

Draft agreed by
Programme
Committees

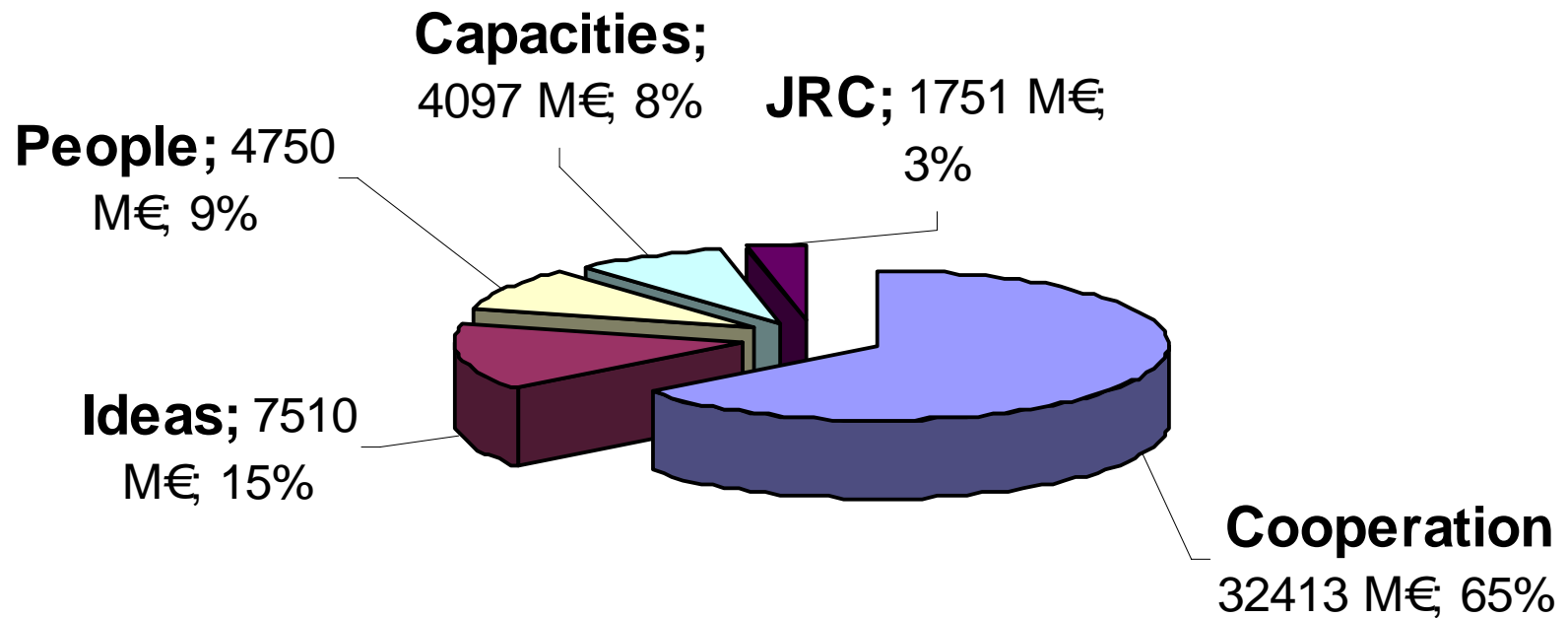
ICT in FP7

Calls for Proposals in 2007

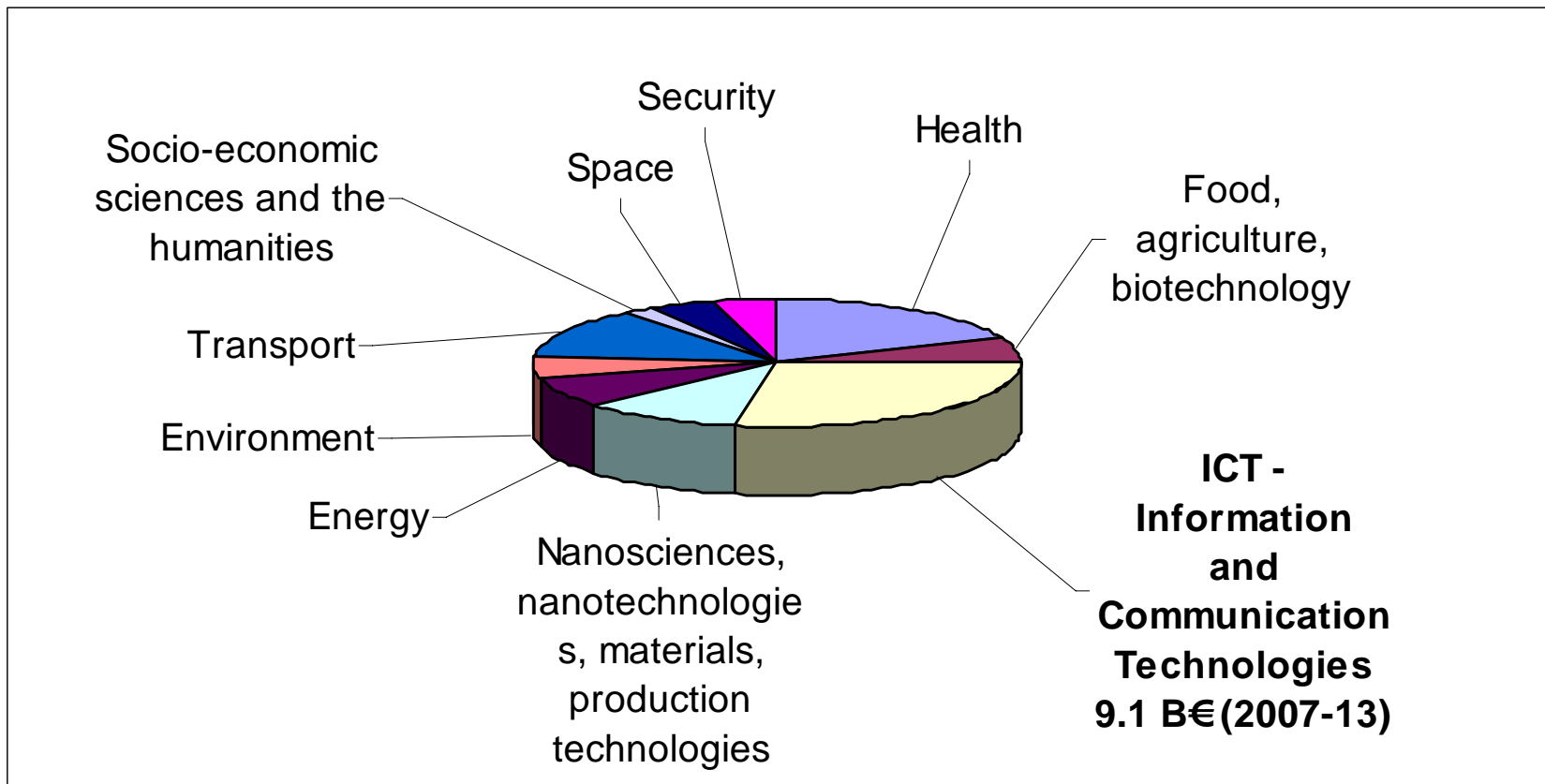
Presentation outline

- ICT Collaborative Research in FP7
- ICT Work Programme 2007 Challenges
 - What's at stake and what can we build on
 - What are the targets
- ICT Calls for Proposal in 2007
 - Objectives and implementation details

FP7 Specific Programmes



FP7 Cooperation Programme



Priorities based on wide consultations

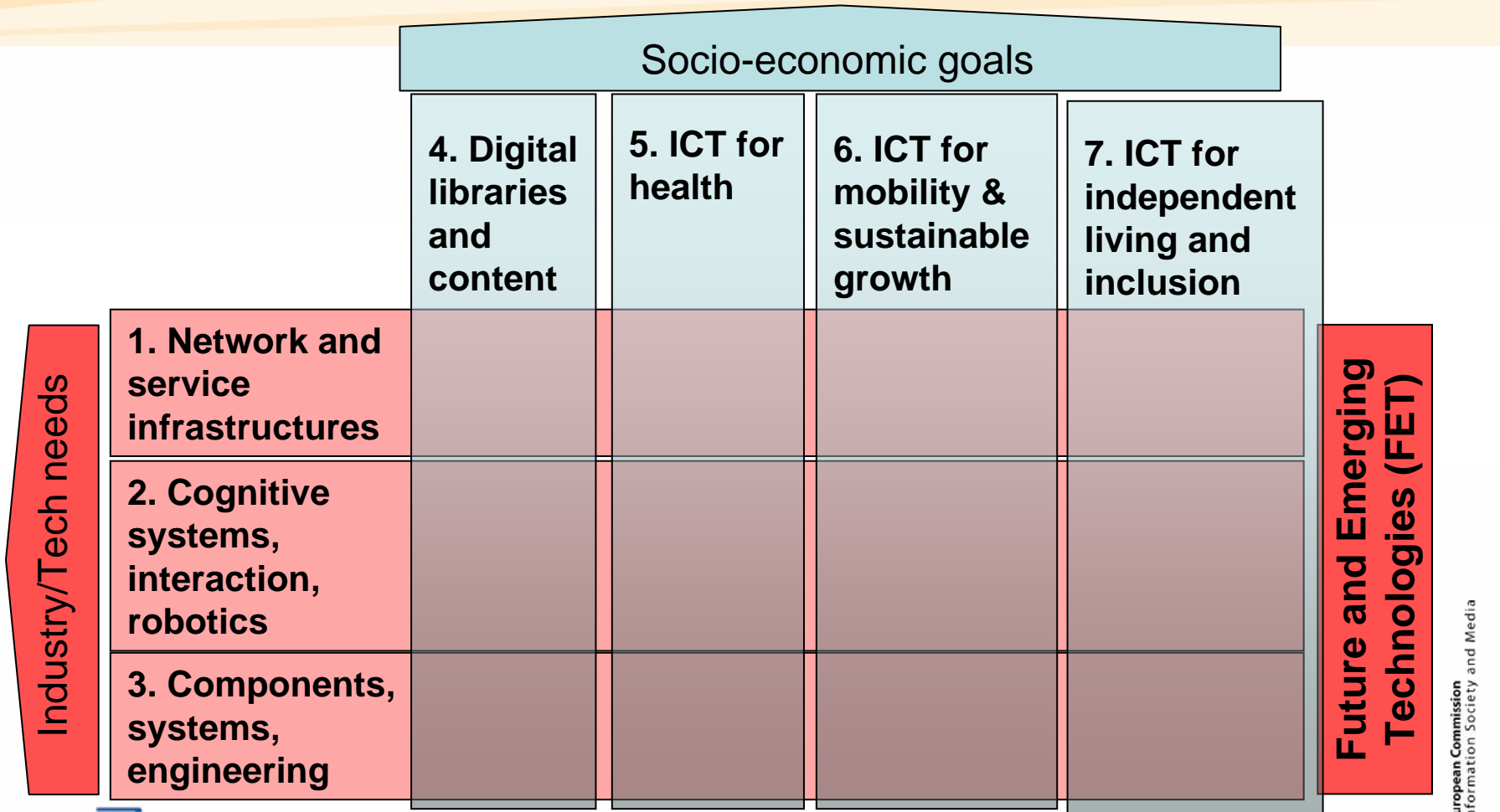
- Ensure that interventions are significant and that Europe has the capacities to implement
 - high-risk, medium-to-long term, trans-national collaborative research
- Reinforce Europe's strongholds
 - Europe's industry and technology position
- Seize new opportunities for Europe
 - (r)evolutions and potential impacts:
industrial competitiveness, socio-economic goals

Work Programme approach and structure

- A limited set of *Challenges* that
 - respond to well-identified industry and technology needs and/or
 - target specific socio-economic goals
- A *Challenge* is addressed through a limited set of Objectives that form the basis of Calls for Proposals
- An Objective is described in terms of
 - target outcome - in terms of characteristics
 - expected impact - in terms of industrial competitiveness, societal goal, technology progress
- A total of 25 Objectives expressed within 7 *Challenges*



ICT Work Programme 2007 *Challenges*



Challenge 1: Pervasive and trusted network & service infrastructures

- Network and service infrastructures underpin economic progress and the development of our societies
 - 2 billion mobile terminals in commercial operation, 1 billion Internet users, 400 million internet enabled devices
- A growing and changing demand
 - for increasing user control of content/services
 - for networking 'things' - TV/PC/phone/sensors/tags ...
 - for convergence: networks|devices|services - video/audio/data/voice/.
- Current technologies can be, and need to be improved significantly
 - for scaling up and more flexibility
 - for better security, dependability and robustness
 - for higher performance and more functionality
- Europe is well-positioned: industry, technology and use
 - networks equipment and services, business software, middleware
 - security, home systems ...

Challenge 1 targets

Today

5 – 10 years

- “Convergence” emerging but:
 - user handles separate networks
 - a multiplicity of devices
 - disparate services
- Billions of devices connected
- Security and trust are “added on”
- Robustness/dependability a key hurdle
- Difficulty to cope with the fragmentation of the value chain

- Anywhere, anytime, any device
 - seamless, ubiquitous
 - broadband, mobile
 - reconfigurable to load/use/context
- Trillions of devices connected
- “Built-in” security and trust
- Highly dependable software and systems
- Full support to distributed value chains and to the networked enterprise

Challenge 1: Objectives in ICT Call 1

1. The network of the future
 - mobile, broadband ... spectrum-efficient, high-speed ... context-aware, scalable ... controlled, managed ... budget: 200 M€
2. Service & software architectures, infrastructures & engineering
 - dynamic composition of services ... service/software engineering tools ... complexity transparency ... virtualised resources ... budget: 120 M€
3. ICT in support of the networked enterprise
 - inter-enterprise interoperability ... integrated enterprise ... intra-enterprise collaboration ... budget: 30 M€
4. Secure, dependable and trusted infrastructures
 - resilience in networks ... trust in services ... trusted computing ... identity management and privacy enhancing ... budget: 90 M€
5. Networked media
 - audio-visual distribution/flow infrastructure ... media manipulation platforms ... budget: 85 M€

Challenge 2: Cognitive systems, robotics and interaction

- Today's ICT systems cannot learn from experience and reason, cannot contextualise and adapt, and cannot (inter)act based on observation and learning
 - many ICT applications cannot be developed further if there are no new breakthroughs in machine intelligence and systems engineering ...
- Overcoming such technology roadblocks opens the doors to a wide range of opportunities in new application fields
 - vision/sensing systems, service robots, health robots, industrial robots, multimodal and multilingual interactions ...
- 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

Challenge 2 targets

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-machine interactions that are rather static / passive
 - unable to adapt to human behaviours and to empower humans in their interactions

5 – 15 years

- Robots, machines and systems exhibiting advanced behaviour
 - operating with gaps in knowledge
 - operating in open-ended env.s
 - operating in dynamic / frequently changing environments
- Machines and systems that understand their users / context
 - learning from observation
 - adapting to context
- Systems that analyse and understand multimedia and multimodal digital information
 - all senses, gestures, natural language – ‘human-in-the-loop’

Challenge 3: Components, systems, engineering

- Electronic systems underpin trillion Euro ICT markets
- Electronic systems are embedded in all artefacts of life
 - 20-40% of the value of new products comes from embedded electronics
 - increasing demand for lower cost, higher performance components
- Europe is currently leading in embedded electronics in a number of industries
 - car safety, engine control, fly-by-wire avionics, telecom equipment, medical equipment, industrial automation ...
- European firms also among top semiconductor manufacturers and equipment companies
- Europe enjoys leading positions in emerging fields
 - photonics, plastic electronics, flexible displays, integrated micro/nanosystems ...

Challenge 3 targets

Today

- 45 nanometer node
 - 300 mm wafers
- Conventional CMOS Silicon dominate
 - 'homogeneous' integration
- Photonics applications emerging
- Design gap for embedded software
- Unable to analyse aggregate behaviours, predict and control systems

5 – 10 years

- Below the 32 nanometer node
 - 450 mm wafers
 - materials, processes, interconnects, design, manufacturing
- New materials, higher levels of integration
 - more heterogeneous (SoC, SiP)
- Wider use of advanced photonics
- Higher productivity in the design of embedded systems / software
- Higher control capacity of large-scale real time embedded systems
- Embedded computing

Challenge 4: Digital libraries and content

- Growing load of information and content and increasing demands for knowledge and skills
 - in less than 10 years, the average person will be managing terabytes of videos, music, photos, and documents every day
 - digital content production | consumption: from “few-to-many” to “many-to-many” models
- Today’s technology provides limited tools for access/interaction, development/creation, delivery/diffusion and preservation of content & knowledge
- Europe, with its unique cultural heritage and creative potential, is well placed to take advantage of technology developments and their use

Challenge 4 targets

Today

- Limited access and usability
 - content not efficiently exploited
 - interactivity limited to smart menus
- Tools for capturing and editing still in their infancy
- Content is not personalised
- Learning tools primarily focus on the delivery of content

5 – 10 years

- “Digital libraries” widely available
 - easy to create, access, interpret, use and preserve content and knowledge
 - cost-effective, reliable, multilingual
- Advanced authoring tools
- Effective semantic-based systems and knowledge management
- Mass-individualisation of learning experiences with ICT (mid-term); adaptive and intuitive learning systems (longer term).

Challenge 5: Towards sustainable and personalised healthcare

- Rising demands on healthcare
 - by 2050 close to 40% of the Union's population will be over 65 years
 - growing expectations of citizens for better care
 - increasing mobility of patients and health professionals
 - need to respond to risks for emerging diseases
- By 2010, ICT for Health spending may account for up to 5% of the EU's total health budget, up from just 1% in 2000
 - need to access, understand and securely manage huge amounts of health information
- ICT is also supporting progress in medical research and a shift towards evidence-based medicine
- European businesses have every opportunity to become leading global players in the new ICT for Health industry

Challenge 5 targets

Today

- Citizens, healthy or under treatment, cannot monitor their health
 - no access to comprehensive and secure Electronic Health Records
- Health professionals do not have fast and easy access to patient-specific data @ point-of-need
 - to support diagnosis or plan clinical interventions
- Health authorities do not make sufficient use of information processing systems

5 – 10 years

- Innovative systems and services for personalised health monitoring.
 - e.g. wearable/portable ICT systems
- Efficient systems for point-of-care diagnostics
 - e.g. alert and management support
- ICT-based prediction, detection and monitoring of adverse effects
 - e.g. data mining
- Tools for patient-specific computational modelling & simulation of organs or systems (longer term)

Challenge 6: ICT for Mobility, environmental sustainability and energy efficiency

- Growing demand for transport services
 - more congestion, higher energy consumption, pollutant emissions
- Accidents causing fatalities and injuries
 - over 40.000 fatalities on the EU roads every year
- Increasing demand for natural resources
 - 1-2% per year for energy and growing water consumption
- Natural and industrial disasters has doubled in one decade
 - killing 500.000 people and causing 700 billion of damage
- Europe's industry is one of the most competitive
 - automotive, transportation, civil protection, equipment supply

Challenge 6 targets

Today

- Safety of vehicles and their energy efficiency have improved, but
 - the “zero-accident scenario” is still a distant goal
 - current vehicle active safety (driver warning, hazard detection ...) is still limited to stand-alone systems
- Risk management systems provide isolated solutions
 - no co-ordinated ICT-triggered alert of rescue and security forces
- Infrastructures are not sufficiently energy efficient
 - transport, buildings, production plants ...

5 – 10 years

- Intelligent Vehicle Systems
 - secure and reliable vehicle-to-vehicle and vehicle-to-infrastructure comm systems
 - optimised traffic management at large scale + mobility services
- Fully integrated management systems / shared data to monitor, warn and react to environmental and other risks
- Intelligent monitoring of energy production, distribution, trading and use

Challenge 7: ICT for Independent Living and Inclusion

- Between 1998 and 2025 the proportion of the population classified as elderly will increase from 20% to 28%
 - more people with high disability rates
 - smaller productive workforce
- Need for a paradigm shift in health and social care and new requirements for inclusion, accessibility and usability
- Complexity and lack of accessibility and usability of many ICT-based products and services is a major barrier for many people
- A major economic opportunity for European industry

Challenge 7 targets

Today

- Research on technology for independent living is in its infancy
 - systems for inclusion
 - assistive technology
- Increasing complexity and limited usability of many products and services
 - eAccessibility
- Lack of interoperability between existing inclusive systems
- Lack of interoperability between assistive technologies and mainstream ICT

5 – 10 years

- ICT-based solutions extending independence and prolonging active participation in society
- ICT solutions that help reduce the 30% of the population currently not using ICT
 - user-friendly systems
- Cost-effective, interoperable solutions enabling seamless and reliable integration of devices and services

Future and Emerging Technologies

- FET Open Scheme

- Open to any foundational ICT-related research
- High-risk / high-potential impact
- To shape emerging research communities and agendas
- Coordination and international cooperation
- Continuous submissions

- FET Pro-active Initiatives

- Fundamental cross-cutting long-term challenges in ICT:
 1. Nano-scale ICT devices and systems
 2. Pervasive adaptation
 3. Bio-ICT convergence
 4. Science of complex systems for socially intelligent ICT
 5. Embodied Intelligence
 6. ICT forever yours

Horizontal support actions

- International cooperation
 - To pave the way for strategic partnerships in view of developing global standards and interoperable solutions and strengthening EU competitiveness
 - To widen the diffusion of the information society, especially in developing countries and strengthened the EU policy for development
- Trans-national co-operation among National Contact Points
 - One proposal including officially appointed NCPs
 - To improve NCP service across Europe
 - To help to simplify access to FP7 calls
 - To lower the entry barriers for newcomers
 - To raise the quality of submitted proposals

ICT Call 1 – Open: 22 December 2006

Close: 8 May 2007

Challenge 1:

	Budget
1. The network of the future	200 M€
2. Service & software architectures, infrastructures & engineering	120 M€
3. ICT in support of the networked enterprise	30 M€
4. Secure, dependable and trusted infrastructures	90 M€
5. Networked media	85 M€

Challenge 2:

1. Cognitive systems, interaction, robotics	96 M€
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Challenge 3:

1. Next generation nanoelectronics components and electronics integration	86 M€
2. Organic and large-area electronics and display systems	63 M€
3. Embedded systems design	40 M€
4. Computing systems	25 M€

... ICT Call 1: 22 Dec 2006 - 8 May 2007 + FET Open – continuous, close 31 Dec 2008

Challenge 4:

1. Digital libraries and technology-enhanced learning
2. Intelligent content and semantics

Budget

52 M€
51 M€

Challenge 5:

1. Personal health systems for monitoring and point-of-care diagnostics
2. Advanced ICT for risk assessment and patient safety

72 M€
30 M€

Challenge 6:

1. ICT for the intelligent vehicles and mobility services

57 M€

Challenge 7:

1. ICT and ageing

30 M€

FET proactive:

1. Nano-scale ICT devices and systems
2. Pervasive adaptation
3. Bio-ICT convergence

20 M€
20 M€
20 M€

Horizontal support actions

International cooperation

7 M€

FET-Open (separate Call for Proposals)

65 M€



ICT Call 2 – Open: May/Jun 2007 Close: Sep/Oct 2007

Challenge 1:

6. New paradigms and experimental facilities

Budget

40 M€

Critical infrastructure protection (open: 30 Aug, close: 29 Nov '07)

20 M€

Challenge 3:

+20/security

5. Photonic components and subsystems

90 M€

6. Micro/nanosystems

83 M€

7. Networked embedded and control systems

47 M€

Challenge 5:

3. Virtual physiological human

72 M€

Challenge 6:

2. ICT for cooperative systems

48 M€

3. ICT for environmental management and energy efficiency

54 M€

Challenge 7:

2. Accessible and inclusive ICT

43 M€

ICT Call 3 – Open: Dec 2007 Close: Mar 2008

Challenge 2:

1. Cognitive systems, interaction, robotics

Budget

97 M€

Challenge 4:

1. Digital libraries and technology-enhanced learning
2. Intelligent content and semantics

50 M€

50 M€

FET

4. Science of complex systems for socially intelligent ICT
5. Embodied intelligence
6. ICT forever yours

20 M€

20 M€

20 M€

Horizontal support actions

International cooperation

5 M€

Trans-national co-operation among NCPs

3 M€

More Information

- FP7: <http://ec.europa.eu/fp7/ict>
- FP6: <http://cordis.europa.eu/ist>