

FP7 Manufacturing Conference

Cardiff, 14-15 January 2009

**ICT Work Programme 2009-10:
Activities Related to Manufacturing**



ICT Work Programme 2007-08: Manufacturing in Calls 1 & 2 of Challenge 3

WP objectives

Next-generation nanoelectronics
Call 1

Organic & large-area electronics
& displays
Call 1

Photonic components
& subsystems
Call 2

Micro/nanosystems
Call 2

Networked embedded
& control systems
Call 2

R&D goals

Cost-efficient, flexible production for < 45 nm silicon, SoC & SiP
- Metrology, AEC/APC, SEA, DfM...

New manufacturing paradigms & very low cost applications
- Large-area production
- Manufacturing of organic materials

Integration & manufacturing technologies

Holistic approaches

- to reduce size & cost
- to increase level of functional integration
- to advance photonic/electronic convergence

From smart systems to viable products

- Overcome technological barriers to commercial manufacturing
- Secure the full supply chain (incl. fabric. & test)

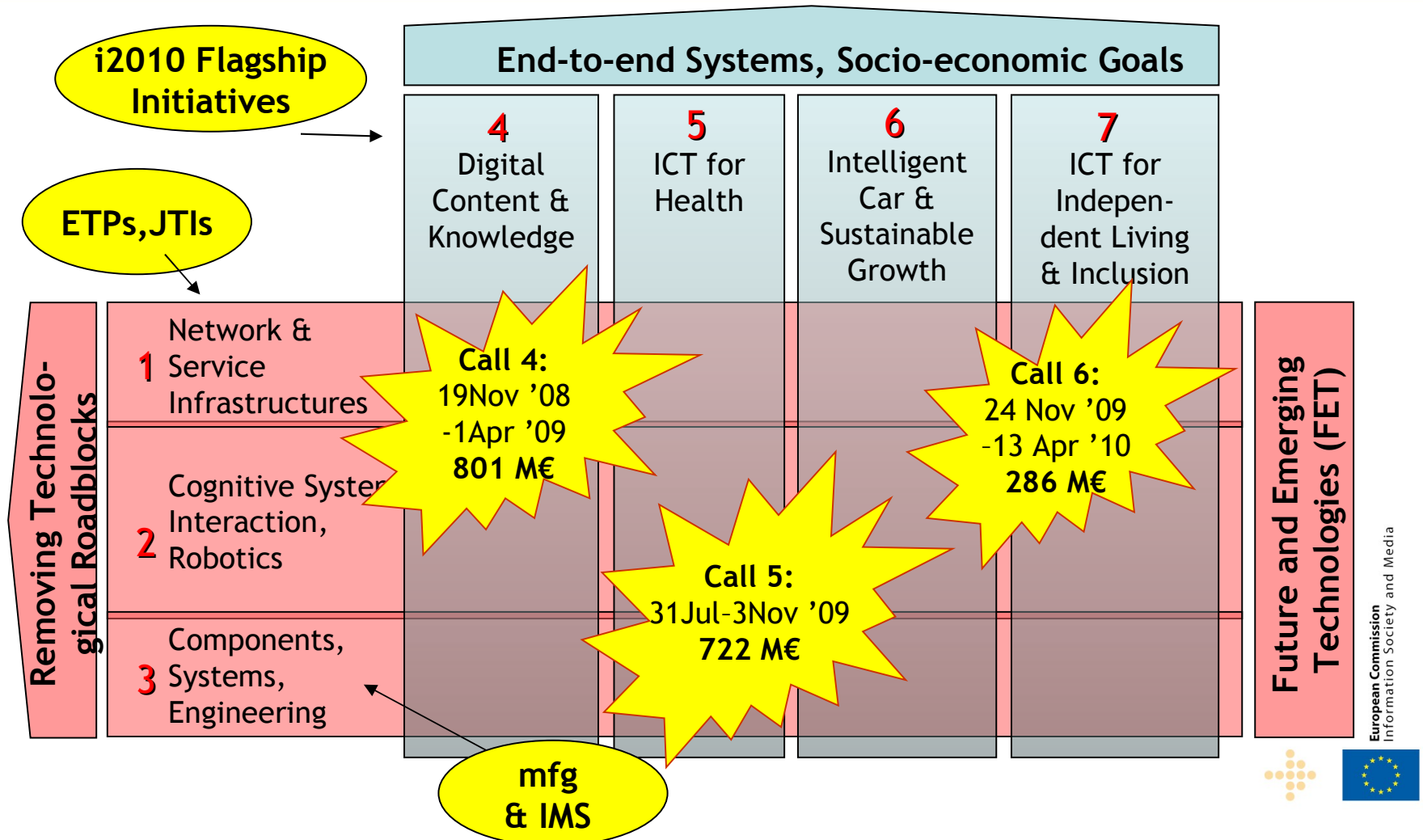
Wireless sensor networks, cooperating objects & middleware

- For industrial systems, e.g. manufacturing plants

**Total selected
FP7 ICT projects
in manufacturing
18 projects;
€ 68 mn**



ICT Work Programme 2009-10: 7 Challenges + FET



Open FP7 ICT Activities Related to Manufacturing: Work Programme 2009-10

- **Challenge 2:**
 - Objective 2.1: Cognitive Systems & Robotics (153 M€; Calls 4 & 6)
- **Challenge 3:**
 - Objective 3.1: Nanoelectronics Technology (35 M€; Call 5)
 - Objective 3.3: Flexible, Organic & Large Area Electronics (60 M€; Call 4)
 - Objective 3.5: Engineering of Networked Monitoring & Control Systems (32 M€; Call 5)
 - Objective 3.7: Photonics (50 M€; Call 5)
 - Objective 3.9: Microsystems & Smart Miniaturised Systems (80 M€; Call 5)
- **Challenge 6:**
 - Objective 6.3: ICT for Energy Efficiency (30 M€; Call 4)
- **Horizontal Support Actions:**
 - Objective 9.2: Supplements to Support Int'l Cooperation between Ongoing Projects (1.3 M€; Calls 4, 5 & 6)



Nanoelectronics Technology (Objective 3.1)

35 M€
Call 5

Focus on:

a) Miniaturisation & functionalisation

- Beyond CMOS domain
- Advanced aspects of the 'More than Moore' domain
- Their integration & their interfacing with existing technologies

b) Manufacturing technologies

- (Small volume oriented) Flexible manufacturing with a high product mix & joint equipment assessment
- Prepare for more disruptive approaches

c) Support measures

Manufacturing challenges:

- Reducing cycle time
- Enhancing production quality & variability control
- Improving equipment productivity
- Reducing environmental impact
- Supporting heterogeneous integration
- Fostering advanced system integration & functionalised packaging



Nanoelectronics Technology Targeted Outcome “Manufacturing”

a) Manufacturing Technologies

- New semiconductor manufacturing approaches, processes & tools
- Joint assessments of novel process/metrology equipment & materials
- Supporting 200/300mm wafer integration platforms
- Preparatory work for 450mm wafer processing

IPs:

- Integrate approaches for flexible & sustainable short cycle time manufacturing
- Clustered joint equipment assessments or wafer integration platforms

STREPs:

- Focussed & complementary semiconductor manufacturing topics

**Funding Schemes:
STREPs,
at least 1 IP**



Engineering of Networked Monitoring & Control Systems (Objective 3.5)

32 M€
Call 5

The activities in this area address engineering technologies for large scale, distributed & cooperating systems for monitoring & control, including wireless sensor networks

- a) Foundations of complex systems engineering
- b) Wireless Sensor Networks and Cooperating Objects
- c) Control of large-scale systems
- d) International cooperation
(CSAs: Western Balkans, India, USA)

**It is acceptable to address only one of the above,
if sufficient for the purpose of the proposal**



Engineering of Networked Monitoring & Control Systems: Target Outcomes (1/3)

Foundations of complex systems engineering:

- To develop novel scalable methods for sensing, control & decision-making.
- To achieve robust, predictable & self-adaptive behaviour for large-scale networked systems
- Scope : foundational multi-disciplinary research in modelling, sensing, monitoring and actuation, adaptive, cooperative control and decision making.
- Note: Activities to encourage and enable multi-disciplinary education in the areas of systems engineering and monitoring & control are welcome.
- Funding Schemes: STREPs, 1 NoE



Engineering of Networked Monitoring & Control Systems: Target Outcomes (2/3)

Wireless Sensor Networks, Cooperating Objects:

- To develop architectures, hardware/software integration platforms & engineering methods for distributed systems composed of heterogeneous networked smart objects
- Scope: Research challenges include e.g.
 - methods & algorithms to support spontaneous ad-hoc cooperation between objects
 - network-centric computing with dynamic resource discovery
 - semantics that allow object/service definition and/or instantiation
 - lightweight operating systems & kernels
- Instruments: STREPs, 1IP



Engineering of Networked Monitoring & Control Systems: Target Outcomes (3/3)

Control of large-scale systems:

- To enable optimal operation of large-scale dynamic systems through proactive process automation systems applicable across several sectors, going far beyond what current SCADA and DCS/PLC can deliver today
- Standardisation of monitoring & control systems in industrial environments is encouraged in all projects.
- Scope: The architectures should
 - Facilitate re-use, enable QoS;
 - Reduce the reconfiguration effort
- Note: Pro-activeness requires e.g. novel predictive models for higher performance, fault adaptation & recovery
- Instruments: STREPs; 1IP



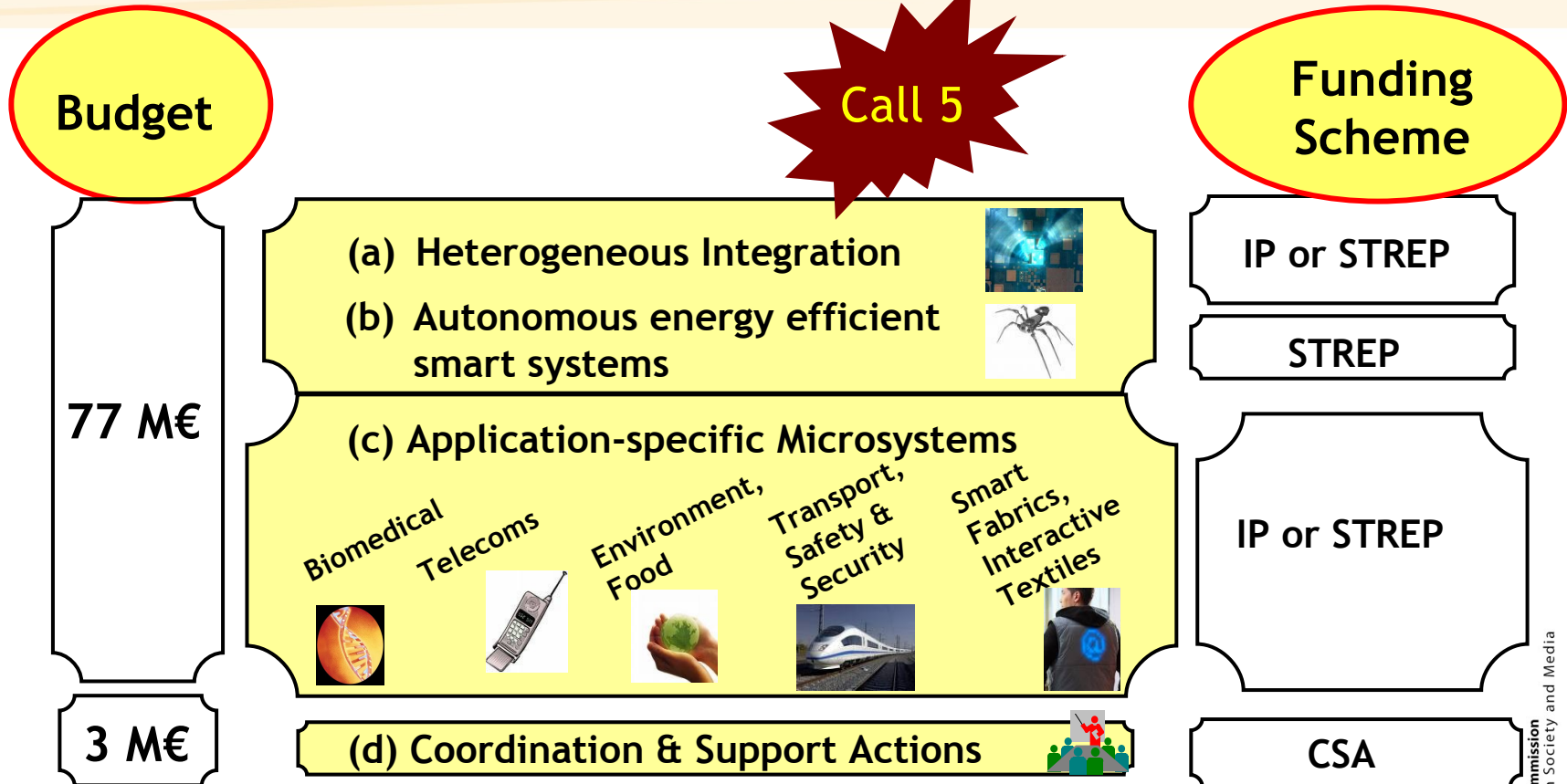
ARTEMIS Sub Programmes: Call 2 (2009)

- SP1: Methods & processes for safety-relevant embedded systems
- SP2: Person-centric health management system
- SP3: Smart environments & scalable digital services
- SP4: Efficient manufacturing & logistics
- SP5: Computing environments for embedded systems
- SP6: Security, privacy & dependability
- SP7: Embedded technology for sustainable urban life
- SP8: Human centric design of embedded systems

Deadline for submission of Proposal Outlines : 15th April 2009
Deadline for submission of Full Proposals : 3rd Sept.2009

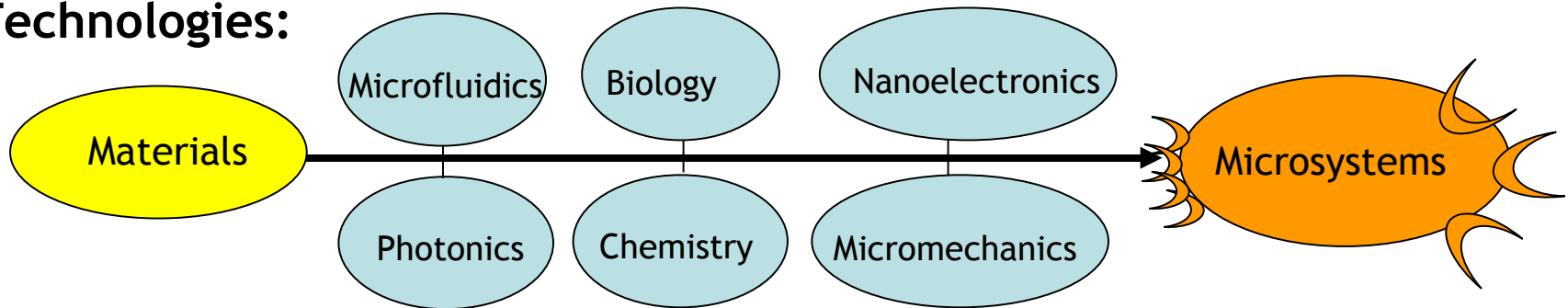


Microsystems & Smart Miniaturised Systems (Objective 3.9)



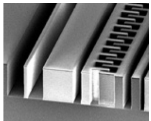
Microsystems: Integration of technologies and functions

Technologies:



Functions:

Sensing, storing, processing, actuation, communication

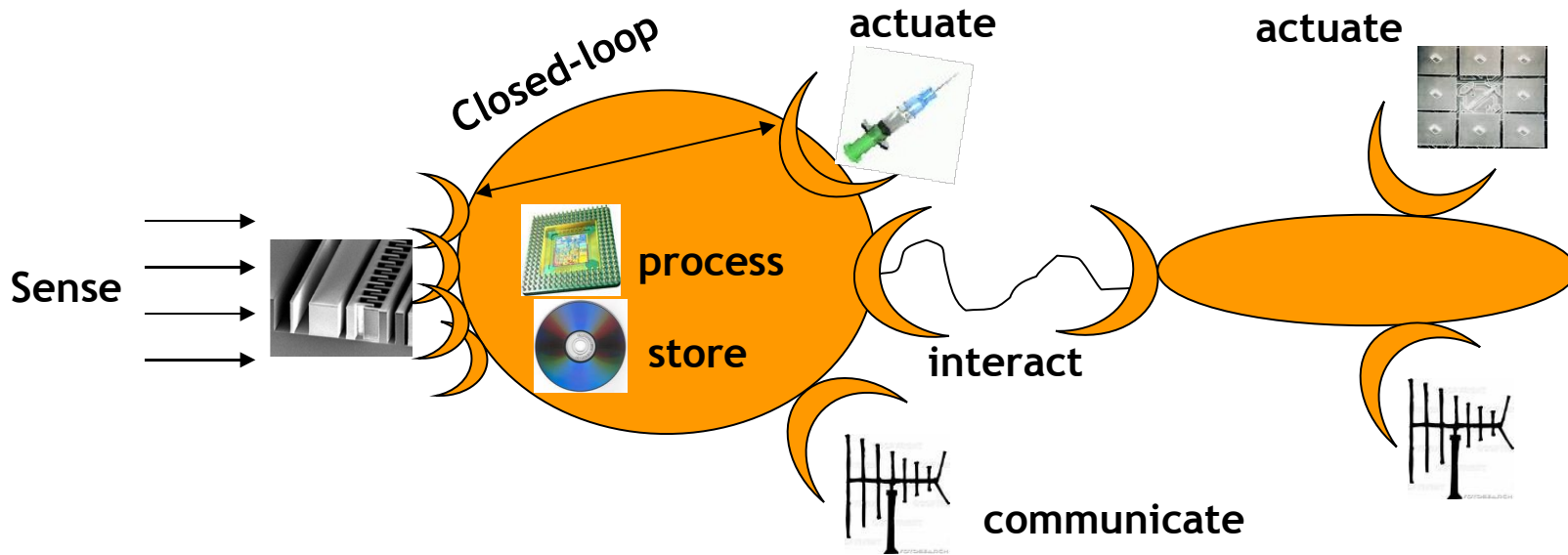


Microsystems:

At least 2 technologies, 2 functions + “small”



What are Smart (Miniaturised) Systems ? Microsystems “Becoming Smart”



Able to:

- Describe a situation, diagnose, and/or
- Predict, decide, help to decide, and/or
- Interact with the environment



For further Information

ICT Work Programme:

<http://cordis.europa.eu/fp7/ict/>

- **Nanoelectronics Technology (Objective 3.1):**
<http://cordis.europa.eu/fp7/ict/nanoelectronics/>
- **Engineering of Networked Monitoring & Control Systems (Objective 3.5):**
<http://cordis.europa.eu/fp7/ict/necs/>
- **Microsystems & Smart Miniaturised Systems (Objective 3.9):**
<http://cordis.europa.eu/fp7/ict/micro-nanosystems/>
- **European IMS Secretariat:**
<http://cordis.europa.eu/ims>

Joint Technology Initiatives:

- **ENIAC:**
<http://www.eniac.eu>
- **ARTEMIS:**
<https://www.artemis-ju.eu/>

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