

The Israel-Europe
R&D Directorate
For EU FP7



ICT WP 2009-2010

At a Glance

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Input

- ❑ ICTC
- ❑ ISTAG
- ❑ ETPs
- ❑ Consultations meetings
- ❑ Studies and analysis
- ❑ Analysis of first two Calls

Future Internet

New emerging network and service infrastructures

- unlimited bandwidth capacity
- much higher computing performance
- wireless access anywhere
- trillions of devices interconnected
- integrated security and trust for all
- adaptive and personalised services
- 3D semantic-based browsing systems

ICT components and systems

New types of devices and intelligent systems through:

- Nano-scale integration, new materials
- photonics and organic electronics
- quantum and molecular technologies
- embedded ICT in even broader range of devices, objects and processes

ICT for sustainable development

Next generations of ICT to support the targets for lower carbon emissions through:

- ultra low power consumption ICT devices and equipment
- ICT solutions for better energy efficiency & lighting
- virtual mobility
- more efficient environmental simulation and monitoring

Challenge 1: Pervasive and trusted network and service infrastructures

"Future Internet" as a federating research theme

- ✓ increase emphasis on:
 - "Experimental Facilities"
 - "Internet of Things for enterprise environments"
- ✓ no follow-up of the joint Call with the Security Theme at this stage

Challenge 1: Pervasive and trusted network and service infrastructures

- ❑ **1.1: The Network of the Future**
- ❑ Future Internet Architectures and Network Technologies
- ❑ Spectrum-efficient radio access to Future Networks
- ❑ Converged infrastructures in support of Future Networks
- ❑ Coordination/ Support actions and Networks of Excellence

- ❑ **1.2: Internet of Services, Software and Virtualisation**
- ❑ Service Architectures and Platforms for the Future Internet
- ❑ Highly Innovative Service / Software Engineering
- ❑ Coordination and support actions

Challenge 1: Pervasive and trusted network and service infrastructures

- ❑ **1.3: Internet of Things and Enterprise environments**
- ❑ Architectures and technologies for an **Internet of Things**
- ❑ Integrated business solutions
- ❑ International co-operation and co-ordination

- ❑ **1.4: Trustworthy ICT**
- ❑ Trustworthy Network Infrastructures
- ❑ Trustworthy **Service Infrastructures**
- ❑ Technology and Tools for Trustworthy ICT
- ❑ Networking, Coordination and Support

Challenge 1:

Pervasive and trusted network and service infrastructures

- ❑ **1.5: Networked Media and 3D Internet**
- ❑ Content aware networks and network aware applications
- ❑ 3D Media Internet
- ❑ Networked search and retrieval
- ❑ Immersive media experiences beyond HDTV, and electronic cinema
- ❑ Knowledge networks
- ❑ Support measures

- ❑ **1.6: Future Internet experimental facility and experimentally-driven research**
- ❑ Building the Experimental Facility and stimulating its use
- ❑ Experimentally-driven Research
- ❑ Coordination and Support actions

Challenge 2:

Cognitive systems, Interaction, Robotics

- ✓ More emphasis on engineering of cognitive systems and robotics
- ✓ More visible objective on language-based interaction

Challenge 2:

Cognitive systems, Interaction, Robotics

- ❑ **2.1: Cognitive Systems and Robotics**
- ❑ New approaches towards understanding and solving key issues related to the engineering of artificial cognitive systems
- ❑ New approaches towards endowing robots with advanced perception and action capabilities
- ❑ New ways of designing and implementing complete robotic systems
- ❑ New, scientifically grounded system architectures integrating communication, control, and cognitive capabilities

Challenge 2:

Cognitive systems, Interaction, Robotics

- ❑ **2.1: Cognitive Systems and Robotics**
- ❑ a "**Virtual Institute**" facilitating the cross-fertilisation between research / academia and development / industry
- ❑ "**Virtual Institutes**" integrating diverse research areas whose problems, techniques and solutions need to be brought together to understand cognitive systems and design
- ❑ Co-ordinated **co-operation and communication** within a multidisciplinary robotics community in Europe, with concomitant outreach to potential users of robotic systems
- ❑ Co-ordinated **co-operation and communication** within a multidisciplinary artificial cognitive systems research community in Europe, with concomitant outreach to potential industrial applications

Challenge 2:

Cognitive systems, Interaction, Robotics

- ❑ **2.2: Language-based interaction**
- ❑ New architectures, models and tools for cost-efficient self-learning machine translation systems, integrating advances from the relevant fields
- ❑ Specific solutions for key domain challenges, taking into account the context in which automatic translation
- ❑ A "Virtual Institute"

Challenge 3:

Components, Systems, Engineering

- ✓ Strong emphasis on "alternative paths to ICT components and systems"
- ✓ Total budget, WP + JTIs: substantial increase
- ✓ Maintain critical mass for:
 - "Nano-electronics and design"
 - "Embedded systems design"
 - "Engineering complex distributed systems"

Challenge 3:

Components, Systems, Engineering

- ❑ **3.1: Nanoelectronics technology**
- ❑ Miniaturisation and functionalisation
- ❑ Manufacturing technologies
- ❑ Support measures

- ❑ **3.2: Design of semiconductor components and electronic based miniaturised systems**
- ❑ Improved design platforms, interfaces, methods and tools that meet the requirements of semiconductor companies, fab-less design houses and system developers
- ❑ Support measures

- ❑ **3.3: Flexible, organic and large area electronics**
- ❑ Flexible, organic and large area electronic devices and building blocks
- ❑ Flexible or foil-based systems using the building blocks based on organics, inorganics or their combination
- ❑ Network of Excellence
- ❑ Support measures

Challenge 3:

Components, Systems, Engineering

- ❑ **3.4 Embedded Systems Design**
- ❑ Theory and novel methods for embedded system design
- ❑ Modules and tools for embedded platform-based design
- ❑ Coordination of national, regional and EU-wide R&D strategies

- ❑ **3.5 Engineering of Networked Monitoring and Control systems**
- ❑ Foundations of complex systems engineering
- ❑ Wireless Sensor Networks and Cooperating Objects
- ❑ Control of large-scale systems
- ❑ International cooperation

- ❑ **3.6 Computing Systems**
- ❑ Parallelisation & programmability
- ❑ Methodologies, techniques and tools
- ❑ System simulation and analysis
- ❑ Technology implications

Challenge 3:

Components, Systems, Engineering

❑ 3.7: Photonics

- ❑ Photonics technologies, components and (sub)systems
- ❑ Cost-effective versatile foundry processes for photonic integrated components based on III-V semiconductors possibly combined with other materials
- ❑ ERA-NET Plus action
- ❑ Coordination and support actions

❑ 3.8 Organic photonics and other disruptive photonics technologies

- ❑ Organic Photonics
- ❑ Disruptive / cutting-edge photonic technologies and materials

❑ 3.9: Microsystems and smart miniaturised / heterogeneous systems

- ❑ Heterogeneous Integration
- ❑ Autonomous energy efficient smart systems
- ❑ Application-specific microsystems and smart miniaturised systems
- ❑ Advanced 3D visualisation components and related systems
- ❑ Coordination and support actions

Challenge 3: Complementing the JTIs

Two JTIs to pool public-private efforts and leverage more R&D investments

ENIAC JTI (nanoelectronics): technology for 'More Moore' and 'More than Moore'

-> ICT WP: beyond CMOS and advanced "More than Moore"

ARTEMIS JTI (Embedded Systems): platforms for design and implementation of ES responding to specific industry requirements

-> ICT WP: new concepts for the design of next generation applications of ES

Challenge 4:

Digital libraries and content

- ✓ Focus on:
 - Intelligent information management
 - ★ Content development tools de-emphasised
 - Digital libraries and preservation
 - Technology enhanced learning

Challenge 4:

Digital libraries and content

- ❑ **4.1: Digital libraries and digital preservation**
- ❑ Scalable systems and services for preserving digital content
- ❑ Advanced preservation scenarios
- ❑ Innovative solutions for assembling multimedia digital libraries
- ❑ Enhancing scholarly understanding and experiences of digital cultural heritage
- ❑ Interdisciplinary research networks bridging technological domains
- ❑ Promoting the uptake of EC-funded research

Challenge 4:

Digital libraries and content

❑ 4.2: Technology-enhanced learning

- ❑ Learning in the 21st Century: large-scale pilots for the design of the future classroom
- ❑ Reinforce the links between individual and organisational learning, and creativity
- ❑ Innovative adaptive and intuitive systems for learning featuring affective and emotional approaches
- ❑ Revolutionary learning appliances (including toys) and advanced cognitive tutors
- ❑ Focused interdisciplinary networks on specific emerging trends
- ❑ Awareness building and knowledge management on the results of EU RTD projects in the field

❑ 4.3: Intelligent information management

- ❑ Capturing tractable information
- ❑ Delivering pertinent information
- ❑ Collaboration and decision support
- ❑ Personal sphere: intuitive systems that help individuals manage, visualise and interpret their personal information
- ❑ Impact and S&T leadership

Challenge 5:

Towards sustainable and personalised healthcare

- ✓ Refinement within objectives
- ✓ Less emphasis on risk assessment and diagnostics

Challenge 5: Towards sustainable and personalised healthcare

❑ 5.1: Personal Health Systems

- ❑ Minimally invasive systems and ICT-enabled artificial organs
- ❑ Mental Health: ICT based solutions for persons suffering from stress, depression or bipolar disorders
- ❑ Support Actions

❑ 5.2: ICT for Patient Safety

- ❑ ICT for safer surgery
- ❑ ICT for integration of clinical research and clinical care
- ❑ ICT-enabled early detection of public health events
- ❑ Support Actions

Challenge 5:

Towards sustainable and personalised healthcare

❑ 5.3: Virtual Physiological Human

- ❑ Development of patient-specific computer based models and simulation
- ❑ Development of ICT tools, services and specialised infrastructure for the bio-medical researchers
- ❑ Support action on evaluation and assessment of VPH projects
- ❑ Coordination/Support action to develop an observatory on the achievements and evolution of the broader Biomedical Informatics field

❑ 5.4: International Cooperation on Virtual Physiological Human

- ❑ Interoperability: Joint development of interfaces
- ❑ Tools and services for global cooperation
- ❑ Contribution to a global validation framework

Challenge 6:

ICT for Mobility, Environment sustainability and Energy efficiency

- ✓ Strengthen and clarify goals for:
 - ICT for energy efficiency
 - ICT for environmental monitoring

- ✓ Maintain effort on ICT for transport
 - Slight budget reduction

- ✓ Novel ICT solutions for Smart Electricity Distribution Networks
(Joint Call between the ICT and Energy Themes)
 - Budget 10M

Challenge 6:

ICT for Mobility, Environment sustainability and Energy efficiency

- ❑ **6.1: ICT for Safety and Energy Efficiency in Mobility**
- ❑ ICT for Intelligent Vehicle Systems
- ❑ ICT for Clean and Efficient Mobility
- ❑ Coordination and Support Actions

- ❑ **6.2: ICT for mobility of the future**
- ❑ Field Operational Tests for Integrated Safety Systems and Co-operative Systems
- ❑ ICT-based systems and services for Smart Urban Mobility and new Mobility Concepts
- ❑ Coordination and support actions
- ❑ International cooperation

Challenge 6:

ICT for Mobility, Environment sustainability and Energy efficiency

- ❑ **6.3: ICT for energy efficiency**
- ❑ ICT tools for the future electricity market
- ❑ ICT support to energy-positive buildings and neighbourhoods
- ❑ ICT services and tools enhanced with energy features
- ❑ Coordination Actions

- ❑ **6.4: ICT for environmental services and climate change adaptation**
- ❑ ICT for a better adaptation to climate change
- ❑ Flexible discovery and chaining of distributed environmental services
- ❑ Analysis of ICT for sustainable urban environment
- ❑ Stimulation of an ICT-enabled environmental information service economy in Europe

- ❑ **6.5: Novel ICT solutions for Smart Electricity Distribution Networks (Joint Call between the ICT and Energy Themes)**

Challenge 7:

ICT for Independent living, Inclusion and Participation

- ✓ Substantial increase in budget for WP + AAL
- ✓ Ageing: Maintain critical mass within the WP
- ✓ New objective on "ICT for participatory governance"

Challenge 7:

ICT for Independent living, Inclusion and Participation

❑ 7.1 ICT & Ageing

- ❑ Service robotics for ageing well
- ❑ Open Systems Reference Architectures, Standards and ICT Platforms for Ageing Well
- ❑ RTD roadmaps and stakeholder coordination

❑ 7.2 Accessible and Assistive ICT

- ❑ Embedded Accessibility of Future ICT
- ❑ ICT restoring and augmenting human capabilities compensating for people with reduced motor functions or disabilities
- ❑ RTD research agendas & coordination of constituencies

❑ 7.3 ICT for Governance and Policy Modelling

- ❑ Governance and Participation Toolbox
- ❑ Policy Modelling, Simulation and Visualisation
- ❑ Road mapping and Networking for 'participation, governance and policy modelling'

Challenge 7: Complementing Joint National Programmes

AAL joint national programme: applied R&D of concrete ICT-based solutions for ageing well

-> ICT WP “ICT and Ageing”: research targeting 5-10 years to market and larger scale projects

Call planning

- ✓ 8 October 08: Final WP to ICTC
- ✓ Spread calls profiles more evenly
- ✓ Spread Calls at $\frac{1}{2}$ year intervals :
 - ✓ November 2008
 - ✓ June 2009
 - ✓ December 2009

Work Program 2009-10- budget

	WP 09-10	Call 4	Call 5	Call 6	FET/FIRE Open	Joint Call
1. Pervasive and Trusted Network and Service Infrast.	557					
1.1 Network of the Future	190	110	80			
1.2 Internet of Services, SW & virtualisation of resources	110		110			
1.3 Internet of Things for enterprise environments	37		37			
1.4 Security of ICT infrastructures & services	90		90			
1.5 Networked Media & 3D Internet	80		80			
1.6 Experimental Facility	50		50			
2. Cognitive Systems, Interaction, Robotics	179					
2.1 Cognitive Systems and Robotic Systems	153	76		77		
2.2. Language Based Interaction	26	26				
3. Components, systems, engineering	375					
3.1 Nanoelectronics Technology	35		35			
3.2 Design of Semiconductor Components and Electronic-based Miniaturised Systems	25	25				
3.3 Flexible, Organic and Large Area Electronics	60	60				
3.4 Embedded Systems Design	28	28				
3.5 Engineering of Networked Monitoring and Control Systems	32			32		
3.6 Computing Systems	25	25				
3.7 Photonics	60		60			
3.8 Organic Photonics and other Disruptive Photonics Technologies	30	30				
3.9 Microsystems and Smart Miniaturised / Heterogeneous Systems	80			80		

4. Digital Libraries and Content	188					
4.1 Digital libraries and preservation	118			69		
4.2 Technology-Enhanced Learning			49			
4.3 Intelligent information management	70		70			
5. Towards sustainable and personalised healthcare	161					
5.1 Personal Health Systems	63	63				
5.2 ICT for Patient Safety	30	30				
5.3 Virtual Physiological Human	68	5		63		
6. ICT for Mobility, Env'l Sust. & Energy Efficiency	154					
6.1 ICT for Safety and Energy Efficiency in Mobility	53	53				
6.2 ICT for Mobility of the Future	37			37		
6.3 ICT for Energy Efficiency	30	30				
6.4 ICT for Environmental Simulation & Monitoring	24	24				
6.5: Novel ICT solutions for Smart Electricity Distribution Networks (Joint Call ICT-Energy)	10					10
7. ICT for independent living, Inclusion & Participatory governance	73					
7.1 ICT and Ageing	24	24				
7.2 Accessible and Assistive ICT	34	34				
7.3 ICT for Governance and Policy Modelling	15	15				
Future and Emerging Technologies	171					
FET-Open	61				61	
Horizontal Actions	16					
9.1 International Cooperation	12	7		5		
9.2 Other Horizontal Actions (ICT ERA-NET/CAs)	4	4				
Total	1874	708	700	395	61	10