



# **Las TIC en el 7º Programa Marco - Cuarta Convocatoria -**

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**Fernando Martín  
Paloma Velasco  
Cristina Garrido  
Maite Boyero**

**Dpto. de Programa Marco de I+D**



# Esquema de la presentación

- 1. El Programa ICT en el VII PM**
- 2. El Programa de Trabajo 2009-2010**
- 3. La Cuarta Convocatoria ICT**
- 4. Plataformas Tecnológicas**

COOPERACIÓN (32.413)	
1. Salud	(6.100)
2. Alimentación, agricultura y pesca, y biotecnología	(1.935)
3. Tecnologías de la información y las comunicaciones	(9.050)
4. Nanociencias, nanotecnologías, nanomateriales y nuevas tecnologías de producción	
5. Energía	(2.350)
6. Medio ambiente (incluido el cambio climático)	(1.890)
7. Transporte (incluida la aeronáutica)	(4.160)
8. Ciencias socioeconómicas y humanidades	(623)
9. Espacio	(1.430)
10. Seguridad	(1.400)



<b>IDEAS (7.510)</b>	Consejo Europeo de Investigación
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<b>PERSONAS (4.750)</b>	Acciones Marie Curie
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<b>CAPACIDADES (4.097)</b>	Infraestructuras de investigación (1.715)
	Investigación en beneficio de las PYME (1.336)
	Regiones del conocimiento (126)
	Potencial de investigación (340)
	La ciencia en la sociedad (330)
	Desarrollo Coherente de las Políticas de Investigación (70)
	Actividades de cooperación internacional (180)

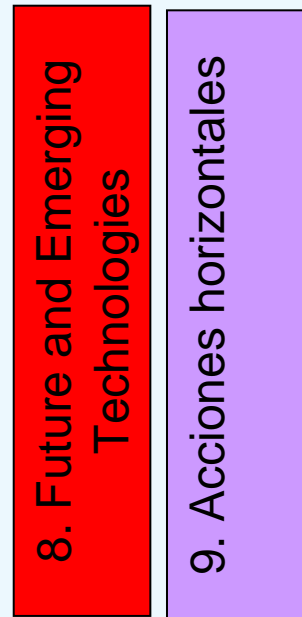
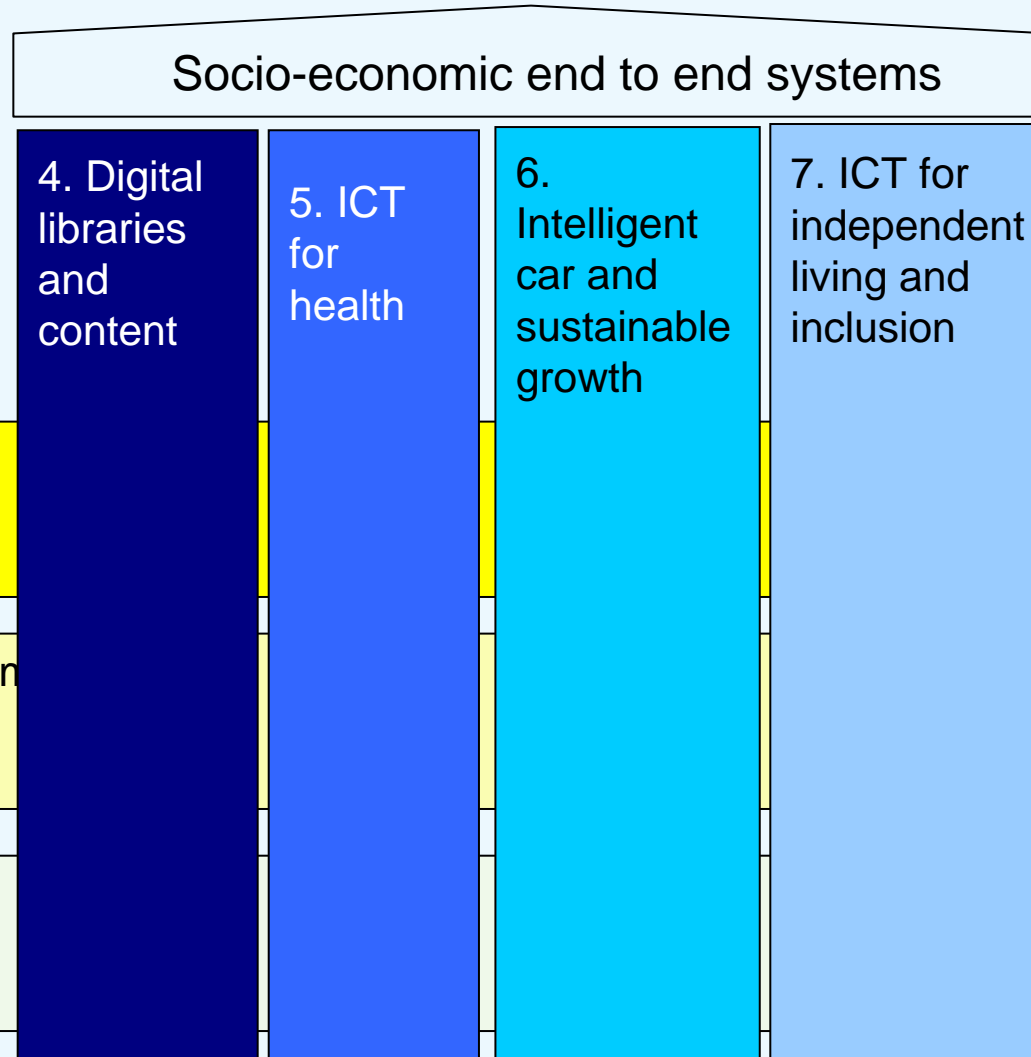
<b>Acciones no nucleares del Centro Común de Investigación (1.751)</b>
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**CIP**  
**3.620 M€**

# WorkProgramme 2009 - 2010

~2.000 M€



# 4ª Convocatoria ICT (19/11/2008 – 01/04/2009)

**1.1 The Network of the Future**

**1.5 Networked Media & 3D Internet**

**2.1 Cognitive Systems and Robotics**

**2.2 Language-based Interaction**

**3.2 Design of Semiconductor Components and Electronic-based Miniaturised Systems**

**3.3 Flexible, Organic and Large Area Electronics**

**3.4 Embedded Systems Design**

**3.6 Computing Systems**

**3.7 Photonics**

**3.8 Organic Photonics and other Disruptive Photonics Technologies**

801 M€

**5.1 Personal Health Systems**

**5.2 ICT for Patient Safety**

**5.4 International Cooperation on Virtual Physiological Human**

**6.1 ICT for Safety and Energy Efficiency in Mobility**

**6.3 ICT for Energy Efficiency**

**6.4 ICT for Environmental Services & Climate Change Adaptation**

**7.1 ICT and Ageing**

**7.2 Accessible and Assistive ICT**

**7.3 ICT for Governance and Policy Modelling**

801 M€

**8.1 Concurrent Tera-Device Computing**

**8.2 Quantum Information Foundations and Technologies**

**8.3 Bio-chemistry-based Information Technology**

**8.9 Coordinating Communities, Plans and Actions in FET Proactive Initiatives**

**8.10 Identifying New Research Topics, Assessing Emerging Global S&T Trends in ICT for Future FET Proactive Initiatives**

**9.1 International Cooperation**

<http://www.cdti.es/index.asp?MP=7&MS=220&MN=4&TR=C&IDR=385&IDP=65&IDS=6>

# 5<sup>a</sup> Convocatoria ICT (31/07/2009 – 3/11/2009)

**1.1 The Network of the Future**

**1.2 Internet of Services, Software & Virtualization**

**1.3 Internet of Things and Enterprise Environments**

**1.4 Trustworthy ICT**

**1.6 Future Internet Experimental Facility and Experimentally-driven Research**

702 M€

**3.1 Nanoelectronics Technology**

**3.5 Engineering of Networked Monitoring and Control Systems**

**3.7 Photonics**

**3.9 Microsystems and Smart Miniaturised Systems**

**4.2 Technology-Enhanced Learning**

**4.3 Intelligent Information Management**

**8.4 Human-Computer Confluence**

**8.5 Self-Awareness in Autonomic Systems**

**8.6 Towards Zero-Power ICT**

**8.9 Coordinating Communities, Plans and Actions in FET Proactive Initiatives**

**8.10 Identifying New Research Topics, Assessing Emerging Global S&T Trends in ICT for Future FET Proactive Initiatives**

## 2.1 Cognitive Systems and Robotics

### 4.1 Digital Libraries and Digital Preservation

### 5.3 Virtual Physiological Human

### 6.2 ICT for Mobility of the Future

### 8.7 Molecular Scale Devices and Systems

### 8.8 Brain-inspired ICT

### 8.9 Coordinating Communities, Plans and Actions in FET Proactive Initiatives

### 8.10 Identifying New Research Topics, Assessing Emerging Global S&T Trends in ICT for Future FET Proactive Initiatives

### 9.1 International Cooperation

286 M€





# Convocatoria ICT-ENE (19/11/2008 – 31/03/2009)

## 6.5 Novel ICT Solutions for Smart Electricity Distribution Networks

20 M€

- The **Internet of the Future** (very high bandwidth and computing performance, wireless access anywhere, trillions of devices, adaptive and personalised services, integrated security and trust)
- **Alternative paths to ICT components and systems** (nano-scale integration, new materials, photonics, organic electronics)
- ICT for **sustainable development** (energy efficiency, environmental monitoring, energy management of ICT devices and equipment)

***Article 169: Ambient Assisted Living (AAL: 50 M€)***

***JTIs: Embedded Systems (ARTEMIS: 118 M€)***

***Nanoelectronics (ENIAC: 124 M€)***

***ICT WP: 1.872 M€ TOTAL ICT R&D: 2.164 M€***

# 1.1.The Network of the Future

- **Background**

- The Challenge is to deliver the next generation of ubiquitous and converged network and service infrastructures for communication, computing and media.
- From “Mobile and Wireless Systems” and “Broadband for All” in FP6, to a converged Objective 1.1 “The Network of the Future”

- **Main Drivers and Objectives**

- Ubiquitous network infrastructures and architectures
- Convergence of mobile, fixed telecom and Internet network infrastructures
- Optimised control, management and flexibility of the future network infrastructure
- Towards mobile broadband and efficient/dynamic spectrum usage
- Technologies and system architectures for the Future Internet

# 1.1.The Network of the Future

## Topics:

- **Future Internet Architectures and Network Technologies**
  - Novel Internet architectures and technologies
  - Flexible and cognitive network management and operation frameworks
- **Spectrum-efficient radio access to Future Networks**
  - Next-generation mobile radio technologies
  - Cognitive radio and network technologies
  - Novel radio network architectures
- **Converged infrastructures in support of Future Networks**
  - Ultra high capacity optical transport/access networks
  - Converged service capability across heterogeneous access

## Expected Impact:

- Strengthened positioning of European industry in the field of Future Internet technologies
- Reinforced European leadership in mobile and wireless broadband systems, optical networks, cognitive network management technologies.
- Increased economic efficiency of access/transport infrastructures (cost/bit)
- Global standards and European IPRs reflecting federated and coherent roadmaps.
- Wider market opportunities from new classes of applications taking advantage of convergence.
- Accelerated uptake of the next generation of network and service infrastructures.

## 1.5 Networked Media & 3D Internet

### a) Content-aware networks and network-aware applications

❑ Architectures and technologies for converged and scalable **networking** and **delivery** of multimedia **content and services** (content adaptation, user context, social networks). Services may include: home management, applications, location and mobility scenarios. Enabling multiple user roles (content producer, consumer, manager of content).

❑ Maintaining integrity and quality of media to **optimise QoE** in collaborative **media creation and delivery** scenarios (sharing, storage, retrieval, fusion capabilities). **Open architectures**, especially for real-time and immersive **collaborative environments**. Enhancements of SVC, 3D & multi-view coding, leading to optimised network awareness and device delivery.



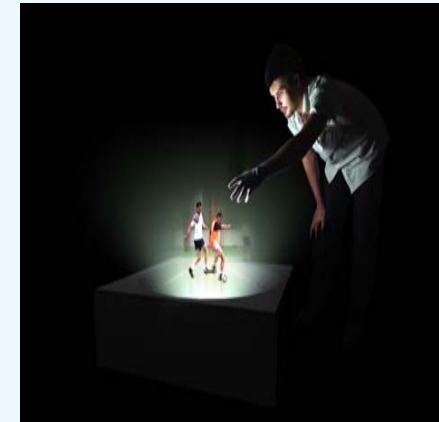
## 1.5 Networked Media & 3D Internet

### b) 3D Media Internet

❑ **Architectures and technologies** for Future Media Internet and 3D processing **enabling** mass distribution, caching, filtering, aggregation and networking of **3D content** and **enhanced user QoE**. Optimisation of **real time rendering** of complex scenes from personalised user perspectives and **minimisation of latency** due to network and processing platforms.

❑ Technologies for **3D content** representation in multiple virtual worlds, with user controlled management of ownership, identity and rights associated to **presence**.

❑ Architectures and technologies ensuring that **3D augmented worlds** are tightly coupled to the physical world (for commercial and social applications).



## 1.5 Networked Media & 3D Internet

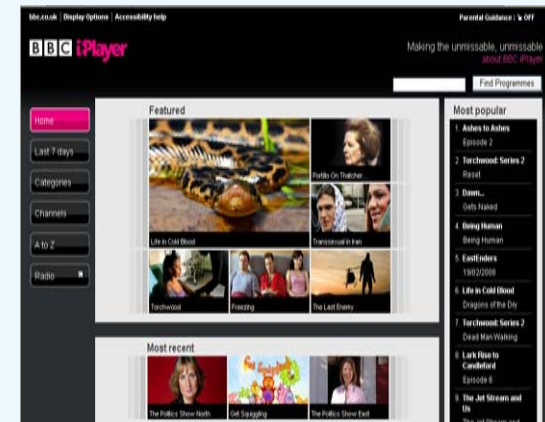
### c) Networked search and retrieval

❑ **Networked technologies and architectures** for optimised networked **search, adaptation** and **access** to large-scale distributed **multimedia content** from diverse sources and scenarios, including physical world information.

*Interaction with content, media-to-network and media-to-device dynamic adaptation.*

*Search capabilities across distributed media systems and P2P networks, adapted to context and applications (e.g. tourism, health).*

❑ **Adaptive technologies** (feedback-based) enabling **personalisation** of multimedia networked search, as a function of user context, perception and usage profile.





### d) Immersive media experiences and electronic cinema



❑ **E2E architectures** for next generation multimedia and cinema experiences (beyond HDTV) with **better QoE**, based on technologies enabling: higher frame rates, wider colour gamut, higher contrast range and screen resolution, advanced “spatialised” sound, 3D capabilities, pervasive and immersive environments, innovative 3D and multi-view coding methods.

*These optimised **E2E architectures** should cope with a massive increase of data throughput.*

## 1.5 Networked Media & 3D Internet

### Expected Impact:

- Reinforced positioning of industry in Europe in:
  - Networking and delivery of multimedia content and services
  - 3D Media Internet technologies
  - Networked search
- Strengthened European industry in:
  - Multimedia experiences beyond HDTV
  - Electronic cinema
- Wider uptake of networked and collaborative platforms based on 3D Media Internet
- Wider market opportunities (incl. for content-related SMEs) for innovative business and societal applications (e.g. games, entertainment, education, culture, services creation) based on novel networked media technologies and systems
- Global standards and European IPRs

## 2.1 Cognitive Systems and Robotics

### Rationale:

- Today's ICT systems cannot learn from experience and reason, cannot contextualise and adapt, and cannot (inter)act based on observation and learning
  - vision/sensing systems, service robots, health robots, industrial robots, multimodal and multilingual interactions ... and many other ICT applications cannot be developed further if there are no new breakthroughs in machine intelligence and systems engineering ...
- Europe has key assets to build on
  - world leadership in industrial robotics and systems engineering
  - mastering of multiple disciplines: neuroscience, microsystems ...
  - excellent academic research in these fields

#### Today

- Robots operating in ‘modelled’, ‘structured’ and ‘constrained’ environments
  - industrial robots
  - ‘programmed’ service robots
- Basic understanding of computational representations of cognitive processes
  - first applications in cognitive vision
- Human-robot interactions that are rather static / passive
  - unable to adapt to human behaviours, critical safety issues unresolved

#### 5 – 15 years

- Robots, machines and systems exhibiting advanced behaviour
  - operating with gaps in knowledge
  - operating in dynamic / frequently changing environments
- Machines and systems that understand their users / context
  - learning from observation
  - adapting to context
- Robotic systems with rich interaction capabilities
  - all senses, gestures, natural language – for safe human-robot collaboration

## 2.1 Cognitive Systems and Robotics

Call 4:

(STREP) New approaches towards endowing robots with advanced perception and cognition capabilities

- Interpretation objects, situations, events

- Memory and learning

- Anticipatory behaviour in incompletely specified environments

- Collective behaviour

- Sensing 3D everyday objects

- Motion perception

- Linking perception and action

understanding and solving key issues related to the engineering of artificial cognitive systems.

(IP) New ways of designing and implementing complete robotic systems that operate largely autonomously in loosely structured dynamic environments.

- Autonomous action in real-world environments

Physical implementation / simulation

and solutions need to be brought together to understand cognitive systems and design useful new ones.

(CA) Co-ordinated co-operation and communication within a multidisciplinary robotics community in Europe.

within a multidisciplinary artificial cognitive systems research community in Europe.

## 2.2 Language-based Interaction

Why?

- EU comprises 27 nations & 23 official languages
- new online paradigms promote communication, collaboration, co-creation ... but significant language barriers remain
- single European Information Space – one of the i2010 objectives
- Overall purpose:  
support and enhance
  - interpersonal & business communication
  - information access & managementacross languages

## 2.2 Language-based Interaction

### a) Core research. Explore new research avenues

- break new ground, foster a novel multi-disciplinary approach to machine translation
- architectures & technologies that can learn and adapt flexibly & effectively to different languages, domains & tasks
- catering for new forms of language & communication (eg online communities)
- high risk but high promise (accuracy, speed, scalability)
- language & translation models coupled with
  - data driven, machine learning methods
  - automatic acquisition & representation of linguistic facts
  - semantics, models of world knowledge relevant for translation
  - methods inspired from social networking ...

## 2.2 Language-based Interaction

### b) **Problem oriented. Address selected challenges in a clearly defined usage context**

- **online translation for the masses**
  - wide coverage (beyond GoogleTranslate); adequate quality, suitable at least for gisting/browsing; language embedded in documents, web pages, multimedia objects ...
- **translation in distributed collaborative environments**
  - support interplay between authors, translators, editors/publishers & active users; innovative integration of automatic, interactive & human translation beyond current practices; technologies as well as processes & work/social interaction
- **managing multilingual content & communication**
  - a subset of the above focussing on the development & management of online content & services esp. their versioning & maintenance in multiple languages
- **acquisition & annotation of language resources**
  - (nearly-)automatic, high volume, high performance
  - mining the web as well available repositories (eg corpora) and public information sources



## 2.2 Language-based Interaction

### c) Community building & networking

- **reinvigorate Europe’s machine translation (MT) community**
  - bring together key players from scientific, technical & commercial circles (esp. SMEs)
  - stimulate cross-border cooperation (teams, institutions, national initiatives)
  - assess skills, foster training & exchanges; support smaller teams & not well-served languages
  - identify gaps, establish strategic roadmap encompassing technologies, resources & applications
- **build bridges between MT community and other relevant disciplines**
  - stimulate dialogue between diverse communities; identify opportunities & bottlenecks
  - initiate integrative research, prepare the ground for further collaboration
  - explore medium to long term approaches, identify possible shifts in paradigm
- **promote and coordinate shared infrastructure, harmonisation & evaluation**
  - infrastructural support: portal services, inventories & repositories of general interest tools & raw/annotated datasets, their documentation
  - active promotion of reusability & open-source; metadata, harmonisation of representation & annotation schemes
  - foster widely recognized benchmarks ...

(18/12/2008)

### a) Improved design platforms, interfaces, methods and tools

- Energy efficiency, thermal effect aware design
- Integration of heterogeneous functions
- Methods for reuse of IP blocks, test and verification
- Moving application boundary between HW/SW to fit performance needs
- Design platforms and interfaces for mixed/new technologies
- Design of reliable circuits with less reliable devices
- Reliability aware design including EMR/EMC requirements
- Design for manufacturability considering the variability of new processes
- Better modelling at all design levels
- Standardisation including interoperability aspects

### Expected Impact:

- Increased efficiency in product design with reduced costs & time to market,
- Design of innovative, reliable architectures and devices with new functionalities,
- Maintaining European lead in innovation & design for major application fields

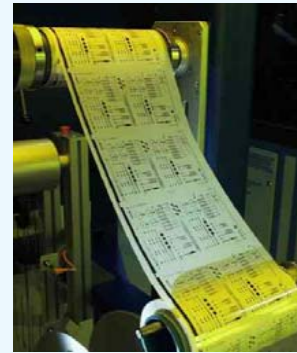
### a) Devices and building blocks

- **Device concepts / manufacturing**

Materials / Devices (organics/inorganics)

Large-area in-line processes, manufacturing

New architectures, tolerant design



- **Building blocks / solid-state integration**

D&A circuits,

CMOS

Power converters

Energy scavengers

Energy storage

Memories

Sensors

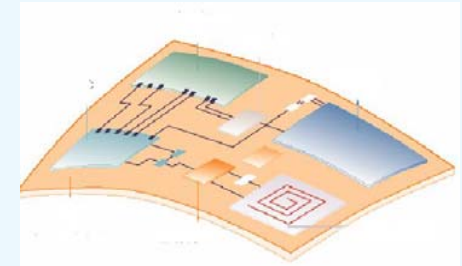
Active RF

Visual interface



### b) Flexible or foil-based systems

- **Integration** in foils / heterogenous integration
  - Flexible / Stretchable substrates, textile.
  - Interconnects with discrete devices, functional foil lamination
- **systems applications**
  - e-paper, e-card
  - OLED/PV based systems
  - Signage
  - Chemical/physical/bio sensors
  - Energy storage
  - Transparent electronics



### a) Theory and novel methods for embedded system design

- **Methods and tools that can increase system development productivity while achieving dependable, safe and secure embedded systems with predictable properties**
  - Key issues are **heterogeneity, predictability, methods for robustness validation** and **adaptability**
  - Unification of approaches from computer science, electronic engineering and control is encouraged
  - International cooperation should address foundational research and provide mutual benefits

## 3.4 Embedded Systems Design

### b) Modules and tools for embedded platform-based design

- **Integrated design environment that can be extended and customised:**
  - **Flexibility** to support different applications
  - **Increased interoperability of tools** primarily from SME vendors
  - **Open** facilitating new industry players, support standards, easily import existing components and/or handle upgrades
- **Key issues include**
  - efficient resource management,
  - tools supporting design space exploration and
  - model-driven development

### Expected Impact:

- Significantly increased productivity of embedded systems development
- Improved competitiveness of European companies by reducing costs and time to market
- Emergence and growth of new design tool vendors and high-tech companies (in particular SMEs)
- Reinforced European scientific and technological leadership in the design of complex embedded systems



## 3.6 Computing Systems

### a) Parallelisation & Programmability

- Automatic parallelisation, new high-level parallel programming languages and/or extensions to existing languages taking into consideration that **user uptake is a crucial issue**.
- Projects on programmability & parallelism of multi-core and/or reconfigurable architectures should adopt a **holistic approach** addressing issues related to the underlying hardware and to the system software.
- Research areas include
  - beyond static auto-parallelisation by exploiting dynamic (run-time) information;
  - new support environments including testing, verification and debugging, program & performance monitoring and analysis;
  - specific hardware support for parallel programming models.

## 3.6 Computing Systems

### b) Methodologies, techniques and tools

- **Continuous Adaptation:** Multicore and/or reconfigurable systems that continuously adapt to a constantly changing environment **by going beyond the strict separation between compiler, runtime and hardware.**
- **Virtualisation** technologies that ensure **portability, flexibility, optimised use of resources and overcome legacy issues** for multicore and/or reconfigurable systems. This includes hardware/software interfaces for efficient virtualisation as well as machine abstractions and performance models for virtualised homogeneous or heterogeneous systems.
- **Customisation:** Rapid extension and/or configuration of existing systems, architectural templates and tool-chains to **optimally address specific application needs and performance/Watt envelopes.**

### c) System simulation and analysis

- **System simulation and analysis:** Advanced simulation and analysis of complex multicore systems to **drastically improve the simulation speed** of new complex, homogeneous or heterogeneous, multi-core systems

### d) Technology implications

- Advanced system architectures, tools and compilers for next-generation semiconductor fabrication technology
- **The key challenge is to bridge architecture, system and technology research efforts**
- Example: 3D stacking

## 3.6 Computing Systems

### Expected Impact:

- Increased performance, power-efficiency and reliability of homogeneous or heterogeneous multi-core and/or reconfigurable on-chip computing systems.
- Accelerated system development and production, enabling new products to be realised with a considerably shorter time-to-market.
- Reinforced European excellence in multi-core and reconfigurable computing architectures, system software and tools.
- Strengthened European leadership in cross-cutting technologies that are applicable to all market segments of computing systems, from embedded to high-performance computing.

### Rationale:

- fill a gap in the WP
- advanced research opening new opportunities
- priority given to novel or “breakthrough” approaches rather than incremental developments
- driven by application requirements
- opto-electronic integration where meaningful
- cost-effectiveness
- **materials research partially covered where necessary**
- international dimension (e.g. Australia, Russia, USA)

**=> any ICT application driven advanced photonics research opening new opportunities**

### a) Organic Photonics

- includes polymer, CNT, bio, hybrids, ...
- excludes large-scale manufacturing
- lighting, illumination, projection, display
  - OLED, OLEFET, ...
- OPV for mobile ICT applications
  - (efficiency >10%, lifetime >5 years)
- light guiding structures
  - waveguides, POF, integrated circuits, ...
- “active” components
  - lasers, amplifiers, sensors, ...

### b) Disruptive/cutting-edge photonic technologies & materials

- exploiting effects @ limits of light-matter interaction
- nanophotonics
  - sub-wavelength structures
  - plasmonics
  - controlling quantum degrees of freedom
  - metamaterials
  - photonic crystals
  - biological systems

## 5.1 Personal Health Systems

### a) Minimally invasive systems and ICT-enabled artificial organs

- **Remote** disease diagnosis, treatment and management
- **Closed-loop** approaches
- Integrate components into **wearable, portable** or **implantable devices**
- Coupled with appropriate platforms and **services**
- Technological innovations both at **component** level and **system** level
  
- **Emphasis on 6 points:**
- **Accuracy** of measurements and operation of the devices
- **Remote control** of devices by health professionals and **self-monitoring** and **autonomous regulation** of own operation
- Continuous, context-aware, **multi-parametric monitoring** (health parameters, activity, lifestyle, environment and operational parameters of the devices)
- **Intelligent analysis and correlation** of multi-parametric data with established biomedical knowledge and expertise
- Clinical **workflows** to support **remote applications**, addressing **alarms** and **crisis management**
- **Education** and **feedback** to patients



## 5.1 Personal Health Systems

### 4 application domains

- Proposals to undertake **high risk** research addressing **only one** domain
  
- **a1) Cardiovascular diseases**
  - **remote** management and treatment of patients at point of need
  - including early diagnosis of further complications
  - heterogeneous data to build integrative risk assessment models
  
- **a2) Diabetes**
  - **remote** management and treatment of patients at point of need
  - including early diagnosis of further complications
  - heterogeneous data to build integrative risk assessment models
  - **automated closed-loop** glycaemic control
  - continuous, **accurate** glucose measurements (max 5% error)
  - minimally or non-invasive methods
  - hypoglycaemia / hyperglycaemia alarms
  
- **a3) Renal failure**
  - **remote, continuous**, daily dialysis at point of need (**artificial kidney**)
  
- **a4) Liver failure**
  - **continuous** detoxification as **remote** transient therapy at point of need (**artificial liver support**)

## 5.1 Personal Health Systems

### b) Mental Health

- Focusing on persons suffering from **stress, depression** or **bipolar disorders**
  - *Other mental disorders are not in scope*
- **Interdisciplinary** research for parallel development of
  - **technological** solutions
  - **new management or treatment models**
  - **closed-loop** approaches
- Combine **wearable, portable** or **implantable** devices with appropriate platforms and **services**
- Promote the **interaction** between patients and doctors
- Facilitate **self-treatment** and **cognitive behavioural therapy** where necessary

## 5.1 Personal Health Systems

### b) Mental Health (cont)

- **Emphasis on multi-parametric monitoring** systems
  - metrics related to **behaviour** and
  - **bodily** and **brain functions**  
(e.g. activity, sleep, physiological and biochemical parameters)
  
- Aiming at:
  - **objective** and **quantitative** assessment of:
    - symptoms
    - patient condition
    - effectiveness of therapy
    - use of medication
  - **decision support** for treatment planning
  - provision of **warnings** and **motivating feedback**
  - For depression and bipolar disorders:
    - also aim at **prediction** of depressive or manic **episodes**

## 5.1 Personal Health Systems

### Expected Impact:

- Reduced hospitalisation & improved disease management and treatment
  - through more precise assessment of health status
- Economic benefits for health systems without compromising quality of care
- Reinforced leadership and innovation of the industry
  - new business models for health service providers and insurers
  - demonstrated potential for patents and spin-offs
- Improved links and interaction between patients and doctors
  - more active participation of patients in care processes
- Facilitating ICT-enabled prevention of diseases (for c1)
- Accelerating:
  - establishment of interoperability standards
  - secure, seamless communication of health data

### a) ICT for safer surgery

- Tool
  - for training, pre-operative planning, and computer-aided surgical interventions
- Objective:
  - to predict clinico-functional outcome of the surgical intervention
  - Capture patient-specific and treatment-specific information
- Focus on
  - Use of modelling, simulation and visualisation techniques
  - Use of real-time/near real time 3-D anatomical predictive models
  - Tools based on realistic tissues and organs models
- Validation
  - through quantitative indicators on quality and safety of surgical operation

## 5.2 ICT for Patient Safety

### b) ICT for integration of clinical research and clinical care

- Tool: Advanced environment for health professionals and researchers
  - **integration/linking** of **clinical care** information in electronic health records (EHR) with information in **clinical research** information system
- Objectives
  - avoid double data entry,
  - assist in automatic identification of patients eligible for clinical trials
  - enable early detection of potential patient safety issues
- Focus on
  - improving **semantic interoperability** between EHR and clinical research systems
  - definition and validation of a **core data set** that enables, scalable and **standardised link between clinical research systems and EHR repositories**
  - Issues related to data protection and security needs
  - Compliance with all applicable legislation and best practice
- Validation
  - in well defined use cases
  - with a high potential for improving patient safety

## 5.2 ICT for Patient Safety

### c) ICT-enabled early detection of public health events

- Tool
  - innovative tools for **interpretation and filtering** of electronic media information
- Objective:
  - Support Public Health bodies in early detection of public health events of potential concern
- Focus on
  - natural language processing, intelligent text mining, free text interpretation
  - conversion of spoken media sources (e.g. radio) into text
  - accuracy improvement through self learning cycles,
  - multilingual search, cross lingual glossing and other public health relevant semantic issues
- Project should include
  - Developers and researchers and
  - Public health information end users:
    - international public health centres such as WHO, the European Centre for Disease Control,
    - national public health bodies in EU and beyond

### Expected impact:

- Improved patient safety in surgery through advanced ICT applications
- Bridging the ICT gaps between clinical research and medical practice
- Enhanced health security through innovative tools for event-based surveillance
- Accelerated adoption of electronic health record systems supported by more user-friendly interfaces
- Improved patient safety through framework for interoperability testing of solutions for exchange of healthcare information



## a) ICT for Intelligent Vehicle Systems

### aiming at:

- Further improving road safety and overall performance of transportation systems
- Integrated approach to safety

### Research topics include:

- advanced in-vehicle safety systems
- systems supporting automated driving
- new approaches to crash avoidance
- human machine interface design principles
- advanced methods for traffic situation detection and communication
- technologies for addressing digital footprint, data security and privacy
- design and evaluation of systems under real world conditions
- methods for the design and evaluation of systems

**Open for  
IP and STREP**



*“...The future research on Intelligent Vehicles should focus on highly integrated and price worthy solutions for driver assistance systems to reach wide deployment and achieve increased traffic safety and efficiency and reduce environmental impact...”* (SRA, ICT for Mobility)

## b) ICT for Clean and Efficient Mobility

### aiming at:

- further improving energy efficiency and reducing CO<sub>2</sub> emissions in all modes of transport.

### Research topics include:

- new tools, systems and services supporting energy-efficient driving (eco-driving).
- methodologies for assessing the impact of advanced ICTs in energy efficiency and CO<sub>2</sub> reduction.



**Open for  
IP and STREP**

*“...reduction of energy consumption and environmental impact... can be achieved in the traffic and transport network by advanced ICT/ITS information and management systems...”* (SRA, ICT for Mobility)

## Expected Impact:

- World leadership of Europe's industry in the area of Intelligent Vehicle Systems
  - expansion to new emerging markets.
- Significant improvements in safety, security and comfort of transport.
- Significant improvement in energy efficiency, emissions reduction and sustainability of transport.



### a) ICT tools for the future electricity market

- Architectures and tools enabling the emergence of an open electricity market
- Specific service delivery platform, uniform energy and information interfaces
  - » different business models
  - » self-configuration and adaptation
- Projects must validate the use and the benefits of the resulting tools in concrete applications

### b) ICT support to energy-positive buildings and neighbourhoods

- Monitoring and control systems able to optimise the local generation-consumption
- Information platforms built on customizable, adaptive and open service-oriented architectures
  - providing connectivity to the energy grids and information to decision makers
  - to facilitate the emergence of new local business models.
- Intuitive user interfaces that help end-users save energy
- Projects shall include tests with concrete targets under real conditions.

### c) ICT services and software tools enhanced with energy features

- ICT services and software tools that incorporate parameters for controlling emissions and energy consumption
  - CAD and simulation tools
  - Enterprise Management Systems
  - Definition of patterns, profiles, methods, energy consumption models
- The use and the benefits of the building blocks must be validated against concrete targets once integrated into concrete services and/or tools.

### Expected Impact:

- **Reinforced European industrial and technological position** in ICT-enabled energy efficiency technologies
- **Strengthened and consolidated European excellence**
- **The emergence of an open electricity market**
- **Progress through standardised control algorithms and communication protocols**
- **Energy savings in residential and commercial buildings of around 30%**
- **Reduced energy intensity of the economy**

### a) ICT for a better adaptation to climate change

- Easy-to-use, web-based systems for better preparedness, decision support and mitigation of climate change impact on
  - population
  - utilities
  - Infrastructures
- Scenario-based prediction, damage assessment, 3D/4D modelling, simulation and visualisation
- Integrated solutions shall be validated in the urban context including for natural disasters
- Take advantage of recent advances in miniaturisation of sensors, wireless communications and increased computation power



### b) Flexible discovery and chaining of distributed environmental services

- Tools for an easy discovery of environmental service nodes on the Web and their on-demand adaptive chaining
  - Generic semantics frameworks and dynamic ontology services
  - Access to distributed environmental resources in a multilingual multi-domain context
  - Methods and protocols for service chaining management of uncertainty propagation
- Projects should be driven by the possibility for users to plug-in their own use cases and get access to customised information and decision support. Solutions shall be validated over different scenarios.

### Expected Impact:

- Contribution to the development of a ***Single Information Space in Europe for the Environment***  
[http://cordis.europa.eu/fp7/ict/sustainable-growth/workshops\\_en.html](http://cordis.europa.eu/fp7/ict/sustainable-growth/workshops_en.html)
- Reinforced European leadership in ICT solutions for interacting environmental service nodes on the Web
- Reinforced role of ICT in establishing sustainable cities
- To mitigate impacts of disasters in the urban context
- Stronger position of Europe with respect to the implementation of international environmental commitments.

- **Development of a flexible ICT infrastructure** for:
  - customer integration
  - effective Demand Side Management
  - active networks
- **Further research** is needed to arrive at **ICT infrastructures for the management of electricity distribution networks** that are:
  - Scalable, Low-Cost, Secure, Reliable, Open and provide self-healing capabilities.
- **Research could include issues such as:**
  - dynamically reconfigurable ICT architectures
  - technologies and tools for ICT systems survivability
  - platforms integrating (near) real-time information

### **Projects should have:**

- a predominant research component
- include concrete targets and appropriate trial tests to validate and assess the proposed solutions
- involving partners from both the ICT and Electricity communities.

### Expected Impact:

- **Improved performance** of the electricity distribution grid in terms of reliability and quality of service
- **Pre-standardisation knowledge** aiming at the adoption of universally accepted hardware and software solutions to monitor and control the electricity distribution grid.
- **Strengthened European excellence** in engineering by consolidating cross disciplinary research on energy technologies and ICT.
- **Reinforced European industrial and technological position** in the global market of ICT for power system applications.

## 7.1 ICT and Ageing

Target Outcomes

Key Area

**Service robotics  
for ageing well**

Strengthened global position of European industry in Service robotics

More efficient care, prolonged independent living and better quality of life of elderly and carers.

Key Area

Open Systems **Reference Architectures, Standards and ICT Platforms** for Ageing Well

Global industrial and academic leadership in ICT and Ageing Well

Global interoperability standards established

Wide use of open ICT platforms and tools cross-cutting Ageing, Health and Energy services

Coordination Action

RTD roadmaps and Stakeholder coordination

Common strategic vision / RTD roadmap for ICT for ageing well in Europe and beyond.

Expected Impacts

## 7.1 ICT and Ageing

### a) Service Robotics for Ageing Well

- Building on R&D advances in robotics research and system design (Challenge 2)
  - Excluded: R&D of robotics components, no pet robotics
    - clinical - rehabilitation
- Operational Verification of integrated and adaptable modular robotic solutions at home
  - Support for daily living and care activities
  - Demonstration in realistic environments
  - Usability, ethics for elderly a key
- Ensuring safe operation in a home environment
  - With people present (context detection)
  - May interfere / cooperate with other smart artefacts, intelligent home space.

## 7.1 ICT and Ageing

### b) Open systems, Reference Architectures, Standards and ICT Platforms for Ageing Well

#### Next generations of open platforms

- Building on advances in middleware, communications standards, service-oriented architectures
- Supporting cost-effective systems integration, personalisation, deployment and maintenance for end-to-end care support.

#### Emphasis put on

- Solutions across mobile and stationary environments
- Physical and semantic interoperability of sensors, devices, services and systems
- Concepts that integrate other home-based services, in particular services for personal health, energy efficiency management



Target Outcomes

**Key Area**  
**Embedded Accessibility** of Future ICT.



Generalized accessibility support by ICT tools seamlessly integrated into future ICT and non-ICT product design  
 Global position of European industry in assistive technologies

**Key Area**  
**ICT restoring and augmenting** human capabilities  
 -for people with reduced motor functions or disabilities  
 -Emphasis on brain/neuronal computer interaction ( **BNCI** )



Global position of European industry in assistive technologies  
 Seizing new market opportunities driven by novel technologies  
 Boosting European excellence in BNCI systems engineering

**Support Measures**  
 RTD research agendas, coordination of constituencies



Impact through aligned strategic research agendas visions of key stakeholders.

Expected Impacts



## 7.2 Accessible and Assistive ICT

### a) Embedded Accessibility in Future ICT

- **Target users:** ICT-based product/service developers
- **Objectives:** Developers' solutions (tools) for embedding generalised accessibility support (related to vision, hearing, speech, dexterity, mobility) within future mainstream ICT-based products and services
- **Key research issues:**
  - 'Virtual User' concept for Verification of accessibility features:
    - Realistic user modelling and interaction, virtual environments
  - Methods enabling self-adaptation of multi-modal interfaces
    - in real time to users' accessibility needs
  - User interfaces and content representation for people with special needs
  - Linking interaction paradigms like 3D or virtual reality to integrating accessibility services in physical environments
- **Essential Elements:**
  - Demonstration in industrial development context, integrated into quality control / content work flow with training material
  - To ensure accessibility support for ICT and also non-ICT products
  - IP: building on a generic framework // STREPs: specific R&D on 'virtual user' modelling supporting applications in high-profile domains of user and industrial relevance.

### b) ICT restoring and augmenting human capabilities

- **Target users:** User with special needs,  
i.e. reduced motor functions or disabilities
- **Objectives:** Radically new approaches, breakthroughs in HCs –  
augmenting personal capabilities
- **Key research issues:**
  - Building on progress on non-invasive sensors/actuator concepts for brain/neuronal-computer interaction (BCI) or other multi-sensor interfaces
  - Smart systems solutions incl. self-learning, advanced signal processing / control
- **Essential Elements:**
  - Advanced **BCI systems engineering:** HW/SW platforms, programming abstraction, tools to support modularity and flexible integration
  - Advanced sensing & control in real user environments (home, work)
  - Combining advances in micro-bio-nano technology, neuroscience and bio-psycho-sociology,
  - New business opportunities, possible spill-over into mainstream

### a) Governance and participation toolbox

- new governance models to empower and engage individuals, groups and communities
- mass online collaboration networking tools, and crowd-sourcing
- security, identity and access controls

### b) Policy modelling, simulation and visualisation

- large scale data analysis, mining, opinion visualisation, pattern recognition, gaming and mixed reality applications
- complex systems analysis and use of cloud computing
- policy modelling, based on simulated behaviour and wishes of large numbers of people

### c) Roadmapping and Networking

RTD roadmap to identify emerging technologies, research directions and potential applications. Insight into research activities undertaken in non-EU countries;

A dynamic 'Network' to encourage networking of relevant stakeholders and multidisciplinary constituency building.

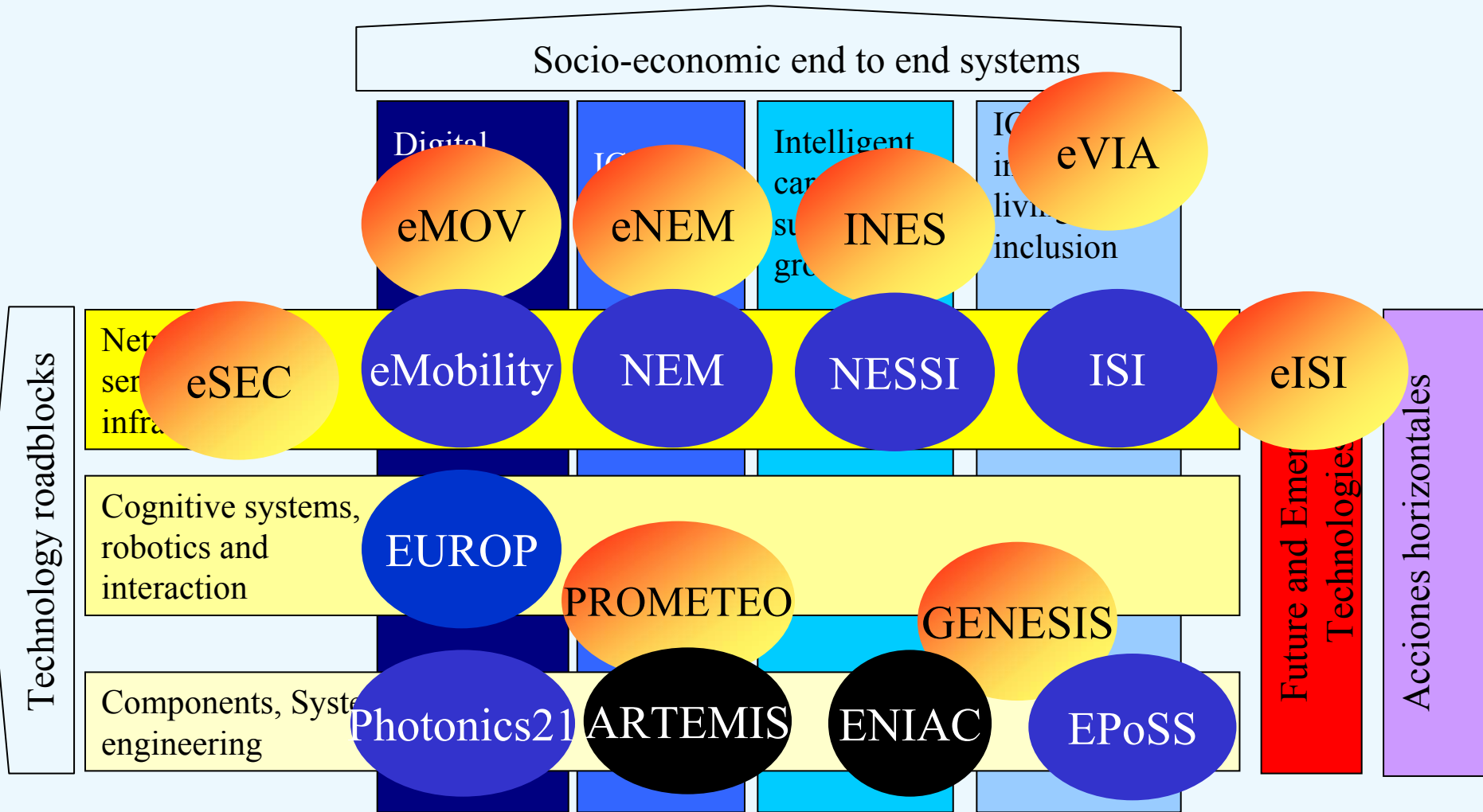
### Expected Impact:

- Improved empowerment and engagement of individuals, groups and communities in policy making processes.
- Increased trust of the citizens through transparency and feedback of their contributions.
- More efficient collection of feedback to continuously improve governance.
- Improved prediction of impacts of policy measures:
  - With increased contribution and involvement of individuals and communities
  - Based on intelligent and optimised use of vast public sector knowledge resources.
- Strengthened competitive position of European industry in the fields of
  - cooperation platforms
  - optimisation
  - simulation
  - visualisation tools.

## As a general comment...

- ... **Always check the final version of the ICT Work Programme 2009-2010 for wider definitive details on the topics and objectives, budget available and distribution, the funding schemes open for each topic, and additional ones open for Networks of Excellence, Support Measures, extension of running projects, etc.**
- ... **And contact your National Contact Point and/or contact person at CDTI specialised in each concrete ICT area.**
- ... **And remember: deadline for submitting proposals to ICT Call 4 is April 1st 2009, 17:00 Brussels time.**

# Plataformas Tecnológicas e Iniciativas Tecnológicas Conjuntas (JTI)





# Otras iniciativas ICT las PT europeas

European Nanoelectronics Initiative Advisory Council (ENIAC)

<http://www.cordis.lu/ist/eniac/home.html>

Advanced R&D on Embedded Intelligent Systems (ARTEMIS)

<http://www.artemis-office.org/dotnetnuke/>

Mobile and wireless communications technology (eMobility)

<http://www.emobility.eu.org/>

Networked and electronic media platform (NEM)

<http://www.nem-initiative.org/>

Networked European Software and Services Initiative (NESSI)

<http://www.nessi-europe.com/>

European Robotics Platform (EUROP)

<http://www.roboticsplatform.com/>

Photonics21

<http://www.photonics21.com>

The Integral Satcom Initiative

<http://www.isi-initiative.eu.org/>

EPoSS : European Technology Platform on Smart Systems Integration

<http://www.smart-systems-integration.org/public>

# Otras iniciativas ICT las PT españolas

Nanoelectrónica e Integración de Sistemas Inteligentes (GENESIS)

**<http://www.genesisred.net>**

Sistemas con Inteligencia Integrada (PROMETEO)

**<http://www.prometeo-office.org/>**

Comunicaciones Inalámbricas (eMOV)

**<http://www.aetic.es/eMOV>**

Tecnologías Audiovisuales en Red (eNEM)

**<http://www.aetic.es/eNEM>**

Tecnologías para la Seguridad y Confianza (eSEC)

**<http://www.aetic.es/eSEC>**

Software y Servicios (INES)

**<http://www.ines.org.es/>**

Comunicaciones por Satélite (eISI)

**<http://www.aetic.es/eISI>**



# Eventos CDTI

Centro para el Desarrollo Tecnológico Industrial - Microsoft Internet Explorer

Archivo Edición Ver Favoritos Herramientas Ayuda

Dirección <http://www.cdti.es/index.asp>

**CDTI** Centro para el Desarrollo Tecnológico Industrial

Asesoramiento - Financiación - Transferencia de Tecnología - Cooperación

english

Texto a buscar

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Financiación CDTI a la I+D+I  
Fondos públicos para el desarrollo de actividades de I+D+I
- Solicitar su ayuda para I+D+I**  
Gestión de proyectos on-line  
Solicitud y seguimiento de ayudas CDTI
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Cooperación internacional en I+D+I  
Búsqueda de socios, asesoramiento, programas internacionales de I+D
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- Espacio
- Grandes Instalaciones
- Eureka
- Iberoeka
- Bilaterales: Canadá, China, India

**Agenda CDTI**

última Hora

enero 2007						
l	m	x	j	v	s	d
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

**Agenda**

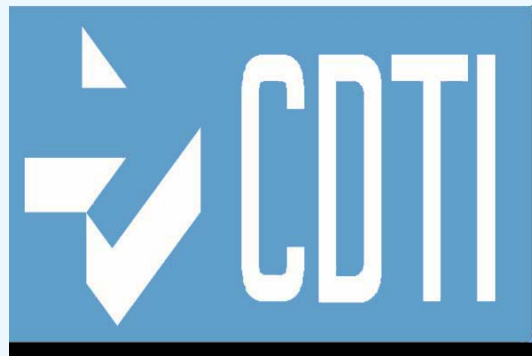
Información detallada de eventos relacionados con actividades innovadoras y de desarrollo tecnológico industrial.

- Eventos CDTI
- Otros eventos

**Área de colaboración para**  
 Neotec Capital Riesgo  
 Comunidades Autónomas  
 Usuario:   
 Contraseña:   
 Entrar  
 Recordar contraseña

<http://www.cdti.es/index.asp?opcion=2>

# Gracias por su atención



**Cid,4 – 28001 Madrid**

**Tlf: 902 34 74 34**

**[www.cdti.es/pidi](http://www.cdti.es/pidi)**