

The Network of the Future

European Research in Framework Programme 7

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- FP 7 Overview
- What is new?
- ICT Work Programme 2007/2008
- Objective 1.1 The Network of the Future

ICT: Information and Communication Technologies
FP: Framework Programme



Dr.-Ing. Peter Stuckmann – ComNets-Workshop 30/03/2007

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7th Framework Programme (2007-2013)

<p>€32 B</p> <p>COOPERATION</p>	10. Space	9. Security	8. Socio-economic Research	7. Transport	6. Environment	5. Energy	4. Nano, Materials, Production Techn.	3. ICT	2. Food, Agriculture Biotechnology	1. Health		
	<p>€7.5 B</p> <p>IDEAS</p> <p>European Research Council</p>											
	<p>€4.7 B</p> <p>PEOPLE</p> <p>Marie Curie Actions</p>											
	<p>€4.2 B</p> <p>CAPACITIES</p>	<p>Research Infrastructures</p>			<p>Research for the benefit of SMEs</p>		<p>Regions of Knowledge</p>		<p>Research Potential</p>		<p>Science in Society</p>	
		<p>International Co-operation</p>										

What's new?

- Main new elements compared to FP6:
 - Duration increased from four/five to seven years
 - Annual budget increased significantly
 - Basic research (~ €1 billion per year)
 - New structure: cooperation, ideas, people, capacities
 - Flexible funding schemes
 - Joint Technology Initiatives
 - Simpler procedures
 - Logistical and administrative tasks → external structures

Terminology changes

FP6 ⇒ **FP7**

IST ⇒ ICT

Contract ⇒ Grant Agreement

Contractor ⇒ Beneficiary

Proposer ⇒ Applicant

Instrument ⇒ Funding scheme

Financial
Guidelines ⇒ Financial Rules

INCO ⇒ ICPC

Audit Certificates ⇒ Certificate on the
financial statements

Ideas – Frontier Research (1)

- Frontier Research is a key driver to innovation and economic performance
- Establish European Research Council (ERC) – the first pan-European funding agency for Frontier Research
- Support investigator-driven frontier research over all areas of research
- European added-value through competition at European level

Ideas – Frontier Research (2)

- Budget ~ €1bn p.a.
- Autonomous scientific governance (Scientific Council)
- Support projects of individual teams
- Excellence as sole criterion
- Simple, user-friendly

Ideas – Frontier Research (3)

- ERC Launch Strategy provides for two streams of funding activities starting in 2007:
 - ERC Starting Independent Researcher Grant scheme (ERC Starting Grant)
 - ERC Advanced Investigator Researcher Grant scheme (ERC Advanced Grant)

People – Marie Curie Actions

- Initial training of researchers
 - Marie Curie Networks*
- Life-long training and career development
 - Individual Fellowships
 - Co-financing of regional/national/international programmes
- Industry-academia pathways and partnerships
 - Industry-Academia Knowledge-sharing Scheme*
- International dimension
 - Outgoing & Incoming International Fellowships
 - International Cooperation Scheme
 - Reintegration grants;
 - Support to researcher 'diasporas'
- Specific actions
 - Mobility and career enhancement actions
 - Excellence awards

FP7 Capacities Programme ICT-related Research Infrastructures

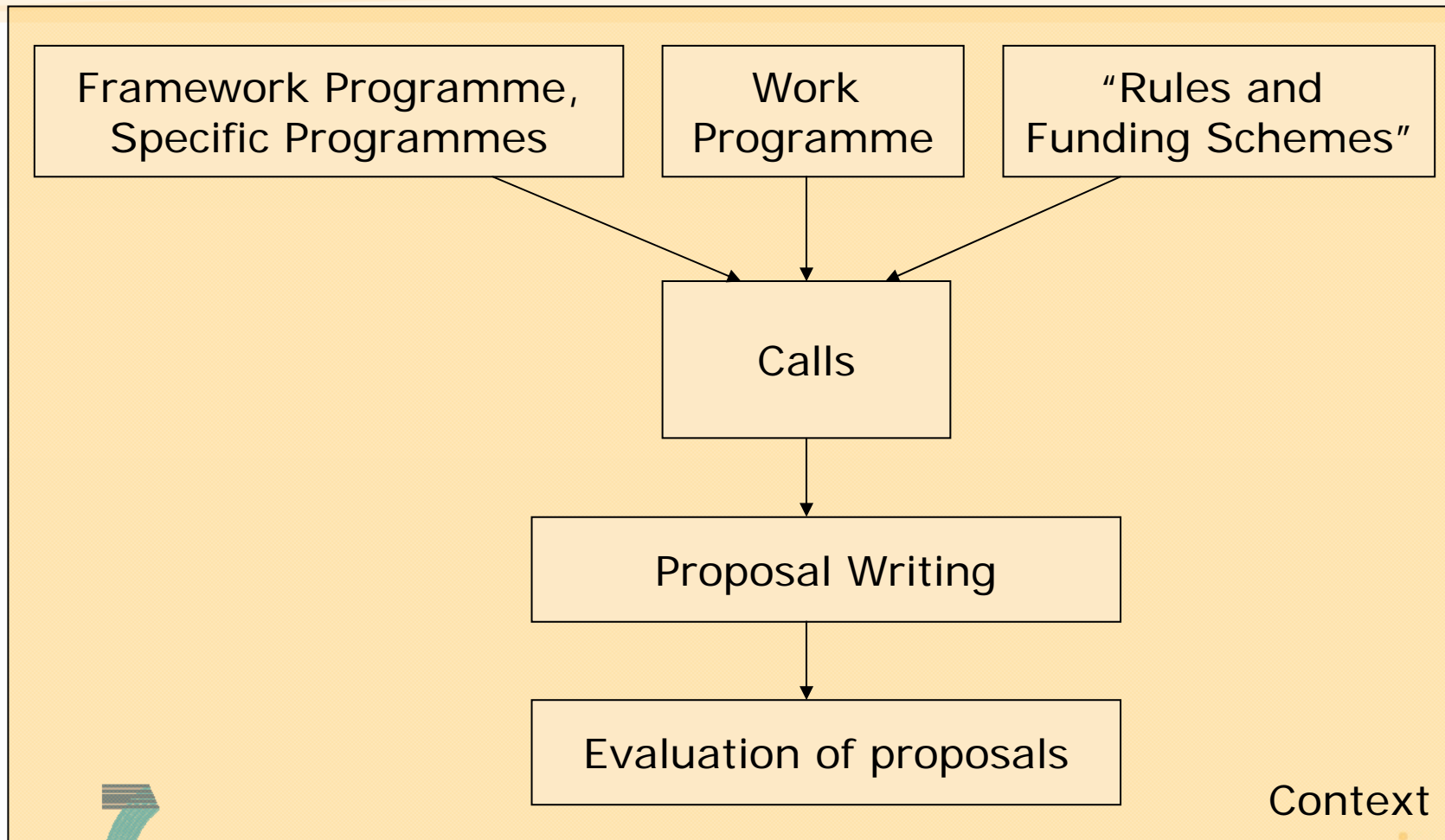
- ICT based research e-infrastructures
 - high-capacity and high-performance communication and grid empowered infrastructures, distributed supercomputing facilities, data storage and advanced visualisation facilities
 - Calls early + late 2007
- Integrating Activities
 - To provide research services for ICT experience and application research, nano-electronics and integrated micro-/nano-systems research, and embedded systems research



Call late 2007



Overview



Context



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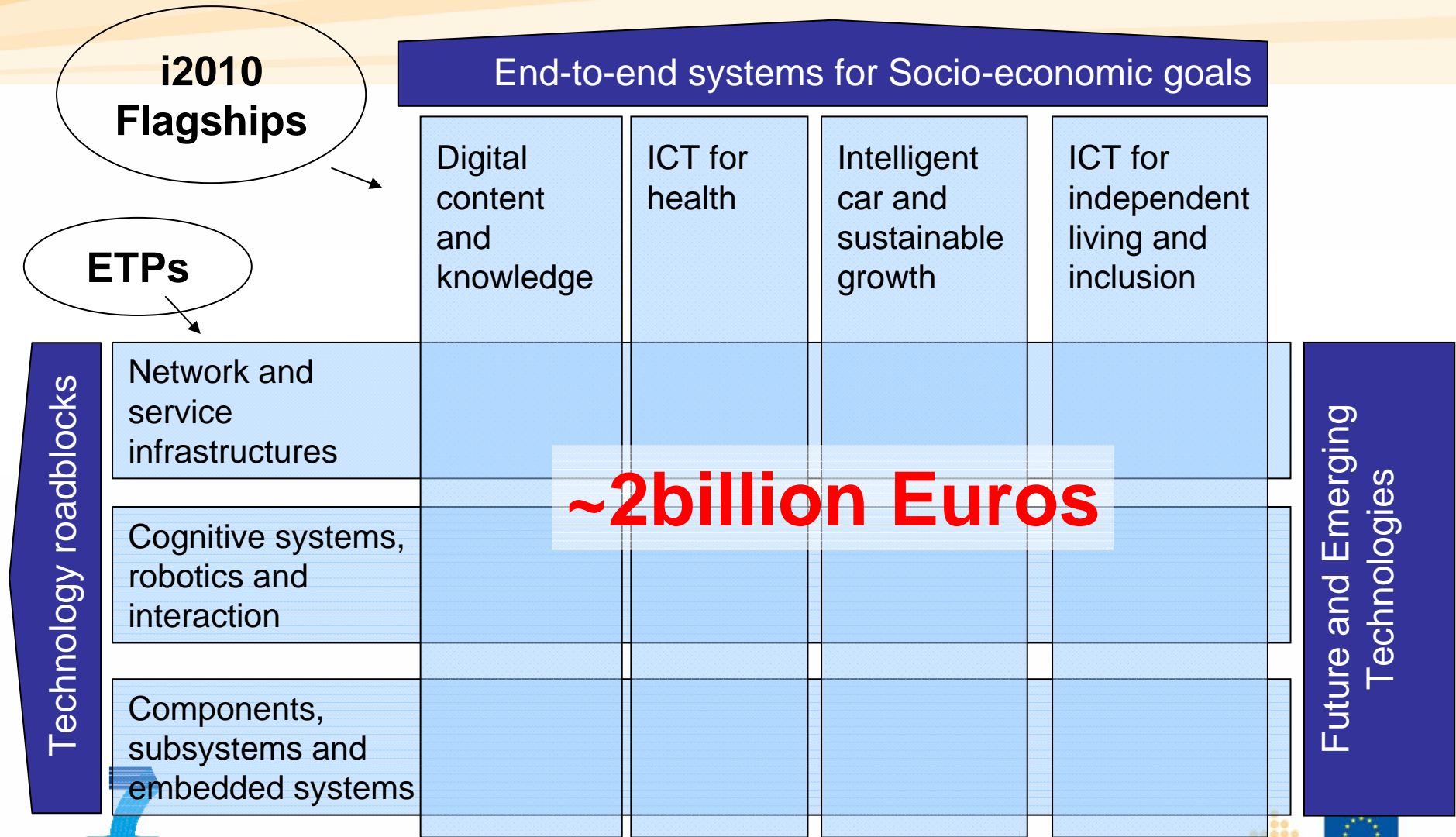
Reinforce Europe's strongholds

- Network and service infrastructures
 - communication equipment and services, business software, security solutions ...
- Components and embedded systems
 - semiconductors, equipment, photonics, plastic electronics, integrated micro/nano systems ... embedded systems in vertical markets: cars, planes, medical, telecom ...
- A strong academic research community
 - in core ICT fields and in other disciplines relevant for ICT: biotech, materials, cognitive sciences ...

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 2007-2008



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 'Pervasive & Trusted Network & Service Infrastructures'

€30 M

The Network of the Future

€200 M

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

Service & Software Architectures, Infrastructures and Engineering

€120 M

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

ICT in support of the Networked Enterprise

- Solutions for inter-enterprise interoperability and collaboration
- Supporting massively distributed networked devices
- Intra-enterprise collaboration

Secure, dependable and trusted infrastructures

€90 M

- Security & resilience in network infrastr.
- Security & trust in dynamic and reconfigurable service architectures
- Trusted computing infrastructures
- Identity management and privacy enhancing tools

Networked Media

€85 M

- Interoperable multi-media network & service infrastructures
- End-to-end systems
- Roadmapping and conference support



ICT Call 1 – Open: ~Jan 2007

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: ~Jan-Apr 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/June 2007

Close: Sep/Oct 2007

Challenge 1:	Budget
6. New paradigms and experimental facilities	40 M€
Critical infrastructure protection (open: Sep, close: Dec 2007)	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€



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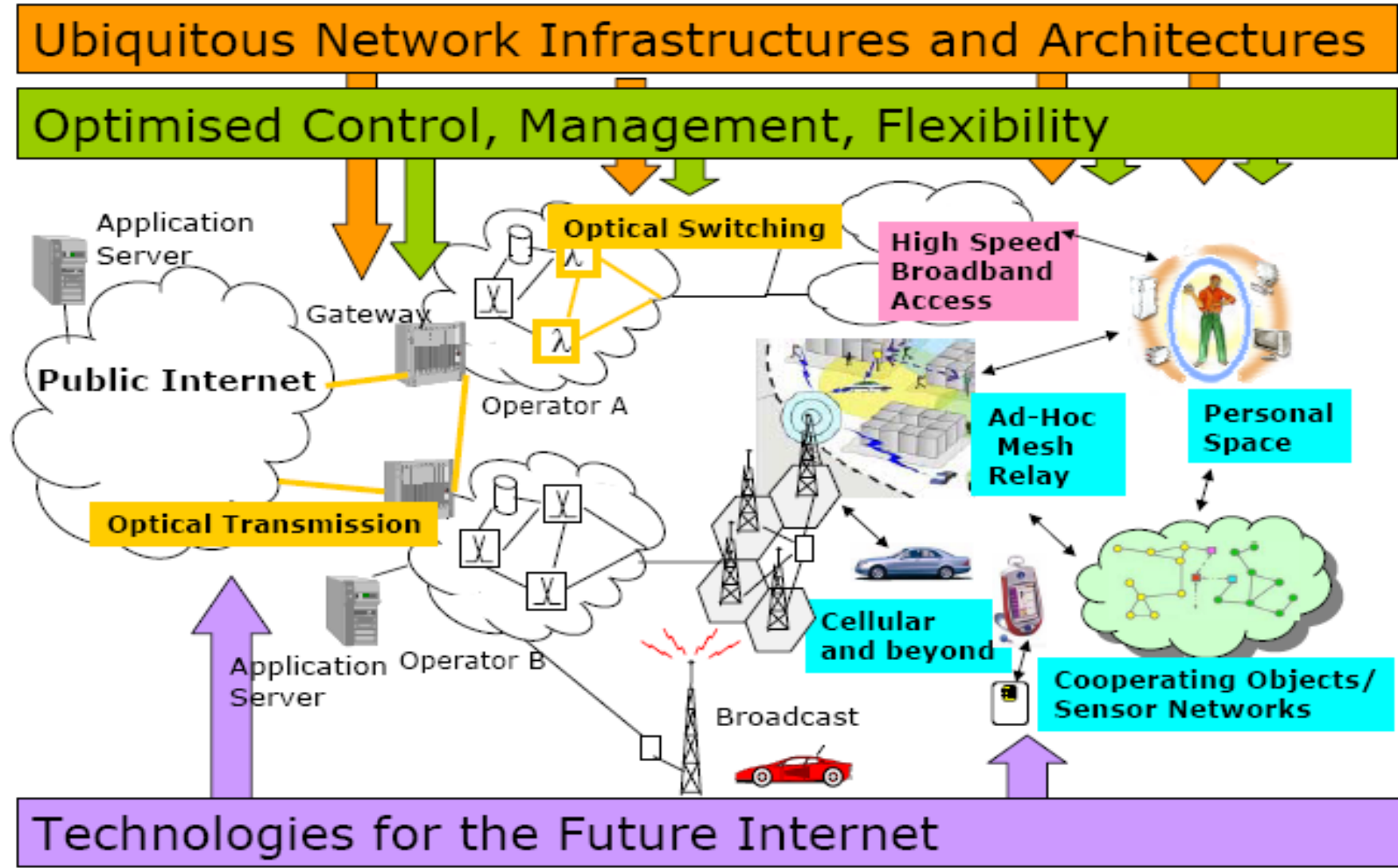
Objective 1.1 The Network of the Future

- **Ubiquitous Network Infrastructures and Architectures**
 - Convergence and interoperability of heterogeneous network technologies
 - Flexible and spectrum-efficient radio access
 - High-speed end-to-end connectivity with optimised protocols and routing
 - Context awareness
 - Support of trillions of connected devices
- **Optimised Control, Management and Flexibility of the Future Network Infrastructure**
 - Seamless end-to-end network and service composition and operation across multiple access technologies, operators and business domains
 - Reconfigurability, self-organisation and -management
 - Management in real-time of new forms of ad-hoc communications with intermittent connectivity requirements and time-varying network topology
- **Technologies and System Architectures for the Future Internet**
 - Overcoming the expected long-term limitations of current Internet technology
 - Scalability from a device, service attributes and application environments perspective
 - Security and trusted domains
 - New forms of routing and content delivery in a generalised mobile and wireless environment

Expected Impact

- Global standards,
- Reinforced European industrial leadership in wired and wireless networks,
- New industrial/service opportunities in Europe
- Lower capital expenditures and lower operational expenditures

System Approach



Future Internet Research

Where do we play?	<u>Leading the Future Internet Network Standards</u>
How does success looks like? What is the prize?	<ul style="list-style-type: none">• Successful technology platform (global standard) for internet services development in Europe• Major market shares for European companies in mobile Internet equipment and services• 30% of Internet equipment and services IPR value for European companies
How do we win?	<ul style="list-style-type: none">• FP7 Research Program and funds• European Technology Platforms (ETP)• Technologies and system architectures for the Future Internet

Objective 1.1 The Network of the Future

Funding schemes

CP, NoE, CSA (SSA for roadmapping and conference support, CA for co-ordination with related national or regional programmes or initiatives)

Indicative budget distribution

200 M€:

- CP 180 M€ of which a minimum of 84 M€ to IP and a minimum of 42 M€ to STREP;
- NoE 14 M€;
- CSA 6 M€

Call: ICT Call 1



More Information

- FP7 web site with **ICT WP 2007/2008 for download**
<http://cordis.europa.eu/fp7/ict>
- The IST Communication Technologies web site
<http://cordis.europa.eu/ist/ct>
- Our bi-monthly newsletter:
 - Distributed via email (by subscription - free of charge);
 - Contains info on all activities in the field including calls for proposals, conferences, publications, etc.)



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