

Design of National IST Programmes in the Context of ERA Coordination



Report on CISTRANA Workshop
Budapest, 9 - 10 March 2006



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ABOUT CISTRANA

... the European initiative for the **C**oordination of **I**ST Research and **N**ational **A**ctivities

Cistrana is a project initiated by a European Research Area (ERA) working group of Member States of the European Union and Associated States.

Europe has a remarkably high reputation in Information and Communication Technologies, but fragmentation of efforts, limited cooperation between key players and lack of information exchange about activities in other countries lead to loss of efficiency, duplication of effort and missed opportunities.

The strategic aim of Cistrana is to achieve coordination of national ICT

programmes with each other and with European RTD programmes in the ICT sector in order to improve the impact of all RTD efforts in Europe and to reinforce European ICT competitiveness.

An elementary aim and first step of approach in CISTRANA is a systematic data collection of national and European funding activities and of the prevailing implementing procedures. First results of the conducted survey are available in the CISTRANA RESEARCH PORTAL at <http://www.portal.cistrana.org/>.

"The need for internationalization has increased over the past few years in virtually every area of the economy. There are clear demands to increase international co-operation It is generally considered that there are no more domestic technology or market conditions - competition is increasingly global."

The next steps on the way to the implementation of trans-national research activities are the analysis of the collected information, the exchange of best practice, and the development of joint procedures. This is the context for the workshop reported here.

INTRODUCTION

In this workshop, "Design of National ICT Programmes in the context of ERA co-ordination" CISTRANA brought together managers of both national and European-level programmes and projects to review a wide range of approaches that support the co-ordination of national programmes with each other and with European-level initiatives.

This workshop complemented and contrasted with an earlier CISTRANA workshop in the same series - "Best Practice in Multinational Programme Collaboration" - in which programme managers had considered European co-ordination from the perspective of the design of multi-lateral collaborative programmes.

Messages

The workshop confirmed and reinforced the message that ERA co-ordination is desirable - even essential - if significant progress is to be made toward the 'Lisbon' agenda.

However, co-ordination does not necessarily require participation in joint programmes, and there are many ways to gain synergy between national initiatives other than through joint programmes.

Moreover, the emphasis has shifted from ERA co-ordination, to ERIA co-ordination - co-ordination of the European Research and Innovation Area. In this context, each country needs to find its own 'niche' and pursue the most appropriate mix of both research and application of advanced RTD, to suit the country's needs and capabilities.

The workshop revealed a number of potential models for coordination and for the design of national initiatives to enhance research and innovation, along with mechanisms for their financial support.

European Technology Platforms, ERA-Nets, and some SSAs are already contributing to harmonisation and - where appropriate - alignment.

For the future, the 'European-Wide Initiatives' proposed by ISTAG and the 'Lead Markets' proposed by the Aho Group are expected to be a major force in the achievement of synergy between national and EU-level initiatives.

Report structure

After a brief introduction to the concept of the European Research Area, this report has two major sections. The first describes the various ways that RTD is being aligned, while the second section presents a collection of ways that RTD may be enriched in a synergistic fashion by means other than RTD funding alone.

There is then a short presentation of the 'Europe-wide Initiatives' proposed by ISTAG, that may both align research and lead to much more effective deployment of research-based ICT.

The report closes with a summary of the key messages from the workshop and a set of outstanding questions that should inform further policy research aimed at enhancing both national social and economic progress and transnational co-operation.

MULTINATIONAL COLLABORATION: The Rationale

The European Research Area

The concept of a European Research Area was launched at the Lisbon Council in 2000.

With the establishment of the ERA, Europe will be able to achieve critical mass in more areas of research and technology development than it can at present with a combination of more or less independent national programmes.

The ERA will enable coordination and concentration of resources. It will enable coherent application of those resources. The ERA will also stimulate competition in an 'open research market'. This is expected to improve the quality of research and to lead to specialisation and thence to further consolidation. It will also ameliorate the present asymmetry within the EU, whereby in the less developed regions there is a relative over-supply of researchers with respect to available funding, whereas more developed and financially well-endowed countries often face a selective shortfall in research capacity.

The Framework Programme already makes some contribution to the 'Europeanization' of research and technology development. However, although the Framework Programme is the primary means of support for European-level research and development, even with the increased budget for the 7th Framework

Programme its funding will amount to only a small proportion of the total annual spending in Europe on RTD.

In consequence, if the ambitions of the ERA are to be realised, then not only must there be more focused and coherent use of European funding, but national programmes must be co-ordinated with each other and with European-level initiatives.¹

Ecosystems

Research should not be considered in isolation: it is only one aspect of a synergistic ecosystem of knowledge development and commerce, involving both internal and external competition and co-operation. This competition and cooperation improves the quality of research, and it increases specialization in the whole socio-economic system, including research.

"Take the long view: multinational collaboration is about more than specific scientific or technological advances. It is about building relationships and both national and international scientific, technological, industrial and social ecosystems."

(Key message from 3rd workshop.)

The development of such ecosystems requires enhancement on all fronts - education, science, and commerce - to take advantage of more open markets and new technology. It requires institutional transformation to respond to and take advantage of new expectations of the citizen as well as new technology. And it also requires that attention be given to regulation, removing unnecessary barriers to progress - often in the form of unnecessary differences in rules that impede interoperability and change.

¹ In the context of the pan-European but nationally funded Eureka! initiative, first steps towards this are already being taken. This was addressed at the third CISTRANA workshop in the present series and was not discussed further in the workshop reported here.

WAYS TO ACHIEVE CO-ORDINATION

Co-ordination is not just alignment

Co-ordination within the ERA is often thought of in terms of alignment of the focus for national support for research and technology development with the focus for EU support. And 'alignment' implies, in turn, that both national and European-level research will have a similar focus. Even the term 'Mirror Group' for the group of national representatives that track the new European Technology Platforms implies that this is what is expected. But it is not - or at least it is not the only form of multi-national co-ordination within, and in support of, the ERA.

"Opening up leads to competition: each country needs to know its own niche" Istvan Lengyel, ALIPRO

As indicated in the introductory explanation of the ERA above, the creation of the ERA is expected to generate competition in an 'open research market' that should stimulate both enhanced research quality and also specialization in research. And if there is to be specialization, then each Member State must consider carefully the strengths of its people and its institutions and where they might fit best into a European constellation of more specialized capabilities and facilities. Co-ordination can then take the form of synergistic specialization across Member States.

'Top-down' co-ordination

Technology-driven 'top down'

One strong mechanism for alignment is proving to be the 'European Technology Platform' (ETP). These platforms are part of a wider policy decision, taken at the European Council in Lisbon in 2000, to establish the European Research Area. They bring together the main stakeholders - research organisations, industry, regulators, user groups, etc. - in order to devise and implement a common strategic agenda for research, development, deployment and use of selected technologies in Europe.

Several European Technology Platforms in the field of ICTs are in various stages of the process of

formation. Even at this early stage, they are already showing signs of progress towards alignment. While led by industry, they nevertheless engage academia and other public-sector organisations. In particular, the creation of 'Mirror Groups' of national (governmental) representatives is leading at least to discussion among the participating Member States of how they might co-ordinate their activities.

In addition, some Member States are establishing their own, national platforms. Poland, for instance, has formed the 'Polish Platform on Mobile Communications and Wireless Technologies' (PPMCWT) that 'mirrors' the eMobility ETP. This has two main activities: to prepare a national Strategic Research Agenda and to foster consortia building to undertake R&D projects. In addition, it delivers information - on activities with the IST Programme, on other European R&D funds, on the programmes of the Polish Ministry, and on the availability of EU Structural Funds to help Polish organizations (and especially SMEs) to access finance for R&D.²

However, it is not all 'top-down'. PPMCWT is cooperating with the eMobility platform so as to contribute to its Strategic Research Agenda and also, thereby, to influence the content of the 7th Framework Programme.

This approach is being taken further. It has been recognised that a network of equivalent platforms in New Member States (NMS) and Accession Candidate Countries (ACC) could significantly increase the influence of the participating member States on the evolution of the European eMobility platform. Discussion of this possibility has already begun with, for example, Romania and Bulgaria.

Similar platforms have been established in Spain, within the 'Plan Avanza'. The Plan Avanza is a national initiative that is part of a 'National Program of Reforms', intended to realize the Lisbon Strategy within Spain. The plan embodies a range of measures, including the establishment of 'national technological platforms'. So far, six have been established that, with one exception, 'mirror' ETPs (see box next page).

² For more information on the Polish Platform, visit www.eMobility.pl

Spanish National Technology Platforms (SNTIP) in ICT

Subject	ETP	SNTIP	website
Embedded Systems	ARTEMIS	PROMETEO	www.prometeo-office.org
Wireless Communications	eMobility	eMOV	www.aetic.es/emov
Nanoelectronics	ENIAC	GenesisRed	www.genesisred.net
Networked Audiovisual Technologies	NEM	eNEM	www.aetic.es/enem
Software and Services	NESSI	INES	www.ines.org.es
Security and Confidence	-	eSEC	www.aetic.es/esec

To take one example, Prometeo is a Spanish Technology Platform for Embedded Systems, that mirrors the Artemis ETP³. Prometeo is defining a workplan and a Strategic Research Agenda that, while following the Artemis SRA structure of 'application contexts' and 'research domains', will be "adapted to Spanish specific needs and capabilities".

Society-driven 'top down'

Unlike many areas of the 6th Framework Programme, the New Working Environments unit has focussed less on technology development per se, and more on the potential for ICT to change the way that we live and work. This then 'pulls' the research and technology development that is necessary to realise that potential. To support work in this area, several virtual or networked 'AMI@Work' communities have been established (see figure below for their scope).

The AMI@Work communities act as breeding grounds for innovation and, in the COMIST

initiative⁵, the partners are building on the foundations of these communities to stimulate and encourage innovation within New Member States and Acceding and Candidate Countries (NMAS). Drawing on country studies and a range of comparative studies, the partners have compared the state of advancement of the Information Society across the NMAS - in effect, benchmarking. From reflection on the findings of these studies, from sharing of understanding among the partners, and from brainstorming, the team is developing a vision for innovation within NMAS and identifying opportunities for the NMS and ACCs to gain benefit for their own socio-economic systems from participation in AMI@Work activities. These will be embodied in a roadmap and an action plan.

COMIST is also facilitating networking among the communities, to continue the sharing of knowledge, to build relationships, and to help them to prepare for collaboration in projects - both in the 7th Framework Programme of RTD, and in the forthcoming Competitiveness and

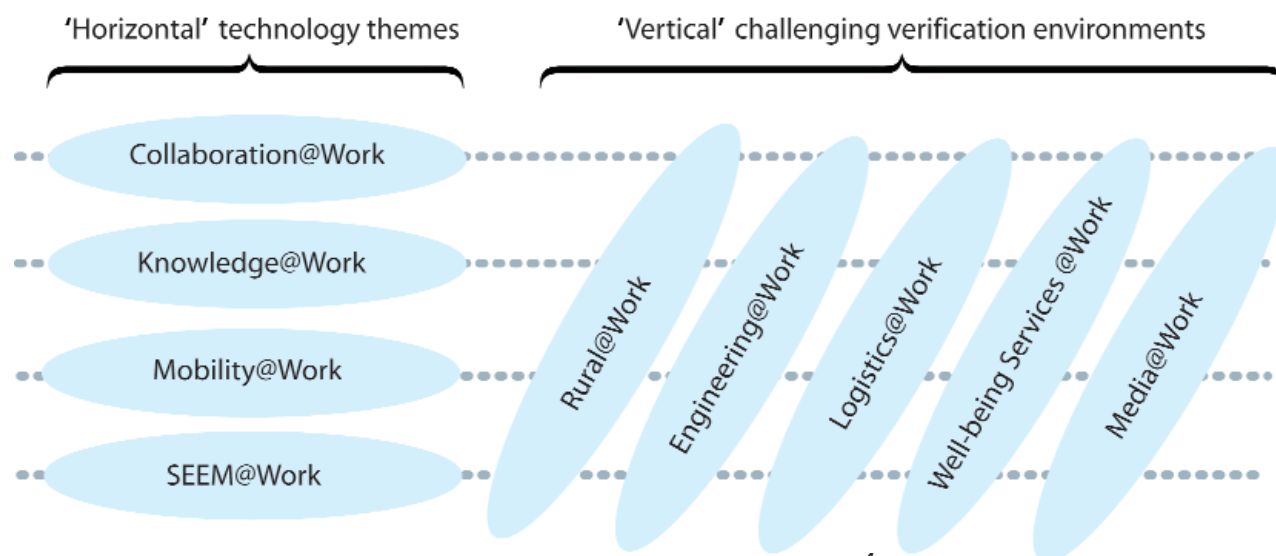


Figure 1: AMI@work Family of Communities⁴

³ For more information on Prometeo, visit www.prometeo-office.org (in Spanish)

⁴ Source: Tünde Kállai, CEIA Association, workshop presentation entitled "Challenges for NMAS in Collaborative Innovation in e-work and e-business"

⁵ COMIST is a Specific Support Action within FP6. For more information on COMIST - and the related project, MOSAIC - visit www.mosaic-network.org/comist

Innovation Programme. Over 600 organisations have already registered to the initiative.

'Bottom up' co-ordination - from the research base

In the domain of Micro- and Nano-technologies and Microsystems, the funding agencies of a number of Member States have worked together to identify common and compatible interests within this domain, and then to harmonise their processes so that they have been able to make a fully co-ordinated pilot transnational call for proposals in 2006. This initiative - MNT ERA-Net⁶ - has been facilitated by an 'ERA Net' project within the Framework Programme.

The MNT ERA-Net approach was first to analyse their national programmes in the area. (Actually, 'Micro- and Nano-technologies and Microsystems' encompasses a wide range of topics, from biotechnology, through instrumentation, to manufacturing and systems integration.) They listed all their national programmes and projects and then, through a process of clustering, identified similarities and complementarities. Despite the ERA Net support, it is clearly a

'bottom-up' initiative: the existence of a programme in micro- or nano-technologies is a prerequisite for participation.

To facilitate harmonisation of processes, national agencies - such as those in Austria and Switzerland - exchanged evaluators between programmes so that they could understand how their processes differed. They also ran 'test projects' as case studies - again to explore differences and to expose compatibility problems.

Finally, the funding agencies have launched a joint, transnational call. The evaluation and funding decision processes for this call have been designed to avoid the difficulties arising from lack of synchronisation and harmonisation of national processes that have been experienced in Eureka. This should lead to compatible - and very much quicker - decisions.

MNT ERA-Net has been a remarkable success story. From an initial consortium with representation of just 8 countries, it has now attracted the participation of a total of 18 countries, encompassing 24 national programmes.

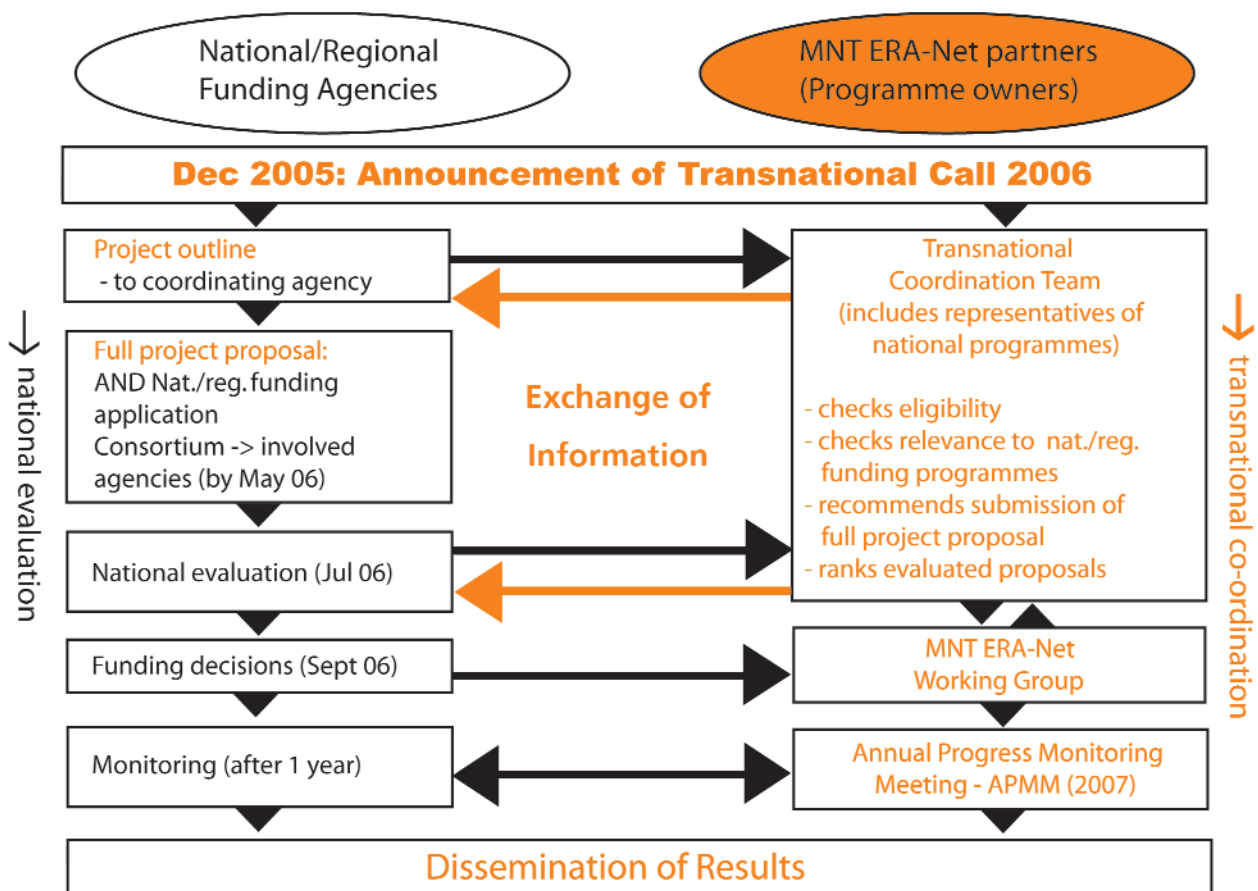


Figure 2: MNT ERA-NET Transnational Call 2006⁷

⁶ For more information on MNT ERA-Net, visit www.mnt-era.net

⁷ Source: Roland Brandenburg, FFG, workshop presentation entitled "MNT-ERA.NET: New Opportunities for Applicants in MNT"

'Bottom up' co-ordination - from analysis of national processes

MNT ERA-Net began with the research that Member States were funding in their chosen domain, and having identified shared RTD objectives, proceeded to sort out the harmonization of processes so that a transnational call could be made. By contrast, the 'ALIPRO' project has taken a rather different approach. Although ALIPRO is also focussed on a particular domain - in this case mobile communications - this initiative has concentrated on the harmonization of processes within this domain, rather than starting with specific research topics.

ALIPRO is supported as a 'Specific Support Action' (SSA) within the IST theme of the Framework Programme⁸. The participants are from 10 New Member States and 3 Acceding and Candidate Countries, together with one 'Old Member State' - Germany - that brings much experience of the 'OMS' philosophy, programmes, and procedures.

ALIPRO first carried out an intensive benchmarking exercise of national programmes in the NMS and ACC, including feedback from participants in those programmes. Apart from producing a factual database of activities and procedures, ALIPRO enabled the participants to share information about their different approaches and attitudes to the direction and management of programmes.

Based on this, the consortium now believes that the national funding systems of mobility-related research should evolve towards a network of autonomous yet open national and regional IST research programmes. National programmes managed locally, but coordinated at European level should become an integrated element of the ERA and should aim primarily at addressing national and regional research needs of academia and industry in the most efficient way possible.

ALIPRO proposes seven Strategic Objectives for this field:

- ▶ intensify RTD efforts
- ▶ open up national programmes
- ▶ improve quality across the board
- ▶ align national (& European) procedures
- ▶ facilitate access to information

- ▶ facilitate researcher mobility
- ▶ facilitate coherence among researchers, industry and policy makers

But these are not mere objectives: ALIPRO has devised a 'roadmap' to achieve these aims, and each participating Member State has devised its own roadmap to achieve the necessary convergence. Note that these are not technology roadmaps: they are roadmaps for the convergence and harmonisation of processes for the management of national programmes.

Bottom-up with a little top-down

While the harmonization of processes in ALIPRO necessarily starts from the processes of each Member State, the experience gained by the Commission in managing the process of programme management offers lessons to be learned nationally.

In particular, the evaluation processes of the Framework Programme have been studied and monitored several times, and Heikki Kotilainen, who has chaired the Monitoring Panel on more than one occasion, has encapsulated the following 'lessons learned' that are as applicable to National Programmes as to European Programmes, as long as they are tailored to accommodate national benefits, objectives and demands:

- secure the transparency of the criteria
- secure the clarity of criteria
- secure the calibration of the application of the criteria by evaluators
- Use ICT to maximise the efficiency and effectiveness of the evaluation
- keep the objectives of the call clear
- keep monitoring and evaluation separate
- monitoring and ex post evaluation should be carried out by neutral parties
- ex ante evaluation and the financial decisions should be linked

Finally, cost-effectiveness should not be forgotten: there are diminishing returns to be gained from ever more refined and 'proceduralised' processes.

⁸ For more information on ALIPRO, visit <http://alipro.eurescom.de>

FROM ERA TO ERIA

European support beyond RTD

The EU RTD Programmes in ICT that have been run over more than 20 years have done much to facilitate the establishment of a recognisable European ecosystem in RTD: there is now a recognisable European Community of researchers and users of research results. Recent initiatives to assist the establishment of the European Research Area (see above), such as the birth of the European Technology Platforms and the planning for the European Research Council in FP7, have made significant advances beyond that.

However, starting with the report at the closure of the Greek Presidency of the EU in 2003, which promoted the idea of not just an ERA, but an ERIA - a European Research and Innovation Area⁹, there have been several developments in the nature of European support for activities other than research itself and in both expectations and rules for the applications of funds, all aimed at developing that European ecosystem.

Moreover, innovation means more than the taking to market of high technology, research-based products and services. The information society is much more than information technology. Innovation in ICT entails the deployment of advanced ICT to achieve social and economic goals, in industry, in commerce, and in the delivery of public services and administration. And ICT deployment can yield new, innovative, business flows rather than simply automating the established flows. The 'Lisbon strategy - Barcelona target' of 3% of GDP to be committed to research, technology development and innovation, is often misinterpreted - whether by accident or design - as a pure input target for research, rather than necessarily making a significant contribution to innovation on a broad front in our socio-economic systems.

To achieve such coherent RTD and innovation across a broad front requires more than money. National governments are almost

invariably departmentalised, and coherence requires inter-departmental cooperation, which is often not easy. So, in addition to the need to perform the research and to remove unnecessary regulatory barriers to progress it is, typically, also necessary to reform the way that governmental departments operate - so that they co-operate.

The need for each Member State to 'know its own niche' applies to this broader picture as much as to research itself. One model of RTD and innovation may not suit all. The appropriate balance of ICT RTD and deployment is likely to vary from country to country, with some countries, perhaps especially among new Member States, finding that their socio-economic system will benefit better from focusing on innovation through deployment of advanced RTD to transform their industry, commerce, and public administration, rather than trying to copy the R&D and high technology innovation approaches of other regions.

EU Structural Funds, Regional Funds and Social Funds

During the period of FP7, it is expected that Structural Funds will complement the Framework Programme to a greater extent than in the past. This is particularly the case for the new actions, planned for FP7, aimed at convergence regions - the 'Research Potential' action and the 'Regions of Knowledge' initiative. Member States are expected to use Structural Funding to implement their strategies for innovation. The Regional Development Fund and the Social Fund will also complement the Research Potential action. The Funds can provide complementary investments for aspects of the project which are not financed through the Framework Programme, such as infrastructure facilities and training.

"We are on a journey together through the ERIA. We would like this to be a speedy and comfortable journey. That depends on many factors. The big questions are: which factors can we change, and at what cost? And do countries want to drive alone or in convoy, for their mutual benefit?"

Attila Havas

There is some misunderstanding in the community about these purposes to which Structural Funds can be applied. It is not fully appreciated that they can be applied to research and innovation.

Certainly the funds are often used to finance physical infrastructure, but in the guidelines for

⁹ "The European Research and Innovation Area: The way forward" The Greek General Secretariat for Research and Technology, May 2003

the 2000-2006 programmes the Commission identified the Information Society as a key priority for structural funds interventions, with a strong emphasis on demand for services and applications¹⁰. In addition, the 'Innovative Actions' enable the regions to develop pioneering projects, with the support of Structural Funds.

Support for research and innovation already accounts for a large share of Structural Fund investments, even excluding Information Society support. Between 2000 and 2006, close to €10.5 billion is being invested in research, technological development and innovation by the Funds, chiefly through the European Regional Development Fund.

These investments are in three main areas:

- ▶ research projects, especially for applied and pre-competitive research, based in universities and public research institutes;
- ▶ research and innovation infrastructure, including research facilities and equipment at public institutes but also technology transfer centres and incubators; and
- ▶ support for innovation and technology transfer, including support for partnerships between businesses and research centres.

In Hungary, for instance, €134 million was applied within the National Development Programme to research, with more on research itself than on infrastructure.

In 2007-2013, Research, Innovation and ICT will have even higher priority within the Structural Funds.¹¹ In the 'Convergence' objective of the Regional Development Fund, for example, "*A new emphasis is placed upon research, innovation and risk prevention*". The 'Regional competitiveness and employment' objective includes priorities of "*innovation and the knowledge economy*" and anticipates examples such as "*industry or technology-specific competence centres, promoting technology transfer, and by developing technology forecasting and international benchmarking of policies to promote innovation, and by supporting inter-firm collaboration and joint*

R&TD and innovation policies ...stimulating innovation in SMEs by promoting university-enterprise cooperation networks, by supporting business networks and clusters of SMEs and by facilitating SMEs' access to advanced business support services, by supporting the integration of cleaner and innovative technologies in SMEs;"

In addition, the European Social Fund can finance: "*the development of human potential in research and innovation, notably through post-graduate studies and training of researchers and related networking activities between universities, research centres and Enterprises*".

As an indication of the potential, the total funding that has been made available for structural actions from 2000 to 2006 is €257 billion - though how much of this goes to research and innovation is to a great extent for those that apply for the funds to decide. Do you want roads, schools, a high-tech industry, or an e-enabled society? Of course, the answer is likely to be 'All of these': the issue is how to get the balance right.

European Investment Bank

Loan-financing is not normally an appropriate means of supporting basic research. However, many applied RTD projects that have traditionally been undertaken thanks to grants or subsidies - or abandoned for lack of them - have a financial profile that could give them access to loans. They are 'bankable'. Applied research, technology development, and prototyping can all be supported by a combination of grants and loans, with the balance shifting from grants to loans as projects move downstream, toward the market.

Through its lending, the European Investment Bank (EIB) is making a significant contribution to the advancement of the ERIA, particularly through its role in implementing 'i2i' - the innovation 2010 initiative. EIB loans in support of Research, Development and Innovation (RDI) have risen from just one project in 2000, to 35 in 2005, with total financing of over €6 billion. These projects are of many kinds - industrial pilot plants, research laboratories, science parks and incubators. The Large Hadron Collider at CERN is perhaps the most famous example of a large infrastructure

¹⁰ "The Structural Funds and their coordination with the Cohesion Fund- Guidelines for programmes in the period 2000-2006", European Commission, COM 1999 (344).

¹¹ "Cohesion policy: the 2007 watershed - Legislative proposals by the European Commission for the reform of cohesion policy (2007-13 period)" European Commission, Dec 2004. This is a summary: for full version visit: http://europa.eu.int/comm/regional_policy/sources/docoffic/official/regulation/newregl0713_en.htm

supported by the EIB, but IMEC is another that is in the field of ICT. Projects from the new European Technology Platforms and even large projects within FP7 are under consideration for EIB loans. In Hungary, the EIB has supported the installation of new production lines for an innovating car component manufacturer - a foreign direct investor.

Apart from simply increasing the total market supply for financing innovation, the funding advantage of the EIB reduces the cost of innovation for private and public sector innovators. By sharing risk with others, it reduces their cost of capital. And through the EIB's reputation for both prudence and technological know-how, its support for an RDI project sends a strong positive signal to the rest of the investment community.

Recently, in December 2005, the European Council encouraged the European Commission and the EIB to investigate the possibility of "*strengthening their support for R&D by up to a maximum of €10 billion through a financing facility with risk-sharing components to foster additional investment in European research and development, particularly by the private sector*". The aim is to increase the volume of riskier - but nevertheless 'bankable' funding for RDI. While in the short term, it is envisaged that the major risk-sharing 'partner' will be FP7, in the longer term - perhaps by 2014 - there could be joint EU, National and EIB loan-based funding for large RTD projects and infrastructures.

While the EIB treats each application on its own merits, and does not specifically seek to advance the formation of the ERA - or the ERIA - by, for example, encouraging specialization, it does so indirectly through the competition it generates for resources. This facilitates the emergence of the best organisations and projects, leading in turn to the specialization expected within the ecosystem.

Competitiveness and Innovation Framework Programme (CIP)

This newly proposed Framework Programme, planned to run alongside the 7th Framework Programme of Research and Technology Development from 2007 to 2013, will bring together a range of measures, some of which

have previously been embodied in separate programmes, in a coherent over-arching programme designed to address the objectives of the renewed Lisbon strategy. It will comprise three 'sub-programmes':

- Entrepreneurship and Innovation programme
- ICT policy support programme
- Intelligent Energy programme.

The first two of these are both pertinent to ICT and the European ecosystem. The Entrepreneurship and Innovation programme brings together activities from previous programmes such as the Multi-annual Programme for Enterprise and Entrepreneurship (MAP) and the PRO Inno Europe initiative that aims to promote trans-European cooperation among national innovation activities.

The ICT Policy Support Programme will support implementation of deployment aspects of the new i2010 strategy "to ensure that Europe's businesses, governments and citizens make the best use of ICT in order to improve industrial competitiveness, support growth and the creation of jobs, as well as aiming to address societal challenges". It will therefore bridge between ICT research, innovation in ICT products and services, and innovation in ICT usage - especially in public services - to realise socio-economic policies.¹²

National support beyond RTD

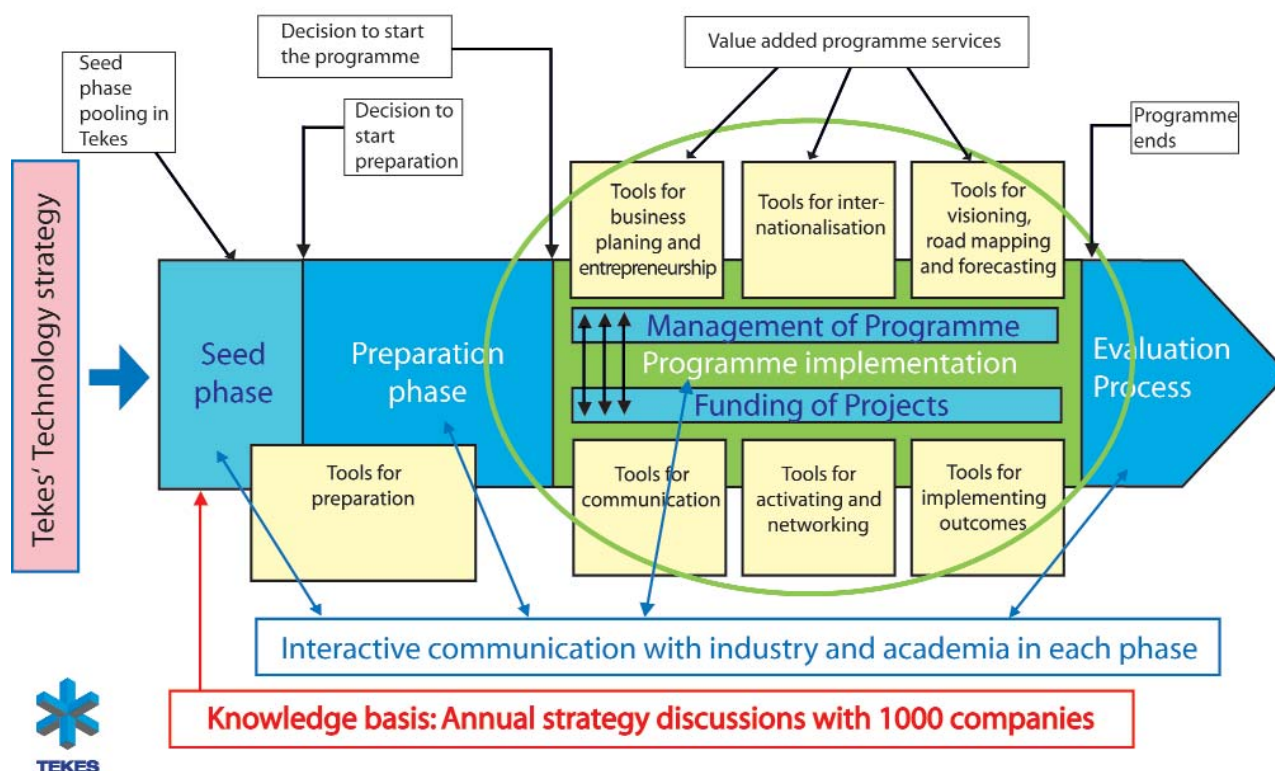
National efforts to create successful research, industrial and social ecosystems are not in conflict with and do not contradict the idea of European and wider, international ecosystems. In the same way that business organisations both compete and co-operate in 'co-opetition', so do countries and regions.

Member States and their individual ecosystems are in co-opetition with each other, within a wider European ecosystem. And that co-opetition between the parts enhances the quality and competitiveness of the whole.

There are many ways to encourage, facilitate and enhance the national ecosystem. Three quite different approaches were presented at this workshop.

¹² For the latest status of the development of the CIP, visit http://europa.eu.int/comm/enterprise/enterprise_policy/cip/index_en.htm (also available in languages other than English)

The „value added services“ in the Tekes Technology Programme Process

Figure 3: Technology Programme Process ¹³**Value-added services**

Many countries have, over the years, supported 'technology transfer' programmes to enhance the exploitation of research - perhaps supported in parallel academic or industrial research and technology programmes. In Finland, the National Technology Agency Tekes, that is their main public financing organisation for applied and industrial R&D, not only devises their technology strategy and funds and manages their technology programmes, but also supports a range of 'value added services' (see figure above).

These value added services go some way beyond those earlier technology transfer programmes. They support internationalisation by making connections, setting up roadshows, and facilitating market-entry. They offer mechanisms to support commercialisation and technology-based entrepreneurship and exchange of information, knowledge and know-how. They encourage engagement with new actors in innovation, particularly in the regions. And

through activities such as events to promote results, they raise the profile and credibility of both researchers and their results, so helping to engage both investors and educators.

In addition to support for individual projects within programmes, value-added services such as these can facilitate the realisation of synergy within and across programmes, so that programmes may be more than a collection of independent, insular projects. 'The whole should be greater than the sum of its parts.'

Moreover, while the Finnish example related to national programmes, the same approach of supporting value-added services in addition to RTD is applicable to transnational collaboration to yield similar benefits of coherence, co-ordination, communication and, ultimately, impact. They can add value that cannot be achieved at national level, such as development of research roadmaps; establishment of more extensive networks with links to industry EU-wide; and bigger and more varied test and evaluation markets for research outputs.

¹³ Source: Jarmo Raittila, TEKES, workshop presentation entitled "Technology Programmes in Finland"

Poles and clusters

Throughout Europe, Member States are establishing 'clusters' or 'pôles de compétitivité', where there is a co-location of a rich mix of industrial, academic and public sector research organisations in particular fields. This can generate considerable local synergy, with significant social and economic benefit, while at the same time directly contributing to specialization within the European ecosystem.

The French government has identified 67 such pôles, so far, explicitly to develop in each case "an ecosystem of growth".¹⁴ In the field of ICT, these clusters include one for software, System@tic, in the Paris region, one in Brittany for images and networks and, in Grenoble, one of six that are ranked as 'world class' - 'Minalogic'¹⁵ - that is concerned with micro- and nano-technologies and embedded systems on chips.

The ambition is to "move the battle from a playing field based on production cost to one based on innovation and value added to products and services". And - of course - to create new services and new jobs around the resulting products. Currently, there are, as a consequence, almost 30,000 jobs in micro- and nano-technologies and software in the Grenoble region, with over 4000 students in higher education in those subjects.

Other countries have established similar clusters. Germany, for instance, has also established a cluster for micro- and nano-technology in Dresden.

Creating an innovation-friendly environment

Rather than approaching 'building the ecosystem' from the perspective of enrichment of research activities, as with the Finnish value-added services, or with a particular technological focus, as with the French and other pôles de compétitivité, it is possible to

"The Innovation Act ... promotes the whole innovation process, from idea to realization."

Dr Ilona Vass, Vice President, NKTH

take a more broad-sweeping approach with the focus less on research or technology development per se, and more on creating an enabling environment - an environment conducive to research and innovation.

Hungary, for example, is implementing a range of measures that entail reform of the way that government agencies are structured and operate; the way that financing is done - and the amount; and removal of barriers arising from the regulatory framework.

The measures combine a number of resources and mechanisms:

- tax relief for R&D,
- continuing promotion of foreign direct investment, but building on that a more resilient domestic ecosystem so as to move away from the present 'dual economy',
- targeted support schemes, including an innovation fund and use of EU structural funds,
- active promotion and encouragement of international co-operation, with a shift from project-based co-operation to programme-based co-operation.

Apart from the application of the Innovation Fund, the way that it is financed also provides industry with an incentive to innovate. Industrial organisations normally pay a levy toward the fund of 0.25% of turnover, and this is matched equally with public funds. But there is reduction in the industrial levy if they undertake research themselves or if they commission research from the public sector.

The innovation environment is further facilitated by a legal measure - the Innovation Act - that clarifies IPR regulations, promotes and makes easier the formation of spin-off companies, and encourages mobility of workers between sectors and across borders.

¹⁴ Les Annales Des Mines, February 2006

¹⁵ 'Micro NANotechnologies et LOGiciel Grenoble-Isère Compétitivité'

EUROPE-WIDE INITIATIVES

'Europe-wide initiatives' are conceived by the IST Advisory Group (ISTAG) as a way to both create greater coherence and effectiveness in ICT research and innovation initiatives and at the same time accelerate innovation in the use of ICT, so as to help get the 'Lisbon Agenda' back on track.¹⁶

The concept is to aggregate demand from sophisticated 'lead users' as a way to overcome market fragmentation and create a coherent 'pull' on research. The Aho Group has recently recommended the establishment of 'lead markets', which is a similar concept¹⁷.

ISTAG's criteria for such initiatives are that they should:

- ▶ have a European dimension - creating critical mass in Europe
- ▶ be urgent, from a societal perspective, and therefore have political support
- ▶ enhance competitiveness and have a long term impact on Europe's IST/industry position
- ▶ be based on ambient intelligence (AMI) or build on other existing areas of expertise

- ▶ add value to existing markets, programmes, and initiatives.

They should be large scale and visionary, so as to harness the concentrated expertise, knowledge and capabilities of European personnel in the pursuit of objectives that are clearly for the benefit of European society and industry. All organisations in the cycle, from research to deployment and exploitation should be involved.

They need to be conducted at European level to ensure critical mass, risk sharing and cross-border implementations - thereby forcing the pace of harmonisation of presently inhibiting and incompatible regulations.

The first domains proposed by ISTAG for such Europe-wide initiatives that meet these criteria are health, road transport, government, and an infrastructure for scientific information and collaboration.

Such initiatives would play a major role in the integration, recommended earlier in this report, of other sources of funds - particularly those of public procurement - into the overall innovation process.

¹⁶ "Ambient Intelligence: from vision to reality", ISTAG report, October 2003

¹⁷ "Creating an Innovative Europe", Report of the Independent Expert Group on R&D and Innovation appointed following the Hampton Court EU Summit, January 2006

Key messages

- ▶ If we wish to make progress toward the 'Lisbon agenda', then ERA co-ordination is essential.
- ▶ However, co-ordination of Member State and EU-level activities does not necessarily require participation in joint programmes: co-ordination can be achieved in a variety of ways, and with a variety of means for financial support - sometimes even without additional funding. And across Europe we have experience of a range of examples that may serve as models for others to follow.
- ▶ Simplistically, some degree of alignment can be achieved through sharing of research agendas. And alignment of research agendas can be achieved 'top-down' or 'bottom-up'.
- ▶ The most obvious example of 'top-down' alignment at present is the alignment of national research agendas with those of the European Technology Platforms.
- ▶ But 'bottom-up' alignment is also possible, as MNT-ERA-Net has demonstrated so well.
- ▶ Coherence can also be encouraged by 'user-pull' on research and technology development. In FP6, the Aml@Work communities have begun to bring the user communities together to achieve this.
- ▶ For the future, much more user-developer-researcher coherence may be expected through the combination of 'European-Wide Initiatives' proposed by ISTAG and the 'Lead Markets' proposed by the Aho Group.
- ▶ The ISTAG and Aho Group initiatives will, in turn, facilitate the application of many more sources of funds - Structural Funds, Regional Funds, EIB loans, Venture Capital, ... to the overall innovation process (well beyond RTD).
- ▶ Within the 6th Framework Programme, 'ERA-Nets' and 'Specific Support Actions' (SSAs) have had considerable success in bringing the European communities together. Their cost is low, but their effect, through the facilitation that they enable, has been very great indeed.

Outstanding questions

This workshop gave some glimpses of a range of rationales for and approaches to the integration of R&D in national 'ecosystems' and of various forms of transnational cooperation. However, it is not generally clear which approaches are appropriate in which circumstances. This raises a number of questions about the formulation of policies and the choice of processes.

What policies that impact on national ICT programmes should each country and the EU pursue? How should these policies be formulated? What are the underlying rationales for particular research challenges and socio-economic objectives to make it to the policy agenda? In particular, what rationales are there for transnational cooperation in RTD? How can small countries, and particularly New Member

States, be most appropriately involved in building the European research agenda? And, given the emerging ETPs, what should be the role of large industrial actors in the Europeanization of RTD?

How can we avoid bad policy decisions - whether at national or EU-level? And how can we avoid misinterpretation of policy targets (such as the misinterpretation of the 'Lisbon-Barcelona 3% target', mentioned previously).

Are small countries - and again particularly the new Member States - ready for a specialized Europe? Do they 'know their own niche'? Do they have a clear and objective view of their strengths and weaknesses and a clear vision of where they want to go? Countries must establish

Innovation Flow

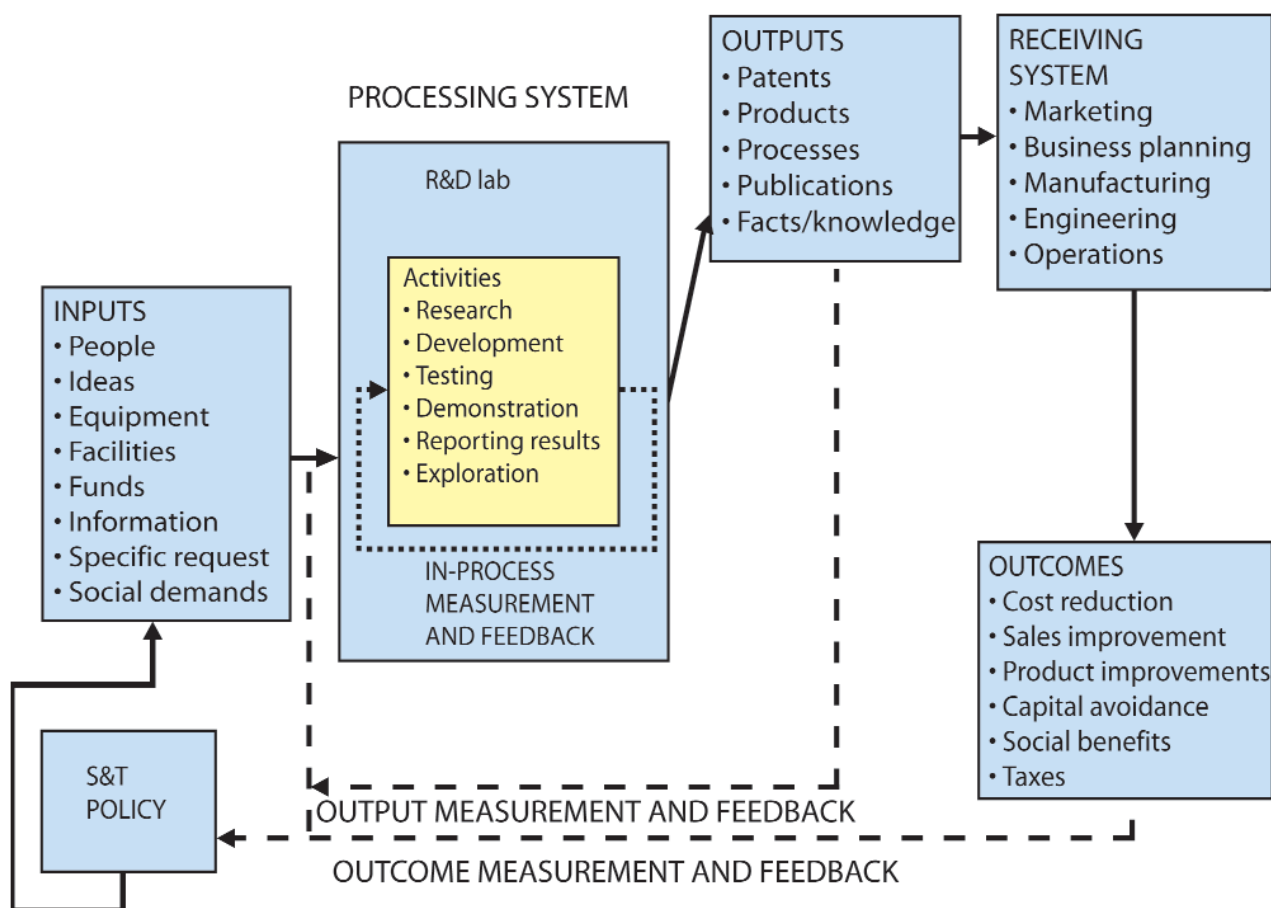


Figure 4: Innovation Flow ¹⁸

¹⁸ © by Heikki Kotilainen, S&T Balance. Workshop presentation entitled "Evaluation and Monitoring of Technology Programmes"

their needs, select priorities and institute appropriate processes for both national initiatives and future transnational cooperation. What mechanisms should they use to make such decisions? What methods, studies, preparatory work, and models are needed for policy formulation and programme selection? Finland, for instance, has a well-developed process (see figure above) that might provide a model for other member states in their establishment of a cycle of policy formulation, programme design, ex-ante evaluation, monitoring, impact assessment, and policy learning.

Finally, is the European financial infrastructure ready to support the ERIA? What financial institutions, changes in banking culture, practices and methodologies are needed to

support risk-taking in RTD? Certainly the EIB is taking some important exemplary steps - but elsewhere hurdles remain. For example, the need for bank guarantees (as required for the application of Structural Funds and sometimes in the Framework Programme) has the effect of taxing the research activities of innovative SMEs, thus raising the price of their research and inhibiting their engagement in the innovation ecosystem.

To answer these questions requires policy research, at both national level and EU and even international level, to understand rationales; to establish needs; and to select priorities, modalities and mechanisms for both national programmes and transnational cooperation.

Annex A: Bibliography

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Innovation appointed following the Hampton Court EU Summit, January 2006

Annex B: Agenda

Design of National ICT Programmes in the Context of ERA Coordination

9 March 2006

Plenary - European Contexts and National Approaches

- 10:00 Welcome
Sándor Bottka, National Office for Research and Technology
- 10:05 Keynote:
National Programming in the IST ERA
Dr. Ilona Vass, Vice-president, National Office for Research and Technology

Session 1 - Regulatory and Financial Context of RTD

- 10:30 Keynote:
State of Play - FP7 and CIP
Michael Arentoft, Deputy Head of Unit, Strategy for ICT R&D, DG INFSO
- 11:15 Financing RTD and Innovation in the ERA: the role of the European Investment Bank
Dr. Guy Clause, Dietmar Dumlich, European Investment Bank
- 11:45 Evaluation and Monitoring of Technology Programmes
Dr. Heikki Kotilainen, S&T Balance

Session 2 - Programme design in the ERA

- 13:15 How to address aspects of programme planning, implementation and evaluation phases when designing national programmes? How can these affect and lead towards future transnational initiatives?
Introduced by: *Bob Malcolm, ideo limited*
- 13:30 The French Pôle de Compétitivité - The Case of Grenoble
Dr. Dominique Grand, CEA Grenoble, (France)
- 14:00 Seed Phase and Value-added Programme Services
Jarmo Raittila, TEKES (Finland)
- 14:30 Spanish Technology Platforms inside IST plan Avanza
Félix Serrano Delgado, Ministry for Industry, Tourism and Trade (Spain)
- 15:30 MNT-ERA-Net: New Opportunities for Applicants in MNT
Dr. Roland Brandenburg, FFG (Austria)
- 16:00 EU-wide Approach to Systems and Services
Dr. Peter Tancig, Researchers' Association of Slovenia, ISTAG

- 16:30 Round table: new issues in ERA context
Introduced by: *Attila Havas, Institute of Economics, Hungarian Academy of Sciences, and European Innovation Scoreboard*
- complementarity and/or coordination in programme themes - where transnational coordination is essential
 - EU-wide system/service approaches (ISTAG)
 - Solving common European problem (eg. AAL, esafety, security)
 - Address areas of crucial importance to EU competitiveness in context of globalisation (eg. mobile tech, embedded)
- 17:30 *Summary of the day*

10 March 2006

Session 2 - continued

- 09:00 ICT, FP7 and Technology Platforms (ISI, eMobility, NEM)
Andrew Houghton, Information Society and Media DG, European Commission
- 10:00 Sustainability Aspects of ICT Related Programmes with R&D Elements
Sándor Ferge, Ministry of Informatics and Communications (Hungary)
- 10:30 Polish Platform on Mobile Communications and Wireless Technologies
Ghislain d'Adesky, ERA, Mobile Communications Technology Platform (Poland)
- 11:20 ALIPRO: IST Research Programmes on Mobile Communications in the New Member States
István Lengyel, Actiwise Consulting (Hungary)
- 11:40 Challenges for NMAS in Collaborative Innovation in e-work and e-business
Tünde Kállai, European Project Coordination Office
- 12:00 Discussion: Opportunities for Coordination in this Field
Introduced by: *Sándor Bottka, National Office for Research and Technology*
- 12:30 Concluding Remarks
Bob Malcolm, ideo limited

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Acknowledgements

The project team and workshop organisers would like to thank the following persons for their help and active contribution:

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