7th Framework Programme

ICT Work Programme 2007 – 2008

INTRODUCTION

Today Europe faces an urgent need to reshape its economy and society to meet the challenges of the 21st Century. We must realise higher economic growth through improved competitiveness and productivity, whilst ensuring a sustainable future. We have to adjust to the changing economic realities brought about by the globalisation of markets and the ever-faster pace of technological change. At the same time, we have to modernise our public services and tackle emerging challenges in areas such as health, ageing, inclusion, energy efficiency, safety and security.

In its Communication on "Working together for growth and jobs, A new start for the Lisbon Strategy", the Commission highlights the importance of ICT for Europe's economy and society. It underlines that "*our innovation performance is crucially dependent on strengthening **investment in and the use of new technologies, particularly ICTs**, by both the private and public sectors. Information and Communication technologies provide the backbone for the knowledge economy. They account for around half of the productivity growth in modern economies."*

One of the key objectives of the i2010 initiative, that sets the strategic framework for ICT policies in the Union, is to achieve "world class performance in research and innovation in ICT by closing the gap with Europe's leading competitors". Leading the progress in ICT is essential to be able to address Europe's key socio-economic challenges and to reinforce its industrial competitiveness. ICT research in FP7 aims at enabling Europe to master ICT development so that it corresponds to the needs of its citizens and businesses.

OBJECTIVE

The primary objective of the ICT Thematic priority is **i*mproving the competitiveness of European industry and enabling Europe to master and shape future developments in ICT so that the demands of its society and economy are met***. ICT is at the very core of the knowledge-based society. Activities will strengthen Europe's scientific and technology base and ensure its global leadership in ICT, help drive and stimulate product, service and process innovation and creativity through ICT use and ensure that ICT progress is rapidly transformed into benefits for Europe's citizens, businesses, industry and governments. These activities will also help reduce the digital divide and social exclusion.

WORK PROGRAMME 2007 – 2008

The following is a summary of the Work Programme for the ICT theme of the FP7 Specific Programme "Cooperation" which defines the priorities for the calls for proposals to be launched in 2007. The Programme can be downloaded from *http://cordis.europa.eu/fp7/ict/*

For further information contact:

Mr. Eric Flask
National Contact Point for FP7 ICT
Malta Council for Science & Technology
Villa Bighi, Bighi, Kalkara CSP 12
Tel: 2360 2123; Fax: 2166 0341
Email: eric.flask@gov.mt

01. CHALLENGE 1: PERVASIVE & TRUSTED NETWORK & SERVICE INFRASTRUCTURES

01.1 The Network of the Future *(€200M)*

- Ubiquitous network infrastructures and architectures
- Optimised control, management and flexibility of the future network infrastructure
- Technologies and systems architectures for the Future Internet

01.2 Service and Software Architectures, Infrastructures and Engineering *(€120M)*

- Service architectures, technologies, methods and tools
- Service/software engineering approaches and tools
- Strategies and technologies enabling mastery of complexity, dependability, and behavioural stability
- Virtualisation tools, system software and network-centric operating systems

01.3 ICT in support of the networked enterprise *(€30M)*

- Generic integrated solutions for inter-enterprise interoperability and collaboration
- Architectures and platforms for the integrated enterprise
- Tools and technologies that enable intra-enterprise collaboration

01.4 Secure, dependable and trusted Infrastructures *(€90M)*

- Security and resilience in network infrastructures
- Security and trust in dynamic and reconfigurable service architectures
- Trusted computing infrastructures
- Identity management and privacy enhancing tools and trust policies
- Longer term visions and research roadmaps; metrics and benchmarks for comparative evaluation and open technology competitions.

01.5 Networked Media *(€85M)*

- Interoperable multimedia network and service infrastructures
- End-to-end systems and application platforms

01.6 New Paradigms and Experimental Facilities *(€40M)*

- Advanced networking approaches to architectures and protocols
- Validation in large scale testing environments
- Interconnected testbeds

01.7 Critical Infrastructure Protection *(Joint Initiative between ICT and Security Themes) (€20M)*

- Capability development for creating, monitoring and managing secure, resilient and always available critical information infrastructures.
    - Understanding and managing the interactions and complexity of interdependent critical infrastructures
    - Designing and developing secure and resilient networked and distributed information and process control systems

- Capability development in creating integrated solutions for risk assessment and risk management of interconnected and interdependent critical infrastructures.
    - developing integrated frameworks and agreed, common methodologies for global analysis of risks, failures and vulnerabilities to assure interoperability between interconnected and in interdependent heterogeneous critical infrastructures
    - developing agreed, common methods for risk assessment and management and contingency plans for interdependent heterogeneous critical infrastructures
    - modelling & simulation

02. CHALLENGE 2: COGNITIVE SYSTEMS, INTERACTION, ROBOTICS

02.1 Cognitive Systems, Interaction, Robotics *(€193M)*

- Artificial Systems
- A principled approach to structuring research

03. CHALLENGE 3: COMPONENTS, SYSTEMS, ENGINEERING

03.1 Next-Generation Nanoelectronics Components and Electronics Integration *(€86M)*

- Integration and miniaturisation technologies
- Design technologies
- Manufacturing technologies

03.2 Organic and large-area electronics and display systems *(€63M)*

- Organic and large-area technologies
- Advanced visualisation systems and novel display technologies

03.3 Embedded Systems Design *(€40M)*

- Theory and methods for system design
- Suites of interoperable design tools for rapid design and prototyping
- Coordination of national, regional and EU-wide R&D programmes

03.4 Computing Systems *(€25M)*

- Novel architectures for multi-core computing systems
- Reference architectures for generic embedded platforms

03.5 Photonic components and subsystems *(€90M)*

- Core photonic components and subsystems
- Application-specific photonic components and subsystems
- Underlying technologies
- Complementary measures

03.6 Micro / Nanosystems *(€83M)*

- Next-generation smart systems
- Micro/nano/biotechnologies' convergence
- Integration of Smart Materials
- From smart systems to viable products
- Smart systems for communications and data management

03.7 Networked Embedded and Control Systems *(€47M)*

- Middleware
- Cooperating objects and Wireless Sensor Networks
- Control of large-scale complex distributed systems

04. CHALLENGE 4: DIGITAL LIBRARIES AND CONTENT

04.1 Digital libraries and technology-enhanced Learning *(€102M)*

- Large-scale European-wide digital libraries
- Radically new approaches to digital preservation
- Responsive environments for technology-enhanced learning.
- Radically new approaches to digital preservation
- Adaptive and intuitive learning systems

04.2 Intelligent Content and Semantics *(€101M)*

- Advanced authoring environments
- Collaborative automated workflow environments
- Architectures and technologies for personalised distribution, presentation and consumption of self-aware adaptive content
- Actions geared towards community building
- Semantic foundations
- Advanced knowledge management systems

05. CHALLENGE 5: TOWARDS SUSTAINABLE AND PERSONALISED HEALTHCARE

05.1 Personal Health Systems for Monitoring and Point-of-Care diagnostics *(€72M)*

- Personalised Monitoring
  - Chronic disease management
  - Preventive monitoring for people at risk
- Point-of-Care diagnostics

05.2 Advanced ICT for Risk Assessment and Patient Safety *(€30M)*

- Advanced computerised adverse event systems
- New risk prediction for large scale events

05.3 Virtual Physiological Human *(€72M)*

- Patient-specific computer models for personalised and predictive healthcare and ICT-based tools to model and simulate human physiology and disease-related processes.
  - Patient-specific computational modelling and simulation of organs or systems targeting specific clinical needs
  - Data integration and new knowledge extraction
  - Clinical applications and demonstration of tangible benefits of patient-specific computational models
  - Networking action on integrating European research in the field of multilevel modelling and simulation of human anatomy and physiology

06. CHALLENGE 6: ICT FOR MOBILITY, ENVIRONMENTAL SUSTAINABILITY AND ENERGY

06.1 ICT for the Intelligent Vehicles and Mobility Services *(€57M)*

- ICT research in Intelligent Vehicle Systems
- Research in Mobility Services for People
- ICT research in Mobility Services for Goods

06.2 ICT for Cooperative Systems *(€48M)*

- ICT research in Co-operative Systems
- Field Operational Tests

06.3 ICT for Environmental management and energy efficiency *(€54M)*

- Collaborative Systems for Environmental Management
- New and affordable ICT for energy-intensive systems

07. CHALLENGE 7: ICT FOR INDEPENDENT LIVING AND INCLUSION

07.1 ICT and Ageing (€30M)

- Advanced prototypes of systemic solutions for independent living and active ageing
- Open systems reference architectures, standards and platforms
- RTD roadmaps and socio-economic research
- Contribution to standards setting, and strategic international cooperation with US, Japan

07.2 Accessible and Inclusive ICT (€43M)

- New approaches and solutions for deeply embedding generalised accessibility support within future mainstream ICT-based products and services.
- New methods and tools for computer simulation of the user interaction and computer-based validation frameworks
- Advanced self-adaptive ICT-based assistive systems based on non-invasive Brain to Computer Interaction (BCI)
- Targeted and exploratory ICT research on innovative communication and shared creative environments
- Coordination of constituencies and development of future research agendas; international co-operation with North America and Asia

08. FUTURE AND EMERGING TECHNOLOGIES

FET-Open (€65M)

FET-Open addresses the widest possible spectrum of research topics that closely relate to Information and Communication Technologies as these arise bottom-up. Since the supported topics are not predefined by the Work Programme but identified by the researchers themselves, FET-Open flexibly accommodates the exploration of new research horizons. Unconstrained by established approaches, it offers the opportunity to try out an unproven idea where the risk is too high for a larger RTD investment to be justified. Once established as credible and valid, a research topic may gradually grow into a wider field, supported by a dedicated research initiative or be taken over by mainstream programme activities in ICT. Rather than doing blue-sky research, a project in FET-Open should contribute to the realisation of a clear long term vision in the ICT domain and the project's objectives must address a key challenge for the realisation of this vision.

08.1 FET proactive 1: Nano-scale ICT devices and systems (€20M)

- Demonstration of new concepts for switches or memory cells
- Demonstration of new concepts, technologies and architectures for local and chip-level interconnects with substantial improvements over current solutions.
- Demonstration of radically new functionalities by the integration of blocks from a few nanometres down to the atomic scale into high added-value systems.

08.2 FET proactive 2: Pervasive adaptation *(€20M)*

- Evolve-able and adaptive pervasive systems, able to permanently adjust, self-manage, evolve and self-organise
- Networked societies of artefacts that adapt to each other and to changing needs
- Adaptive security and dependability
- Dynamicity of trust
- Security for tiny, massively networked devices

08.3 FET proactive 3: Bio-ICT convergence *(€20M)*

- Novel Computing Paradigms,
- Biomimetic artefacts
- Bidirectional interfaces between electronic or electro-mechanical systems and living entities, at or close to the cellular level, with adequate control and/or signal processing algorithms,
- Biohybrid artefacts, involving tightly coupled ICT and biological components

08.4 FET proactive 4: Science of complex systems for socially intelligent ICT *(€20M)*

- Theoretical and algorithmic foundations for scaleable modelling and simulation of such multi-level systems
- Data-driven simulation, tools and techniques able to cope with huge sets of heterogeneous and often unreliable data to reconstruct, possibly in close-to-real-time, dynamic system models at multiple levels.
- Prediction and predictability

08.5 FET proactive 5: Embodied Intelligence *(€20M)*

- Mind-body co-development and co-evolution through permanent and extended multi-modal interaction with the physical and social environment.
- Morphology and behaviour
- Design for emergence

08.6 FET proactive 6: ICT forever yours *(€20M)*

- Eternal Systems
- Knowledge, diversity and time
- Secure and dependable software

09. HORIZONTAL SUPPORT ACTIONS

09.1 International cooperation *(€12M)*

- Identification and promotion of cooperation opportunities, support to policy dialogues
- Development-related ICT research exploitation and cooperation roadmaps
    - Language and speech technologies with particular focus on Arabic-speaking regions / countries (including Mediterranean Partner Countries and African, Caribbean and Pacific (ACP) countries)
    - Open Source Software with particular focus on Asia, ACP and Latin America
    - Accessible and inclusive ICT with particular focus on Latin America and ACP

09.2 Trans-national co-operation among NCPs *(€3M)*

- Reinforcing the network of National Contact Points (NCP) for ICT under the Seventh Framework Programme, by promoting further trans-national cooperation within this network.

IMPLEMENTATION OF CALLS

	Total Budget (M€)	Budget per Call			FET Open[4]	Joint Call[5]	*Funding Schemes*[6]
		Call 1[1]	*Call 2*[2]	*Call 3*[3]			
Challenge 1: Pervasive and Trusted Network and Service Infrastructures							
1. The network of the future	200	200					CP, NoE, CSA
2. Service and software architectures, infrastructures and engineering	120	120					CP, NoE, CSA
3. ICT in support of the network enterprise	30	30					CP, CSA
4. Secure, dependable and trusted infrastructures	90	90					CP, NoE, CSA
5. Networked media	85	85					CP, NoE, CSA
6. New Paradigms and experimental facilities	40		40				CP, NoE, CSA
7. Critical infrastructure protection[7]	20					20	CP, CSA
Challenge 2: Cognitive systems, interaction, robotics							
1. Cognitive systems, interaction, robotics	193	96		97			CP, NoE, CSA(CA only)
Challenge 3: Components, systems, engineering							
1. Next generation nanoelectronics components and electronics integration	86	86					CP, NoE, CSA

[1] Call 1: Publication Date: 22nd December 2006. Closure Date: 8th May 2007, 17:00 Brussels local time
[2] Call 2: Publication Date: May/June 2007. Closure Date: September/October 2007
[3] Call 3: Publication Date: December 2007. Closure Date: March 2008
[4] FET Open: Publication Date: 22nd December 2007. Receivable Date: 19th March 2007. Closure Date: 31st December 2008, 17:00 Brussels local time
[5] Joint Call: Publication Date: 30th August 2007. Closure Date: 29th November 2007, 17:00 Brussels local time
[6] Refer to Appendix A – Funding Schemes
[7] This joint call between the ICT-FP7 Theme and the Security-FP7 Theme may not fall together with ICT Call 2, but may be organised separately.

	Total Budget (M€)	Budget per Call			FET Open[4]	Joint Call[5]	*Funding Schemes*[6]
		Call 1[1]	*Call 2*[2]	*Call 3*[3]			
2. Organic and large-area electronics and display systems	63	63					CP, NoE, CSA
3. Embedded systems design	40	40					CP(STREP only), NoE, CSA
4. Computing systems	25	25					CP(STREP only), NoE
5. Photonic components and subsystems	90		90				CP, NoE, CSA
6. Micro/nanosystems	83		83				CP, NoE, CSA
7. Networked embedded and control systems	47		47				CP(STREP only), NoE, CSA
Challenge 4: Digital libraries and content							
1. Digital libraries, and technology-enhanced learning	102	52		50			CP, NoE, CSA
2. Intelligent content creation and semantics	101	51		50			CP, NoE, CSA
Challenge 5: Towards sustainable and personalised healthcare							
1. Personal health systems for monitoring and point-of-care diagnostics	72	72					CP(IP only), CSA
2. Advanced ICT for risk assessment and patient safety	30	30					CP, CSA
3. Virtual physiological human	72		72				CP, NoE, CSA
Challenge 6: ICT for mobility, environmental sustainability and energy							
1. ICT for the intelligent vehicle and mobility services	57	57					CP, CSA
2. ICT for cooperative systems	48		48				CP, NoE, CSA
3. ICT for the environmental management and energy efficiency	54		54				CP, CSA

	Total Budget (M€)	Budget per Call			FET Open[4]	Joint Call[5]	*Funding Schemes*[6]
		Call 1[1]	*Call 2*[2]	*Call 3*[3]			
Challenge 7: ICT for independent living and inclusion							
1. ICT and ageing	30	30					CP, CSA
2. Accessible and inclusive ICT	43		43				CP, CSA
Future Emerging Technologies (FET)							
Open scheme	65				65		CP(STREP only), CSA(CA only)
1. Nano-scale ICT devices and systems	20	20					CP, CSA
2. Pervasive adaptation	20	20					CP, CSA
3. Bio-ICT convergence	20	20					CP(IP only), CSA
4. Science of complex systems for socially intelligent ICT	20			20			CP(IP only), CSA
5. Embodied intelligence	20			20			CP(STREP only), CSA
6. ICT forever yours	20			20			CP(IP only), CSA
Horizontal support actions							
International cooperation	12	7		5			CSA
Trans-national Cooperation among NCPs	3			3			CSA
Total	*2021*	*1194*	*477*	*265*	*65*	*20*	

APPENDIX A – FUNDING SCHEMES

Collaborative Projects (CP)[8]

Support to research projects carried out by consortia with participants from different countries, aiming at developing new knowledge, new technology, products, *demonstration activities* or common resources for research. The size, scope and internal organisation of projects can vary from field to field and from topic to topic. Projects can range from small or medium-scale focused research actions to *large-scale* integrating projects for achieving a defined objective. *Projects may also be targeted to special groups such as SMEs.*

The Funding Scheme allows for two types of projects to be financed as follows:

a) *Small or medium-scale focused research actions* (**STREP**)

Targeting a specific objective in a sharply focused approach; they shall have a fixed overall work plan where the principal deliverables are not expected to change during the lifetime of the project.

Their content will consist of either of the following two, or a combination of the two:

a) a research and technological development project designed to generate new knowledge which would improve European competitiveness and/or address major societal needs

b) a demonstration project designed to prove the viability of new technologies offering potential economic advantage but which cannot be commercialised directly (e.g.testing of product-like prototypes) and naturally project management activities.

c) Such type of projects could also include innovation-related activities, in particular with respect to the management of the knowledge produced and the protection of intellectual property.

b) Large-scale integrating projects (**IP***)*

Larger scale actions, including a coherent integrated set of activities tackling multiple issues and aimed at specific deliverables; there will be a large degree of autonomy to adapt content and partnership and update the work plan, whereas appropriate. Their content will consist of a combination of most or all of the following (indents a and/or b being a must):

a) objective-driven research and development, i.e. clearly defined scientific and technological objectives, aiming at a significant advance in the established state-of-the-art; in addition, typically of multidisciplinary character

b) a demonstration project designed to prove the viability of new technologies offering potential economic advantage but which cannot be commercialised directly (e.g. testing of product-like prototypes)

c) innovation activities relating to the protection and dissemination of knowledge, socioeconomic studies of the impact of that knowledge, activities to promote the exploitation of the results, and, when relevant, "take-up" actions; these activities are inter-related and should be conceived and implemented in a coherent way

[8] ***Minimum participation conditions:***
Collaborative Project: At least 3 independent legal entities, each of which is established in a MS or AC, and no two of which are established in the same MS or AC

Collaborative Project for specific cooperation actions dedicated to international cooperation partner countries (SICAs): At least 4 independent legal entities. Of these 2 must be established in different MS or AC. The other two must be established in different international cooperation partner countries

d) training of researchers and other key staff, research managers, industrial executives (in particular for SMEs), and potential users of the knowledge produced within the project. Such training activities should contribute to the professional development of the persons concerned

e) any other specific type of activity directly related to the project's objectives (as identified in the relevant work programme or call for proposals)

f) project management activities.

Networks of Excellence (NoE)[9]

Support to a Joint Programme of Activities implemented by a number of research organisations integrating their activities in a given field, carried out by research teams in the framework of longer term co-operation. The implementation of this Joint Programme of Activities will require a formal commitment from the organisations integrating part of their resources and their activities.

The funding scheme will support the long-term durable integration of research resources and capacities (researchers, services, teams, organisations, institutions) in fields of strategic importance for European research, through the establishment of a single virtual centre of research, in order to overcome demonstrable, detrimental fragmentation, thus strengthening European scientific and technological excellence on a particular research topic.

Networks of Excellence will aim at consolidating or establishing European leadership at world level in their respective fields by integrating at European level the resources and expertise needed for the purpose. This will be achieved through the implementation of a Joint Programme of Activities (JPA) aimed principally at creating a progressive and durable integration of the research capacities of the network partners while at the same time advancing knowledge on the topic.

Since Networks of Excellence are aimed at tackling fragmentation of existing research capacities, they should be implemented provided that:

- research capacity is fragmented in the (thematic) area being considered;
- this fragmentation prevents Europe from being competitive at international level in that area;
- the proposed integration of research capacity will lead to higher scientific excellence and more efficient use of resources.

The implementation of the Joint Programme of Activities will require a formal commitment from the organisations integrating part or the entirety of their research capacities and activities.

The Joint Programme of Activities (JPA) is the collective vehicle for achieving the durable integration of the research resources and capacities of the Network of Excellence. In order to do so, the JPA should consist of a coherent set of integrating activities that the participants undertake jointly. The JPA will have several components:

- activities aimed at bringing about the integration of the participants research activities on the topic considered, such as:
    - establishing mechanisms for co-ordinating and eventually merging the research
    - portfolios of the partners
    - staff exchange schemes
    - complete or partial relocation of staff
    - establishment of shared and mutually accessible research equipment, managerial and research infrastructures, facilities and services
    - exploration of the legal requirements (facilitators/barriers) for durable integration,
    - setting up of joint supervisory bodies
    - measures for joint public relations …

[9] ***Minimum participation conditions:***
At least 3 independent legal entities, each of which is established in a MS or AC, and no two of which are established in the same MS or AC.

- jointly executed research to support the durable integration, e.g. systemic development, or development of common tools, or at filling gaps in the collective knowledge portfolio of the network, in order to make the research facilities useable by the network. (NB: in addition to this research, participants in a network will pursue their "own institutional portfolio", including research, development or demonstration in the area covered by the network itself. The latter research, development or demonstration activities are not part of the "joint programme of activities" and thus will not be part of the eligible costs of the network)
- activities designed to spread excellence, such as:
    - The main component of these activities will be a joint training programme for researchers and other key staff;
    - Other spreading of excellence activities may include: dissemination and communication activities (including public awareness and understanding of science), and, more generally, networking activities to help transfer knowledge to teams external to the network.
    - Spreading of excellence may also include the promotion of the results generated by the network; in such a context, networks should, when appropriate, include innovation-related activities (protection of knowledge generated within the network, assessment of the socio-economic impact of the knowledge and technologies used and development of a plan for dissemination and use of knowledge), as well as any appropriate gender and/or ethical related activities
- all the network's activities should be carried out within a coherent framework for the management of the consortium linking together all the project components and maintaining communications with the Commission.

Coordination and Support Actions (CSA)[10]

Support to activities aimed at coordinating or supporting research activities and policies (networking, exchanges, trans-national access to research infrastructures, studies, conferences, etc). These actions may also be implemented by means other than calls for proposals.

The Funding Scheme allows for two types of actions to be financed as follows:

a) Coordination or networking actions (CA)

Coordinating or networking actions will always have to be carried out by a consortium of participants, normally three from three different countries. The coordination or networking actions cover the following activities:

> the organisation of events - including conferences, meetings, workshops or seminars -, related studies, exchanges of personnel, exchange and dissemination of good practices, and, if necessary, the definition, organisation and management of joint or common initiatives together of course with management of the action.

The coordination and networking actions normally stretches over a longer period.

b) Specific support actions (SA)

Specific support actions may be carried out by a single participant, which can be based in any member state, associated country or a third country. Therefore there are no restrictions on the size of the consortium.

Although normally awarded following calls for proposals, there are also the possibilities to award specific support actions through public procurement carried out on behalf of the Community or to grant support to legal entities identified in the Specific Programmes or in the work programmes where the Specific Programme permits the work programmes to identify beneficiaries.

The objective of specific support actions are to contribute to the implementation of the Framework Programmes and the preparation of future Community research and technological development policy or the development of synergies with other policies, or to stimulate, encourage and facilitate the participation of SMEs, civil society organisations and their networks, small research teams and newly developed or remote research centres in the activities of the thematic areas of the Cooperation programme, or for setting up of research intensive clusters across the EU regions.

The specific support actions can be of different types covering different activities:

- monitoring and assessment activities, conferences, seminars, studies, expert groups, high level scientific awards and competitions, operational support and dissemination, information and communication activities, support for transnational access to research infrastructures or preparatory technical work, including feasibility studies, for the development of new infrastructures, support for cooperation with other European research schemes, the use by the Commission of external experts, management or a combination of these.

[10] ***Minimum participation conditions:***
Coordination Action: At least 3 independent legal entities, each of which is established in a MS or AC, and no two of which are established in the same MS or AC.

Support Action: At least 1 independent legal entity.