duration in line with the contractual time frame at the time of recruitment (the duration of the formal contract being extended each year for 12 month periods), which made it difficult to attract high-quality candidates. So far two Science Officers have left the ESF in the reporting period and finding qualified staff for short term contracts is a continuous challenge.

Status at Reporting Period 5 (May 2009)

The new EUROCORES procedures 2008

With the Call for theme 2008, the new and shorter timeline was implemented (see figure below). While the publication date and deadline for the Call for themes remained in March and June 2008 and the time for the Peer Review of the theme proposals by the ESF Standing Committees during the summer period remained also at 3-3.5 months, the period for the processing of the EUROCORES theme proposals was shortened so that after the approval of the ESF Governing Council in October, the Calls for proposals could be finalised and distributed for formal commitments to the National Funding Organisations with a commitment deadline of 10 December of each year. The Calls for Outline Proposals were published in December 2008 and January 2009 with deadline for submission in March 2009. These programmes will go through the Peer Review Process in spring and summer with a finalisation of the selection process by the ESF by 15 October 2009. National Funding Organisations are subsequently invited to take their funding decision so that the Programmes may start in January/February 2010 instead of June as would have been the case under the previous timeline and procedures.

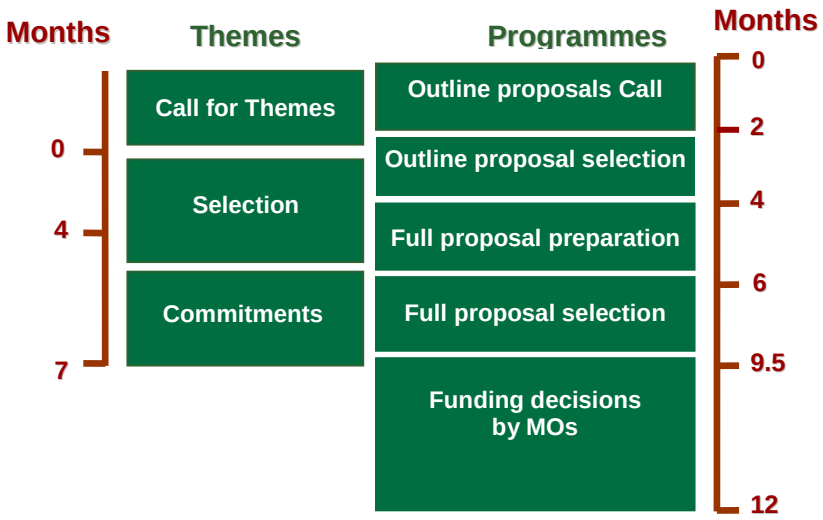


Figure 7: Current timeline for new the EUROCORES procedures

Topical EUROCORES (TOP-CORES)

As reported in previous periods, this variant of EUROCORES proposed in the evaluation of the Scheme in 2007, is meant to provide possibilities for medium-term cooperation between outstanding scientists on a European [or international] scale focusing on special topics that are broad, complex and of particular interest to a sufficient number of ESF Member Organisations (from at least three countries). This would in principle imply that these topics should be relevant and timely not only within the European Research Area (ERA) but also at an international scale.

The two fundamental features of TOP-CORES are:

1- Common peer review and governance provided and coordinated by the ESF.

2- A common-pot covering Networking activities as well as coordination and management costs (common pot or open funding mechanisms would considerably help maximizing the funding of

Collaborative Research Projects)

Similar to traditional EUROCORES Programmes, TOP-CORES has three main stages:

1-Selection of Topics (Themes);
2-Selection of Projects;
3-Collaborative Research and Networking.

For the implementation of the TOPCORES instrument as approved by the ESF Governing Council the ESF identified together with National Funding Organisations a topic which had emerged through joint ESF-NSF activities enabled by the networking activities of the EUROCORES Programme S3T (Smart Structural Systems Technologies). The selected topic was "Bio-inspired Engineering of Sensors, Actuators & Systems" (EuroBIOSAS). It was decided by the Governing Council in their meeting of October 2008 that ESF should bring the proposal under the normal EUROCORES Scheme and continue with the further definition of the TOP-CORES variant. ESF is currently conducting a full-spectrum analysis of the portfolio of collaborative research managed within the Scheme. The result of this conceptual framework which will cover TOP-CORES as an integrated module will be submitted to the EUROCORES Scheme Management Committee in June this year.

ESF Collaborative Research Tool Kit

The ESF Collaborative Research Tool Kit offers as a package the experiences developed from running the EUROCORES Scheme and its numerous Programmes (e.g. development of Calls for proposals, running the international Peer Review etc.). This Tool Kit can be used by other National Funding Organisations and by other initiatives such as the ERA-Nets. The first application of the ESF Tool Kit is for the peer review and project selection of the PolarCLIMATE Call generated by the EUROPOLAR ERA Net.

Term of Participation in the EUROCORES Scheme 2008

To ensure a clear basis for the governance of the EUROCORES Scheme and understanding of the rights and expectations of the participating organisations in the Scheme, the "Terms of participation in the EUROCORES Scheme 2008" were approved by the ESF Governing Council at their meeting in October 2008. The Terms of participation stress especially, the rights and obligations of participation National Funding Organisations in the process of the EUROCORES theme and programme selection as well as the financial obligation in the contribution to the coordination and networking costs and the funding of selected proposals. They also establish the EUROCORES Scheme Management Committee as the advisory body for the management and development of the EUROCORES Scheme. The main overall governance remains with the ESF Governing Council.

Overview of Programmes in the Research Phase

The EUROCORES Scheme has supported 41 EUROCORES Programmes. Of these 41 Programmes, 7 Programmes have completed their activities while currently 34 EUROCORES programmes are still active (status March 2009). Of these 34 Programmes, at the time of writing, 23 are in the **research phase,** 4 have completed their Peer Review and are in the final funding negotiations stage, awaiting the kick off of their networking activities in the next months.

Name of Programme in Work package 2	Call publication date	Number of outline proposals received	Number of full proposals received	Number or referees approached	Number running projects (CRPs)	Number running projects (IPs)	Number agencies involved	Number of countries participating	Amount of research budget (Mio Euro)
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Euro-CLIMATE	10/07/2003	103	35	444	9	50	14	12	3.7
EuroSCOPE	01/10/2003	20	10	68	6	14	11	10	2
EuroSTELLS	01/03/2004	33	7	72	3	21	10	10	3.2
EuroMinScI	15/07/2004	48	21	133	13	58	12	11	2.4
Euro-IVERSITY	20/07/2004	300	53	530	22	81	19	16	6.9
S3T	15/09/2004	55	23	190	16	29	20	15	4
FoNE	01/04/2005	31	16	285	5	25	16	16	4.7
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CNCC	01/06/2005	34	17	185	5	27	23	20	4.3
EuroDEEP	13/03/2006	11	9	100	4	22	11	9	3.2
BOREAS	03/05/2005	28	12	83	7	36	9	9	5.1
SONS II	23/05/2006	56	24	413	7	40	16	14	7.3
ECRP II	02/02/2006	n.a.	26	299	5	26	23	20	4.8
EuroMARC	21/12/2005	26	14	n.a.	7	37	12	11	7.5
EuroQUAM	31/03/2006	24	18	150	5	38	16	15	6.5
RNA Quality	31/03/2006	12	5	80	3	16	17	14	3.5
InventingEurope	31/03/2006	23	14	104	4	21	18	16	3.3
TECT	10/04/2006	21	12	148	5	31	17	15	3.3
EuroSTRESS	13/03/2007	11	7	94	4	13	15	14	4.2
EuroQUASAR	13/03/2007	7	5	n.a.	3	17	12	12	3.6
FANAS	13/03/2007	18	12	113	7	39	17	16	7.1
TOPO-EUROPE	13/03/2007	51	23	152	10	62	23	22	13.9
LogICCC	13/03/2007	34	15	106	8	29	18	17	6
HumVIB	13/03/2007	28	14	73	6	24	19	18	4.1
ECRP III	01/02/2007	n.a	23	194	2	8	23	20	1.5
Total		**1308**	**723**	**6575**	**235**	**1041**	**485**	**432**	**161.2**

Table 10: For Programmes in Work Package 2 (Research Phase) in the reporting period 5

Overview of Programmes in the Project Selection Phase

The eleven programmes in the **project selection phase** fall into 2 Batches of Programmes (besides the ECRP Scheme Programmes). The first Batch of Programmes result from the 2007 Call for Themes, following which the Calls for proposals were launched in March 2008 (EuroMEMBRANE, EuroHESC and EuroBABEL). These Programmes have completed their Peer Review and are in the final stage of negotiations with the National Funding Organisations for the completion of the Project Selection Phase.

The second Batch is composed of the Programmes resulting from the Call for themes in 2008 for which the Calls for proposals were launched on 19 December 2008 (for EuroGRAPHENE, EuroCORECODE, EuroEEFG and EuroSYNBIO), on 8 January 2009 (for EuroCOOLS and EuroGENESIS) and on 1 February 2009 (for ECRP V). For these seven Programmes the Calls for proposals have been published and the outline proposals have been received. Considering the level of financial commitment and the response to the call for proposals for EuroCOOLS, the status of this programme is still uncertain and will be determined within the next few weeks.

Work-package 3	Call publication date	Number of outline proposals received	Number of full proposals received	Number of referees approached	CRPs recom-mended for funding	Number of agencies participating	Number of countries	Expected start of research phase
EuroMEMBRANE	11/03/2008	35	17	128	9	12	12	May 2009
EuroHESC	11/03/2008	22	9	59	5	15	15	May 2009
EuroBABEL	11/03/2008	37	19	101	11	20	20	May 2009
ECRP IV	01/02/2008	n.a.	12	369	10	17	16	May 2009
EuroGRAPHENE	19/12/2008	23				23	22	Jan/Feb 2010
EuroEEFG	19/12/2008	59				18	17	Jan/Feb 2010
EuroCORECODE	19/12/2008	15				19	18	Jan/Feb 2010
EuroSYNBIO	19/12/2008	24				18	14	Jan/Feb 2010
EuroGENESIS	08/01/2009	5				12	11	Feb. 2010
EuroCOOLS	08/01/2009	6				14	13	Terminated
ECRPV	01/02/2009	n.a.	49			23	20	Feb. 2010
Total		**226**	**106**	**657**	**35**			

Table 11: For Programmes in Work Package 3 (Project Selection) in the reporting period 5

New Themes from the 2008 Call

Following the Call for Themes with a deadline of 2 June 2008, 38 new Themes were submitted. Following the selection process described above six themes were chosen to be developed into EUROCORES Programmes. These were assessed and selected using the selection criteria of scientific quality, European scientific added value and the unique character of the proposed Programmes compared to Programmes supported in other instruments.

In 2008, no preparatory workshops took place since one major ambition of the revised EUROCORES procedures was the further shortening of the timeline through different measures, one of which being the abolishment of the Preparatory workshops. However, for the finalisation of the Call for proposals and the possibility to incorporate any comments from the ESF Standing Committees or National Funding Organisations, some proposing teams held meetings in September/October 2008 together with an ESF representative. After the viability check by the Science Advisory Board in December, the Calls for proposals for these new programmes were published on 19 December 2008 and 8 January 2009.

Appendix B: Sample Success Stories from EUROCORES Programmess

Although reporting on individual programmes in terms of their scientific achievements and accomplishments is well beyond the scope of this report, in this Appendix, a sample of recent Success stories reported during this period is provided as examples.

CNCC: Consciousness in a Natural and Cultural Context

Prizes Recognise Young Scholars in Consciousness Research (Appeared in Insight 5, November 2008)

The brightest new research talent in the science of consciousness came together for the final of the EUROCORES CNCC (Consciousness in a Natural and Cultural Context) essay prize, held in Edinburgh on 28th June. Two winners were plucked from a shortlist of six finalists who represented the cream of emerging academics in the field.

The finalists each had the chance to give presentations on their submissions at a daylong conference at Edinburgh University. The announcement marked the long awaited culmination of a difficult selection and judging process. The award, which is part of the EUROCORES programme CNCC, was aimed at creating a space for promising young researchers to join established scholars from across the scientific and philosophical community and bring their work to a wider audience.

Edinburgh's own PhD student Dave Ward, and Hong Yu Wong from University College London, were selected as joint winners and each received €1500 for their submissions. Only six out of the total of 44 submissions were eventually shortlisted for the competition. The final six candidates were chosen for the unique contribution they are making to the understanding of consciousness, and all papers will be published in a forthcoming edition of Psyche.

Hong Yu Wong presented a paper on bodily experience and human agency, which examined the crucial role of bodily awareness in the control of action. The paper drew on empirical and conceptual knowledge to demonstrate human agency depends on embodied consciousness.

"It is very nice to win this prize and a big help for my career," Hong Yu said. "More importantly this was a very interesting competition because it celebrates this kind of interdisciplinary approach and gave us junior scholars an opportunity to interact with and get feedback from established professionals."

Dave Ward's paper focused on how our knowledge of colour facilitates human action in the world. Dave's view is that our ability to distinguish colour is a function of how we sort information in our consciousness in order to "sift, sort and track" our perceptions and act accordingly.

"This is a really great honour," said Dave. "To be chosen from such a talented group of entrants is great, and it was good to have a chance to get some top feedback on my work."

Following the announcement of the prize-winners, Professor Andy Clark from Edinburgh University, commented on the quality of talent on show at the conference, and predicted a promising future for a

collaborative, interdisciplinary approach to understanding consciousness.

“Interdisciplinary studies of the mind are becoming more and more important,” he said. “Encouraging young scholars like this who are truly empirically informed, interdisciplinary, and excited about the mind – bringing them together and showing them that they can do things like this – I think is incredibly important.”

Clark emphasised that EUROCORES is an essential form of support for helping young research talent make the move into serious cutting edge scholarship. “The European Science Foundation is doing a very good job of supporting that. It is just an exciting time to be studying the mind and a therefore a great time to get young scholars interested” continued Clark.

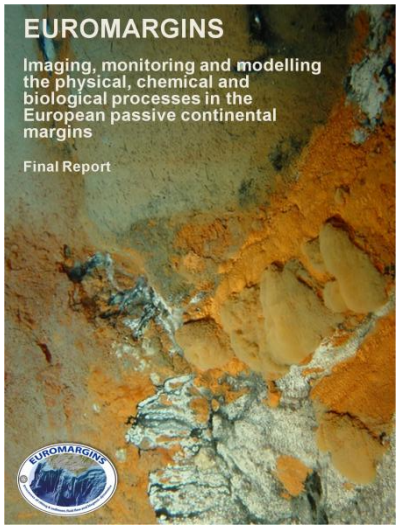
The idea for the essay prize was born out of an attempt by those working on the CNCC programme to allow young researchers an opportunity to present their work to the international academic community. The programme is run by senior scholars in the field and brings together the world’s leading minds in the exploration of human consciousness. Projects across Europe aim to form a complete understanding of mind from both a social and cultural perspective, as well a conceptual and scientific one.

Despite the fact that this work is highly specialised and involves pioneering work at a high level, a lot of the research is carried out by students at PhD level. These young scholars explore detailed conceptual problems and carry out experiments and investigations in crucial areas. Organisers of CNCC were conscious of the vital role these contributions make to the overall goal of understanding consciousness. The essay prize aims to recognise this work, and the rich pool of talent that forms the basis of an exciting global project to unravel the mysteries of the mind.

Professor Clark added that an award like this can also help to recognise the powerful contribution graduates are already making to international cutting edge research in the science of consciousness. “One thing that we have seen here is just how much serious, first author work is being done, by people whose names you probably won’t see in published journals for a few years yet, but who are certainly going to be at the forefront of the next generation” concluded Clark.
For more information, see www.esf.org/cncc

EuroMARGINS: **Imaging, monitoring and modelling the physical, chemical and biological processes in the European passive continental Margins**

Happy ending for EUROMARGINS, the first EUROCORES on geosciences



The EUROMARGINS programme launched by the European Science Foundation (ESF) in the early 2000s focused on studying the eastern and western Mediterranean and the North-East-Atlantic sedimentary systems and deep-seated structures. Margins are sites of some of the world’s largest sediment accumulation

centres and are among the best indicators for past changes in sea-level, climate, sediment transport and fluxes. The margins around Europe are prone to major natural geohazards where seismic activity and submarine slope failures may trigger tsunamis. Since the majority of the population lives within a short distance to the coastal zone our understanding of geohazards and their development is of societal relevance. Our comprehension of how the margins around Europe have changed and are changing draw on only a small number of variables that have been geophysically imaged and modelled very carefully with emphasis on the Norwegian and Greenland rifted continental margins, the margins surrounding the Iberian Peninsula, and the Mediterranean margins. There are many new discoveries related to fluids that are emitted to the ocean via the seafloor. Fluid seeps are highly variable and dynamic biological hotspot locations. Presently, the global inventory of fluid storage systems, such as gas hydrate in continental margins, attracts much attention regarding future energy resources, climate threat and geohazards. This is one of the instances where EUROMARGINS research has contributed significantly. Geohazard studies along the European margins provided new insights into the role fluid flow may play as a trigger for submarine slope failures. Many publications resulted from the EUROMARGINS programme. In particular, a special issue in the Marine Geology journal provides one of several excellent examples of the integrated research of the programme. The eleven papers of the special volume to be released in May 2009 focus on the Norwegian-Greenland, the Algerian, the Iberian and the eastern Mediterranean margins including the Nile deep-sea fan. The EUROMARGINS final report is also available on the ESF website under
http://www.esf.org/activities/eurocores/programmes/euromargins.html

EuroCLIMATE:

The climate for the next century, and thereafter, is expected to be largely different from the present and the recent past. CO2 concentration is expected to reach levels unequalled over the past millions of years. Temperature is also rising rapidly. The last 150 years of meteorological observations and the reconstruction over the last millennium display a quite uniform climate. Only the reconstruction of paleoclimates extending much further back in time can help build a database with a broader climatic diversity. In addition, such a database offers the possibility to test the reliability and robustness of the models used for future climate scenarios and thus to better understand how the climate system works.

The EuroCLIMATE EUROCORES programme (2005-2008) focused both on reconstructing past climates using different well-dated and calibrated proxy records and on modeling climate and climate variations for a better understanding of the underlying physical, chemical and biological processes involved. Thanks to an integrated research and collaboration between nine Collaborative Research Projects (CRPs), new proxies to reconstruct past climates have been developed and intercalibrated for both marine and continental regions. For instance, the absolute chronology based on tree rings has been extended and coupled to ice-core archives. Most importantly, the programme has achieved that data producers and climate modellers are becoming good collaborators and that the cooperation between the terrestrial and marine scientists have been firmly established.

Some scientific issues need to be addressed at a scale which is beyond the scope of national funding levels because their ecological and socio-economic implications are global. It is particularly the case for climate research. Next to the EU Framework Programme and EUROCORES Programmes is the only alternative for doing collaborative research at a European scale. Based on the EuroCLIMATE experience, the EUROCORES scheme has been a fantastic instrument that allowed climate scientists to do research at the European level with relatively little administrative burden and an excellent networking and outreach

component as for instance the release of the EuroCLIMATE DVD.

Climate scientists are not only driven by curiosity, but also by concerns about the fate of the Earth. This requires a global approach. Follow-up activities have and will certainly continue to emanate from the active EuroCLIMATE community. In particular, for the marine scientists, the natural extension of EuroCLIMATE would be a collaborative programme on ocean acidification. But other ideas are also germinating in the land proxy specialist's minds and will soon be submitted to the ESF for further programme development.

EuroSCOPE: **European biotechnologists unravel life's big cellular factories**

Biotechnologists are poised to take a leap forward in understanding the detailed structure and mechanism of life's major cellular machines, which could lead to new therapies for a range of diseases and disorders. These machines are large assemblies of macromolecules such as proteins that process external signals to modify gene expression and control biochemical activity inside the cell. Further progress depends on being able to manufacture the machines accurately so that their structure can be studied in the laboratory using techniques such as cryo electron microscopy, x-ray crystallography and high resolution mass spectrometry.

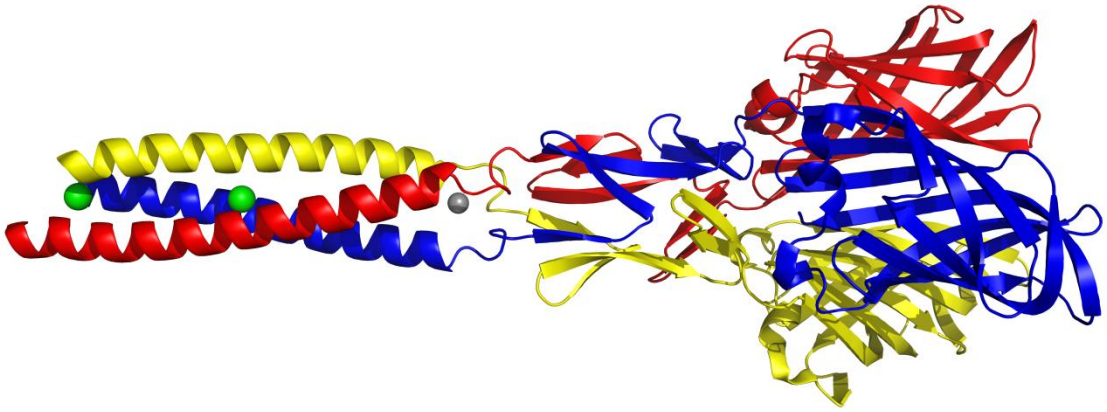


Fig.1 Reovirus cell attachment protein (fibre) (courtesy of Mark van Raaij, University of Santiago de Compostella)

Recent advances in recombinant protein production, and prospects for progress obtaining the structure of important molecular machines involved in critical cellular activities, were discussed at a recent meeting co-organised by the EuroSCOPE programme of the European Science Foundation (ESF). The meeting highlighted progress in harnessing bacteria to produce proteins so that they can then be studied in the laboratory, and used for novel drugs to treat diseases, according to Roman Tuma, a biophysicist from Leeds University in the UK, and a convenor of the EuroSCOPE meeting.

"Currently, the number of protein-based pharmaceuticals is steadily increasing since they are highly specific and exhibit far fewer side effects than traditional drugs," said Tuma. "However, their wider use is hindered by the higher production costs. The work of Marcus Aebi and colleagues from ETH Zurich on engineering E. coil bacterium for production of mammalian proteins will definitely help biotech and

pharmaceutical firms to reduce the costs and ultimately bring new treatments to market at affordable cost." This was a good example of how clever genetic engineering can be used to transform former pathogens into model organisms for research and technology.

Protein complexes play a variety of important roles in assembling cellular components themselves and regulating activities that include expression of genes and subsequent activities of the protein and RNA molecules resulting from such expression. The workshop noted the recent success in determining the structure of the protein factory itself, the ribosome, which is one of biology's most elaborate and remarkable machines. The workshop also identified another protein complex, the spliceosome, as an important target for investigation. The spliceosome is comprised of protein and RNA units and precisely cuts and re-assembles transcribed RNA into protein-coding messenger RNA, which is subsequently translated by the ribosome into proteins. It does this by removing introns, i.e. non-coding sequences, from the precursor RNA produced by reading the underlying DNA.

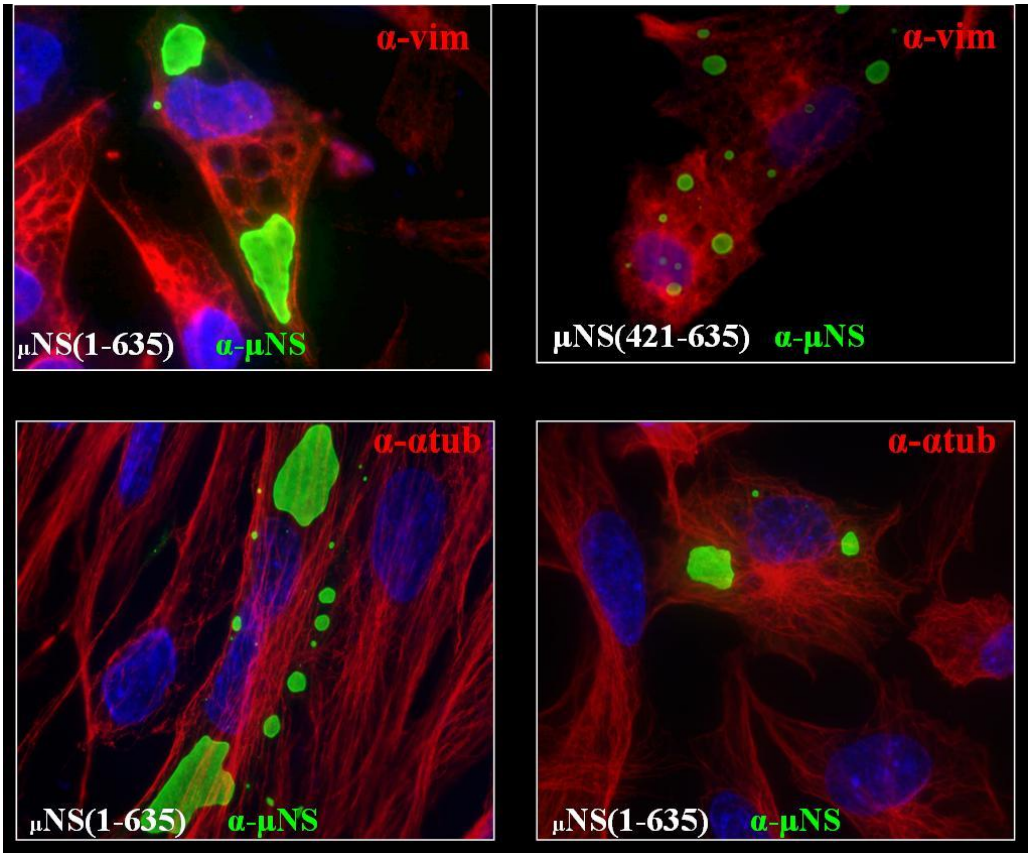


Fig 2. Avian reovirus inclusions formed by protein μNS (Courtesy of Prof. Javier Benavente, University of Santiago de Compostella)

Not all protein complexes in the cell play a constructive role. In the event of virus infection, the cell becomes populated by alien macromolecules, which recruit the host's ribosomes to manufacture proteins the virus needs. At the ESF conference, José Martinez-Costas and Javier Benavente, both from the Santiago University in Spain, described proteins used by the avian reovirus to form viral inclusions, which are areas inside the host cell where the virus houses the components it needs to propagate. These viral

"factories" serve to produce new virus that then go on to infect other cells. The assembly of viral factories is an essential step in the virus life cycle and thus constitutes a novel target for drug intervention.

“Avian reovirus is a recurring menace for poultry farms across southern Europe and these epidemics have devastating economic consequences,” said Tuma. “José Martinez-Costas and Javier Benavente made a breakthrough in understanding the essential step of infection during which new reoviruses are formed inside the host cell. This may help with designing a cheap drug intervention which would prevent spread of the epidemic and needless culling of thousands of birds annually.”

The conference included a session on folding, assembly and secretion of complex proteins, aiming to tackle the important bottlenecks that still must be overcome in recombinant protein production. There was also a strong focus on the role of molecular chaperones in protein production in all organisms, since these are essential for correct folding and subsequent assembly after the chain of amino acids has been generated. Molecular chaperones are required to help the correct folding of the chains by preventing incorrect interaction of the polypeptide chain either with itself or with other proteins. Molecular chaperones are also employed during the attachment of carbohydrates and lipids that are needed for the formation of some large molecular complexes.
Apart from folding and assembly, protein complexes are also involved in processing signals transmitted either between or within cells, coordinating the expression of genes and also large scale activities, such as muscle contraction. Signalling between single cell micro-organisms occurs in bacteria that live in colonies or biofilms and is used to coordinate bacterial behaviour, a process that is called quorum sensing. Greater knowledge about the protein complexes that are involved in processing the information will help develop cures for diseases right across the spectrum, including infectious diseases such as Tuberculosis, and certain auto-immune conditions where signalling between human cells goes wrong.
The ESF meeting ended on high hopes of substantial progress, based on growing structural knowledge of the major protein assemblies and their role in the basic processes that occur inside the cell.

The 5th Meeting on Recombinant Protein Production was organised by the Microbial Physiology Section of the European Federation of Biotechnology from 24-28 September 2008 in Sardinia, Italy, near the town of Alghero.

EuroQUAM: Cold Quantum Matter

Faraday meeting's hot science and ultracold molecules, written by the science journalist David Bradley

A Faraday Discussion on the subject of ultracold molecules that was more than two years in the planning has proved to be exceptionally timely, says the meeting's Chair Professor Jeremy Hutson of Durham University.

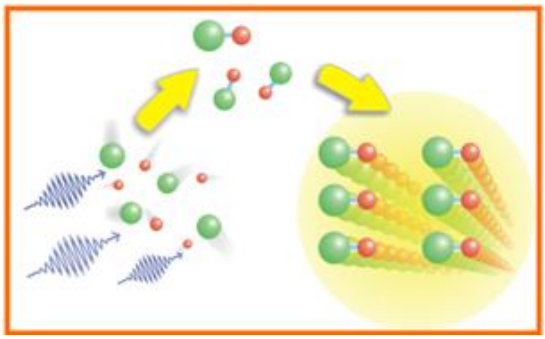
"During 2008, several research groups around the world succeeded in producing ultracold molecules in their lowest rotation-vibration state for the first time." This, he adds has been a major goal for several years. "It will let us create and study new phases of matter in which even translational motion behaves quantum mechanically," he explains, "and it opens the way to a new form of quantum control for molecules."

An introduction to the meeting held in mid-April explained how such advances in scientists' ability to produce and trap cold molecules at temperatures around 1 Kelvin and ultracold molecules at 1 milliKelvin, are providing new insights into the fundamental behaviour of matter and chemical reactions. The same

science might also enable future technological applications in areas such as quantum computing and materials science.

The main focus of the EuroQUAM programme is to study cold and ultra-cold molecules. The programme deals with cold quantum matter in general. Hutson explains how the EuroQUAM programme provides a mechanism for groups across Europe to collaborate and share their results.
"Collaborations between experimental and theoretical research groups in particular have been crucial in recent developments," he says, "and EuroQUAM scientists are now ideally placed to exploit the new results."

ESF's EuroQUAM programme began in July 2007 and is now at its mid-term.
Sixty scientists funded within the program participated in the Royal Society of Chemistry's Faraday Discussion No 142 in Durham, UK. Two of those scientists Professor Matthias Weidemueller of the University of Heidelberg, Germany, and Professor Johannes Hecker Denschlag, of the University of Innsbruck, Austria, highlighted an especially promising area of ultracold science - molecular quantum gases.



One particular focus of the work of Weidemueller's team is the use of sophisticated techniques for manipulating many-body quantum systems using coherent light. He revealed details of the photoassociation of ultracold dipolar molecules in the lowest rovibrational states.

This research involves merging two different atomic clouds at ultralow temperatures to produce ultracold molecules from lithium and caesium atoms using laser light. The team could store these molecules at 100 microKelvin at densities of just one hundred billion per cubic centimetre.

"Nobody anticipated that progress on the formation of ultracold molecular gases within ESF EuroQUAM would proceed so rapidly,"
Weidemueller explains, "With these developments, we are at the dawn of a new era for the understanding of complex quantum systems. In particular, the successful formation of electric dipoles at ultracold temperatures now paves the way to fascinating new phenomena including the self-assembly of exotic crystalline structures, the emergence of new quantum phases and the dynamics of ultracold chemical reactions."

Denschlag and his team have focused on Rb2 molecules. Their work investigates the quantum properties of weakly bound Rb2 molecules and the more tightly bound triplet Rb2 species. They start from a much colder cloud, provided by an atomic Bose-Einstein condensate. The team produces these different species using a special two-colour laser field.
These Rb2 species are stable because in the ground state there is no energy to be released in a collision.

This ultracold stability could allow scientists to study and optimize the formation of so-called Bose-Einstein Condensates (BECs). In this unusual and fragile state of matter every atom or molecule is in exactly the same quantum state and so can be used to probe wave-particle duality, superfluidity, and other phenomena without having to isolate individual atoms or molecules.

EuroSTRESS: Relevance of EuroSTRESS Programme

It is widely accepted that depressive disorders will rank as the second most common cause of human suffering by the year 2020, behind cardiovascular diseases. It is therefore important to invest in research, in an effort to address the current and future societal and economic burden resulting from these prevalent disorders. The EUROCORES programme **EuroSTRESS** is one pan-European multidisciplinary effort targeting this important issue. It was launched in September 2008 and should be completed in September 2011.

Repetitive and uncontrollable stress is known to be a powerful risk factor for the development of mental disorders. Whether an individual will respond adaptively or mal-adaptively to a stressor is determined by several factors, including genetics, developmental history and environment in adulthood. Traumatic experiences in early life, notably neglect or abuse during childhood, could considerably add to the risk of subsequent psychiatric illnesses, including major depression, psychosis and post-traumatic stress disorder. Therefore, it is crucial to better understand how stress during childhood influences the development of mental disorders in adulthood.
EuroSTRESS focuses on two important questions through an interdisciplinary research effort:

- How can early life experience and genetic background in concert evoke lasting changes in signalling pathways within the brain, resulting in altered behaviour and increased vulnerability to negative effects of stress in adulthood?
- How can periods of repetitive stress or traumatic events in adulthood (against a background of life history and genetic vulnerability) disrupt brain function in such a way that the risk of precipitation of specific psychiatric disorders is increased?

EuroSTRESS will increase knowledge about the basic mechanisms of stress-related mental disorders, which can be used not only for the development of new treatment strategies, but also for the actual prevention of mental disorders.

2009 Highlights:

- Production of EuroSTRESS leaflet in January 2009.
- Networking activities at PENS Summer School on “Neurodevelopmental Programming and Phenotypic Plasticity: Implications for Stress, Aging and Health”, Rhodes, Greece, 6-13 September 2009.

More information: www.esf.org/eurostress

EuroSTELLS:

The three-year EUROCORES programme **EuroSTELLS** was launched by the European Medical Research Councils (EMRC) in 2005, recognising a need for basic stem cell research in Europe. **EuroSTELLS** was initiated as a follow-up activity of the first two Science Policy Briefings (SPB) entitled “Human Stem Cell Research: scientific uncertainties and ethical dilemmas” that were published in 2001 and 2002. Terminated in December 2008, **EuroSTELLS** is followed by a new SPB on “Human Stem Cells and Regenerative Medicine”, to be published in October 2009. **EuroSTELLS** is a very good example of interconnection and interdependency between

the various synergistic and strategic ESF instruments (EUROCORES, RNP, SPB).

Highlights:

1. EuroSTELLS has provided financial support for the International Society for Stem Cell Research (ISSCR) Task Force to prepare their **Guidelines for the Clinical Translation of Stem Cells**, a comprehensive and influential document defining the key scientific, clinical, ethical and societal issues that must be addressed to ensure that basic stem cell research is translated into suitable clinical applications for treating patients. The ISSCR Task Force comprised top stem cell researchers, clinicians, bioethicists and regulatory leaders from 13 countries.

The **ISSCR Guidelines for the Clinical Translation of Stem Cells** (accessible from the **EuroSTELLS** webpage at http://www.esf.org/eurostells.html) have recently provided the basis to the **National Institutes of Health Guidelines for Human Stem Cell Research** (available at http://stemcells.nih.gov/policy/2009guidelines.htm, published on 7 July 2009), thus showing the international impact ESF activities can have in medical and scientific fields.

2. In 2008, the **Research Networking Programme** (RNP) "Regenerative Medicine" (**REMEDIC**) was launched with a focus on stem cell technologies.

3. The **EuroSTELLS final report** was published in February 2009, available at: http://www.esf.org/eurostells

4. Further dissemination and networking took place at the **ISSCR 7th Annual Meeting**, in Barcelona, Spain, on 8-11 July 2009. For more information: http://www.isscr.org/meetings

5. The **SPB "Human Stem Cells and Regenerative Medicine"** (number tbc) will be published in October 2009.

More information:

www.esf.org/eurostells