



Coordination of National and European R&D Policies and Programmes in ICT

Overview Report 2005

October 2005



Information Society
Technologies

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1. INTRODUCTION

This document outlines the approach and progress made to date in improving coordination of National and European R&D policies and programmes in the domain of Information and Communications Technologies (ICT).

It recalls the objectives and expected benefits of developing better coordination in ICT, takes stock of what has been achieved to date and looks ahead at future opportunities and challenges.

2. BACKGROUND

2.1. Why investing in ICT and R&D?

Investing in ICTs is Europe's best bet for delivering sustained growth, skilled jobs and cost-effective public services. ICTs are enabling technologies. They boost economy-wide innovation, creativity and competitiveness, and underpin all scientific and technological progress. ICTs account for 40% of recent productivity growth in Europe and 60% in the USA.

The ICT sector itself generates 6-8% of GDP, and devotes 10-20% of its output to new knowledge generation. ICTs account for a growing share of the value-added of all goods and services. Intensive ICT-users, such as the automotive, aerospace, pharmaceutical, medical equipment, agri-food, financial service, media and retail sectors, all have big EU markets with good growth prospects – provided that they invest in ICTs to stay competitive.

ICTs are also the best bet for tackling many social challenges. They help to meet growing demand for better health care, efficient education and lifelong learning, better quality of life in old age, security and social inclusion. They also help to cut red tape in government services. Over 90% of public service providers now have an on-line presence, and 40% of basic public services are fully interactive.

ICTs as the backbone for the knowledge economy and as key contributors to stronger growth, high-quality jobs and a sustainable future were also highlighted by recent reports from Brussels, in particular the Kok report¹, the Commission proposal for a renewed Lisbon strategy² and the i2010 initiative³.

An indigenous research capacity is essential to be able to master and assimilate technology and to exploit it to economic and societal advantage. This is particularly true for ICT, where innovation moves at an ever faster pace, where the frontiers of research are increasingly broad, and where people and organisations depend more and more on ICT.

¹ "Facing the Challenge : The Lisbon Strategy for Growth and Employment" Report from the High Level Group Chaired by Wim Kok, November 2004

² "Working together for growth and jobs – A new start for the Lisbon strategy", COM (2005) 24

³ "i2010 – A European Information Society for growth and employment" COM(2005) 229 1/6/2005

2.2. The current scene of investments in ICT research in Europe

Europe is investing less in ICT research than other regions

Within the EU, the countries that invest most in ICT research, Ireland, Finland and Sweden, also have the highest productivity growth rates⁴. But Europe as a whole is not investing enough. ICTs account for more than a third of the total R&D budget in all major OECD countries, but only 18% in Europe. In absolute terms, the EU ICT research investment is about one-third that of the US and is 30% lower than in Japan⁵. In fact, the gap in ICT research investment accounts for half the total gap in research spending between the EU and the US.

ICT R&D	EU15	US	Japan
Private sector investments	€23 B	€33 B	€40 B
Public sector investments	€8 B	€20 B	€11 B
Inhabitants	383 m	296 m	127 m
Investments / inhabitant	€80	€50	€400
ICT R&D / Total R&D	18%	34%	35%

Source: IDATE, OECD (Annual figures for 2000)

Apart from the deficit in the public investments, European investments in ICT R&D within the private sector also needs substantial increase to reach the levels of major competing regions of the world.

It is one of the major targets of the Barcelona objective of 3% of GDP for research to develop new policy mixes, which will effectively leverage a strong increase in ICT R&D investments by the private sector.

The European scene for ICT research is currently fragmented and varied

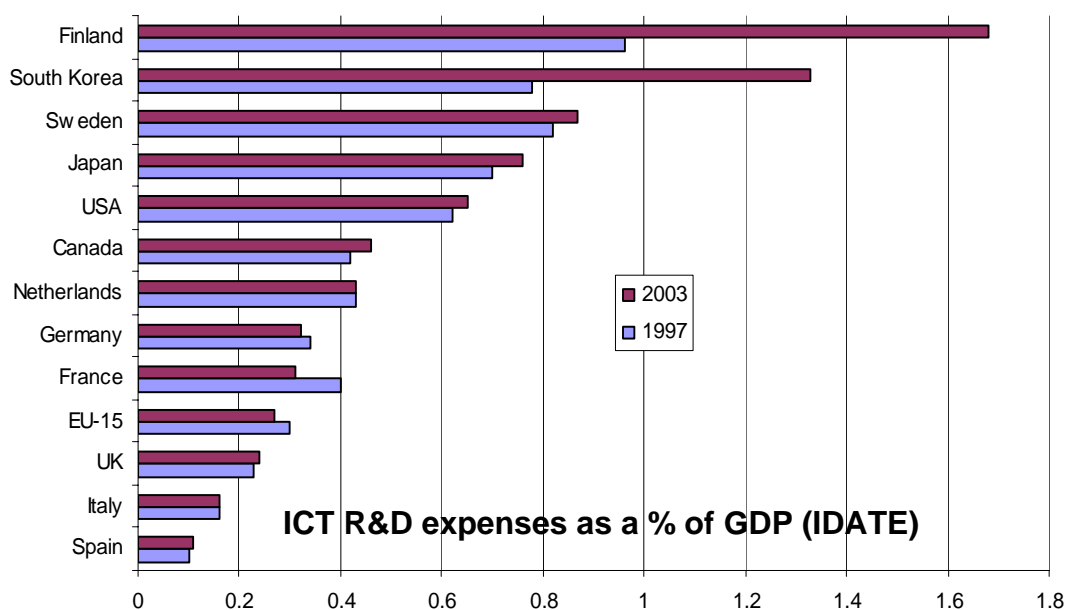
In addition to the problem of overall lower comparatively level of R&D investments, Europe also has a very fragmented landscape for public funding of ICT R&D across a number of structures at European/National/Regional level, each with differing policies, strategies and objectives.

- The main instrument for European collaboration is the ICT part of the 6th Framework Programme for R&D, which accounts for appr. 12% of the overall public investment in ICT specific R&D.

⁴ "ICT and Economic Growth: Evidence from OECD Countries, Industries and Firms", OECD, 2003

⁵ "Investment in ICT Research, Comparative Study", IDATE, 2002

- The EUREKA programme brings together national support to a number of ICT relevant project clusters in the field of micro-nano electronics (MEDEA+), software (ITEA+), Packaging (PIDEA), Microsystems (EURIMUS) and telecommunication (CELTIC).
- The remaining public effort is spread across National/Regional programmes and funding schemes for ICT R&D in each Member State, in addition to other European structures with ICT R&D relevance, such as COST, European Space Agency, CERN etc.



Source: IDATE (2003)

2.3. The case for improved coordination of ICT research efforts in Europe

The context for ICT research has changed significantly in the last decade. Globalisation has brought new challenges for Europe. In addition to the development of new ICT production facilities in emerging economies, we see increasingly the development of research poles outside the traditional knowledge intensive economies in Europe, the US and Japan.

ICT R&D and manufacturing are de facto international. No single EU country or any one organisation can now afford the cost⁶ of building the know-how and skills to master increasingly complex technology chains. EU research programmes foster the pan-European industry-academic partnerships needed to integrate ICT goods and services and to develop the EU and international standards that enable them to work together, but national efforts increasingly need to be considered in the global context.

With increasing global competition, the sustained fragmentation of the European research effort is a major European weakness particularly in the ICT sector where high levels of investment are needed to develop solutions for large scale markets.

⁶ For instance, the costs of developing a new generation of semiconductor technology has increased ten-fold in 20 years to reach a level of several billion Euros.

Further coordination, as stated in the i2010 initiative, is needed between the Member States and with activities at European level for Europe to address the challenges ahead and to ensure its industry and academic communities are well placed to compete and seize the new opportunities ahead.

Better coordination of research activities and the convergence of research and innovation policies at national and EU levels allow Member States to avoid unnecessary overlaps of efforts, to exchange information, expertise and good practice. By providing a clearer picture of the research funding and investment landscape it can serve to achieve the Lisbon strategy by facilitating and leveraging industrial R&D investment.

3. APPROACH FOR ICT R&D POLICY AND PROGRAMME COORDINATION IN EUROPE

It is essential to promote better synergies and common visions through coordination between European and national R&D in strategic ICT areas where significant overlaps of activities in terms of scope and constituency currently exist. This approach is expected to lead to more strategic and direct linkages between ICT RTD policies and activities at European and national levels, consequently leading to higher overall critical mass and impact.

As an integral part of the re-launched Lisbon strategy, the Commission has therefore in its i2010 Communication highlighted the need for Europe to increase and coordinate further its ICT research effort, to improve its impact and make sure that it serves its economy and society. Most Member States are currently updating their research and innovation strategies for ICT. The same is happening at EU level within the proposals for the seventh RTD Framework Programme⁷ and the CIP (Competitiveness and Innovation Programme)⁸.

The strategy for coordination in ICT has been to stimulate coordination on ICT R&D both at policy level as well as at programme/funding level. It is clear that the inherent inertia of political decision making and budgetary cycles requires a longer term strategic perspective and commitment for achieving the full impact. However, first concrete initiatives at implementation level can also be built bottom-up on the basis of already existing or emerging activities at European and national level.

The main responsibility for success of coordination lies with the Member States and the role of the European Commission is mainly to act as a catalyst and facilitate the coordination process. The key principle of voluntary involvement ensures that the coordination process can progress with Member States in variable geometry around strategic ICT R&D topics.

Two complementary strands of activity have been established to support the development coordination activities addressing general policy level coordination and programme/funding level coordination of ICT R&D.

⁷ FP7 proposal and related documents can be found at <http://www.cordis.lu/fp7/>

⁸ CIP proposal and related documents can be found at http://europa.eu.int/comm/enterprise/enterprise_policy/cip/index_en.htm

3.1. ICT R&D Policy level coordination

An informal forum of national and European decision makers (National IST RTD Directors forum) has been established as the main mechanism to discuss and develop shared visions and strategies for ICT R&D in Europe, to share knowledge and best practice and to improve coordination in ICT RTD in Europe. It provides a framework for interaction between senior officials from national ministries with responsibility for ICT R&D policy and funding decisions (typically research and industry ministries) and European Commission representatives responsible for ICT research and development.

The aim is to develop future shared visions and strategies for ICT research, which can offer help in providing coherence and critical mass and support the development of common initiatives between Member States and with the EU in ICT R&D and innovation.

This activity is complemented by a number of supporting measures, which are intended to support the higher level policy making and support an open method of coordination in ICT R&D:

- CISTRANA (<http://www.cistrana.org>) is a supporting measure involving most of the Member States to underpin the process of the open method of coordination in ICT R&D. The objective is to develop a map of the national research landscape in the area of ICT and establish a portal with comparable information on national ICT R&D policies and programmes across Europe. In addition the project will identify ICT research topics and strategic themes where trans-national cooperation is essential and will aim to establish sustainable mechanisms including common methodologies and procedures to set up trans-national coordination initiatives between several Member and Associated States. Furthermore, CISTRANA also interacts with all the ICT ERA-NETs in specific areas.
- The FISTERA (<http://fistera.jrc.es>) project has the objective to compare results of national ICT R&D foresight exercises and to exchange visions for the future. This includes the setting up of a forum for consensus building on future visions for ICT and to contribute to constructing the European Research Area in ICT through benchmarking and community building, by providing a dynamic pan European platform on foresight.
- In addition, studies are being launched by the EC to provide improved and regularly updated information and trends about public and private investments in ICT RTD and the impact of globalisation on the competitiveness of Europe for attracting ICT RTD investments, and on the innovation in the ICT sector, including the role of SMEs.

The IST Advisory Group (ISTAG)⁹ is also contributing to this issue through vision papers and has provided first recommendations in a report from the dedicated working group on this issue.

⁹ See <http://www.cordis.lu/ist/istag.htm>

3.2. Programme level coordination initiatives in specific ICT areas:

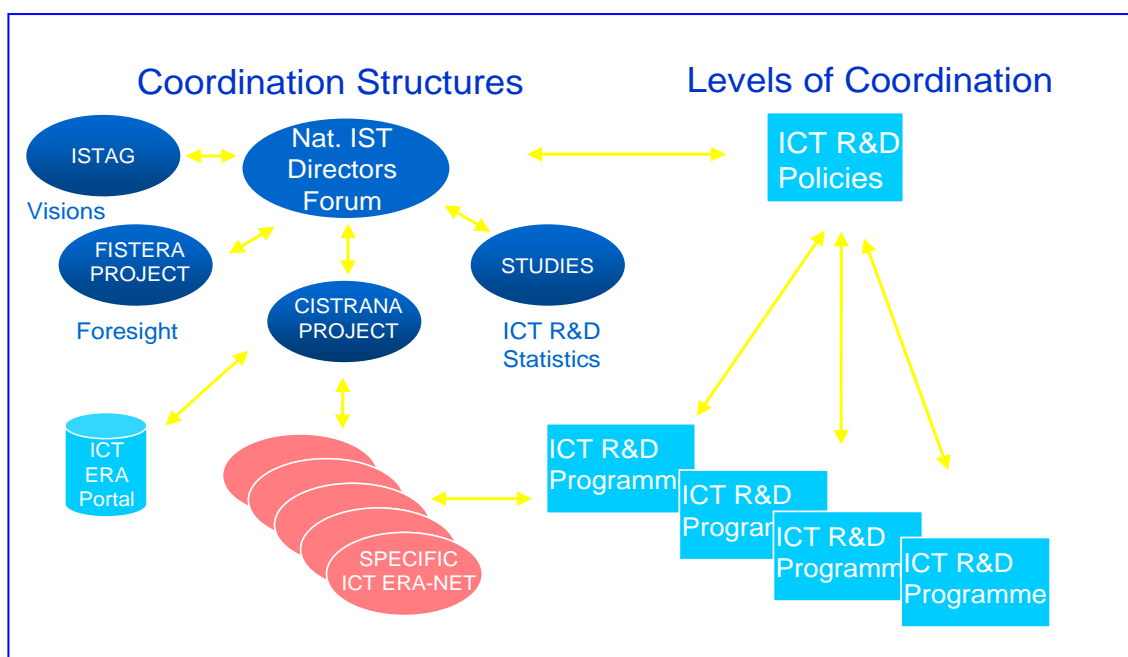
In agreement with the Member States, DG INFSO has promoted a thematic approach to ICT R&D policy and funding coordination as an integral part of the ICT activities in FP6, in order to ensure that both EU and national support to R&D within a particular ICT field can be addressed.

As already envisaged in the overall FP6 ERA-NET scheme, this has been done through usage of Coordination Actions or Specific Support Actions linked to the Strategic Objectives of the IST priority of FP6.

Programme level coordination is intended to bring together national programme managers and relevant organisations with sector knowledge together in strategic ICT R&D areas. Depending on the maturity and nature of the ICT area addressed, the objectives vary from basic information exchange over mapping of national activities to more explicit commitments for strategic cooperation and possible joint initiatives.

Actions typically target one or several of the following activities, with involvement of Member States in a variable geometry and on a voluntary basis:

- Information collection and mapping of national and European ICT R&D policies and funding schemes in the specific ICT area addressed (e.g. funding schemes, rules of participation, timing, content)
- Cross-national exchange of information, good practice and personnel (e.g. exchange of evaluators, programme managers, common project events)
- Development of future common R&D visions and roadmaps, in cooperation with industrial stakeholders (in some cases this is closely linked with European Technology Platforms and major EUREKA clusters).
- Development of coordinated or joint R&D initiatives (e.g. cross-national programmes or wider initiatives such as Joint Technology Initiatives or Art. 169 based initiatives as foreseen in the FP7 proposal).



4. OVERVIEW OF CURRENT STATUS

4.1. ERA Policy Level Coordination Initiatives in ICT

Informal Forum of National IST RTD Directors

The forum has already met successfully four times since 2003 and is anticipated to play an important role in the further development of the ICT research and innovation part of the i2010 initiative.

The group has also already exchanged several examples of good national practice in ICT research and has been consulted on the EC proposal for ICT in the 7th Framework Programme. A document outlining a common future vision for EU ICT R&D has been adopted¹⁰ and possible joint R&D initiatives between the European Commission and Member States in the context of the FP7 proposal are under discussion and further development.

Supporting measures

The CISTRANA project has started work on the collection of national data and has developed a proposal for an outline ICT taxonomy, which will allow for comparative analysis of the national information on ICT policies and programmes. It is expected that a first version of the ICT ERA portal will go online during autumn 2005 with information on national ICT R&D policies and programmes. A number of strategic workshops for national programme managers and policy makers are envisaged during the second half of 2005 and beginning of 2006, addressing strategic topics of common interest.

The FISTERA project has produced a map of the European ICT actor space; a series of strategically selected scenario exercises on wider aspects of ICT applications; two rounds of roadshow workshops, and a final conference and a final book is expected during 2005. FISTERA has developed framework scenarios that reflect alternative futures under different sets of context conditions, and highlight key challenges and critical issues on the pathways towards these futures. Moreover, the analysis of the EU actor landscape will lead to insights on what skills are needed to address weaknesses and threats.

A study on public and private trends in ICT R&D investments in Europe has been launched on September 1st 2005 and a first deliverable is expected by February 2006. In addition a study on ICT innovation and SMEs will be launched during autumn 2005.

IST Advisory Group (ISTAG)

ISTAG has undertaken to provide broader visions for future ICT research, which can be taken on-board at EU and national level as input for development of shared ICT research strategies.

¹⁰ ICT R&D strategy paper ftp://ftp.cordis.lu/pub/ist/docs/strategy_paper_final_website.pdf

4.2. Thematic ERA Coordination in IST

The main instrument for ERA coordination in FP6 is the ERA-NET scheme, which aims to provide support to policy and programme level coordination. Following the launch of the ERA concept and FP6, a number of initiatives have been taken to develop ERA coordination in IST. 2003 and 2004 has seen a successful engagement of both DG INFSO services and Member States representatives in the development of ERA coordination initiatives, facilitated through the IST advisory Committee (ISTC) and interaction between IST topical units and relevant national programme managers and actors.

Currently 24 ERA coordination measures addressing key ICT R&D areas have been launched as part of calls for proposals from the IST programme in FP6. In particular, a dedicated call (IST call 3) specifically targeted ERA coordination measures relevant for ICT RTD and additional ICT related measures have also been selected through a bottom-up process under the horizontal ERA-NET calls by DG RTD.

In addition there are other policy and programme coordination activities undertaken in the area of eMobility, Intelligent transport systems and further measures are under preparation (e.g. in the area of eGovernment).

In some cases the coordination measures are strongly linked with ICT related European Technology Platforms¹¹ where they offer the opportunity to discuss the possible inclusion of Strategic Research Agendas in the scope of relevant funding activities. In a few cases these coordination measures have also played a key role in developing proposals for Joint Technology Initiatives and Art. 169 initiatives included in the ICT part of Framework Programme 7.

All these measures will also contribute to the further discussion about the possible scope and positioning of future European and national R&D support efforts within the ICT fields addressed.

Overview of current ICT ERA coordination initiatives (IST-related ERA-NETs / CAs / SSAs, September 2005)

The following table provides an overview of IST coordination initiatives (with the participation of funding bodies) and activities in support of coordination initiatives and an indication of the areas covered. Further details about the scope and participation in the projects can be found in Annex 1.

Coordination projects (CA's and SSA's)

Project Acronym	Title	Area
AAL	Ambient Assisted Living - Preparation of an Art. 169- initiative.	ICT for Inclusion
BrainBridges	Collaborative technologies and	New working

¹¹ European Technology Platforms <http://www.cordis.lu/technology-platforms/>

	environments enhancing the seamless creativity process, leveraging the full European potential.	environments
BREAD	Broadband in Europe for ALL: a multi-Disciplinary approach	Broadband for all
CI2RCO	Critical Information Infrastructure Research Coordination	Trust and Security
CISTRANA	Coordination of IST research and national activities	ICT wide
COSINE	Co-ordinating Strategies for Embedded Systems	Embedded Systems
e-Health ERA	Towards the Establishment of a European e-Health Research Area	eHealth
ERA Pilot MiNa TSI	European Research Area Pilot Action on MicroNano Technology Systems Integration	Micro-nano systems
ERA-NET Transport	Achievement of an efficient trans-national research co-operation in the field of transport	eMobility
ERA-Pilot QIST	Structuring the European Research Area within Quantum Information Science and Technology	Quantum Information Science
ERA-SPOT	Coordination in the ERA of optical technologies	Optical technologies
eTRANET	ICT in traditional manufacturing industries ERA-NET	ICT in Manufacturing
GRIDCOORD	ERA Pilot on a Coordinated Europe_wide initiative in Grid Research	Grids
MNT ERA-NET	From Micro- and Nanoscale Science to New Technologies for Europe	Micro-nano systems
MOCCA	Mobile and Wireless Beyond 3G Technologies	Optics and photonics
OPERA	Optics and Photonics in the European Research Area	Optics and photonics
TOSSAD	Towards Open Source Software Adoption and Dissemination	Open source software

Support for Coordination projects

ALIPRO	Supporting the ALIgnment of IST research PROgrammes on mobile communications in the new member states	Mobile Communications
AMI@NETFOOD	Development of Long-term shared vision on AMI Technologies for a Networked agri-food sector	New working environments
ARTEMISOS	Advanced Research and Technology for Embedded Intelligence Systems Operational Support	Embedded Systems
ISHTAR	Industrial Stimuli for the HarmonisaTION of EuropeAn Research in the area of Location Based Services	Location based services
MONA	Merging Optics and Nanotechnologies	Optics and photonics
SUGERT	Strategic User Group for European Research on TCAD	Micro-nano electronics
SYMBIOmatics	Synergies in Medical Informatics and Bioinformatics	Bioinformatics
Widgap	Wide Bandgap Semiconductors	Micro-nano electronics

5. CONCLUSIONS AND OUTLOOK

The goals of the i2010 initiative are challenging, but Europe needs to set an ambitious agenda for ICT R&D and innovation, if we want to stay competitive and reach the goals of the Lisbon agenda of being the most competitive knowledge based economy in the world by 2010.

The 6th Framework Programme can be seen as a pilot period for developing coordination measures with the Member States to improve the coherence and reduce fragmentation of the public research efforts in Europe. This will offer a learning experience as a useful further basis for further measures to be developed. It is planned to perform a first level of impact evaluation from these measures in autumn 2006 with support from the CISTRANA project.

The progress and commitment shown to the coordination process by the Member States is very encouraging and a comprehensive framework for coordination has already been established to address both policy and programme level coordination. In the coming period all these initiatives will start to produce useful information and first results in terms of impact on existing or future research initiatives in ICT.

Looking further ahead, within the Commissions proposal for FP7¹² coordination has matured into an important integral element of the thematic activities as concrete evidence of the importance of the approach. The aim will be to consolidate the existing efforts, address the challenges and build on initiatives which demonstrate clear benefits, bearing in mind that the real impact will be longer term. In addition, new instruments are being proposed to provide even further support to specific initiatives.

One new instrument (ERA-NET+) is proposed to allow for extending the coordination effort between Member States funding programmes with FP funding for common calls for proposals under certain conditions. The use of Art. 169 of the EU treaty is also proposed in a small number of justified cases, which involves the setting up of a common structure for implementation of joint national R&D programmes, supported by the Framework Programme.

In the case of ICT, this modality has been proposed in the area of “Ambient Assisted Living” dealing with ICT support for independent living of the ageing population. The final decision on this proposal will be taken as part of the further agreements on the Framework Programme with Council and Parliament.

Furthermore two Joint Technology Initiatives have been proposed under FP7 in the fields of nano-electronics and embedded systems and these will also involve a strong level of coordination of national ICT policies and funding schemes in participating countries.

¹² FP7 proposal and related documents can be found at <http://www.cordis.lu/fp7/>

6. FURTHER INFORMATION

i2010 – A European Information Society for growth and employment
http://europa.eu.int/information_society/eeurope/i2010/index_en.htm

The Seventh Framework Programme
<http://www.cordis.lu/fp7/home.html>

The Sixth Framework Programme – IST (Priority 2)
<http://www.cordis.lu/ist/>

IST in the European Research Area
<http://www.cordis.lu/ist/about/era.htm>

The ERA-NET Scheme
<http://www.cordis.lu/coordination/era-net.htm>

IST Technology Platforms
<http://www.cordis.lu/ist/about/techn-platform.htm>

Report on European Technology Platforms and Joint Technology Initiatives
ftp://ftp.cordis.lu/pub/technology-platforms/docs/tp_report_council.pdf

COST (European cooperation in the field of scientific and technical research)
TIST is the Telecommunication and Information Science and Technology domain
within COST.
<http://www.cost.esf.org>

EUREKA – A network for market orientated Research and Development
<http://www.eureka.be/home.do>