

Objective ICT-2007.3.6

# Micro/nanosystems

ICT Proposers' Day  
Köln, 1 February 2007



# Expected Outcome I

- **Next generation smart systems**  
Sensor- & actuator-based systems, high density mass storage
- **Micro/Nano-Bio-ICT convergence**  
Biosensors, lab-on-a-chip, bioMEMS, autonomous implants
- **Integration of smart materials**  
Integration of micro-nano technologies and smart systems into new & traditional materials, e.g. textiles, glass, paper

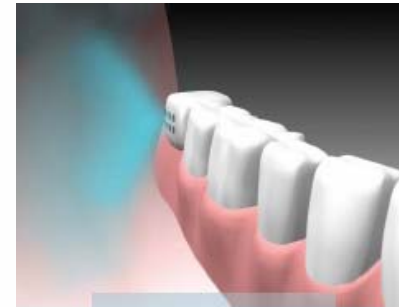
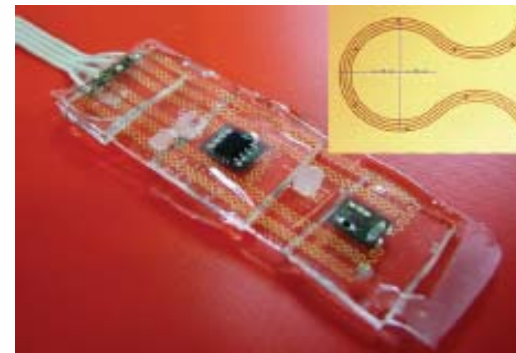
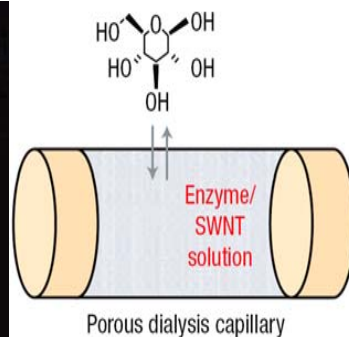
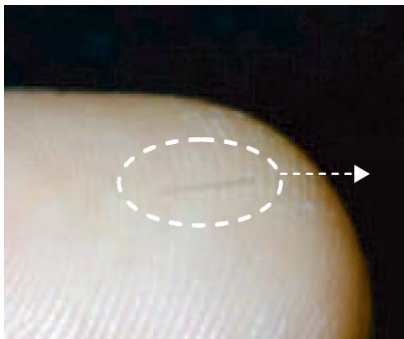
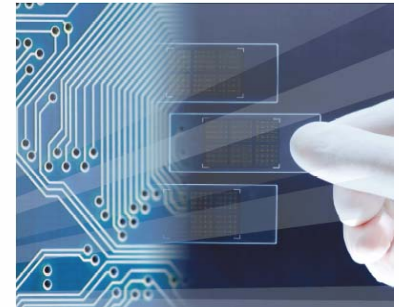


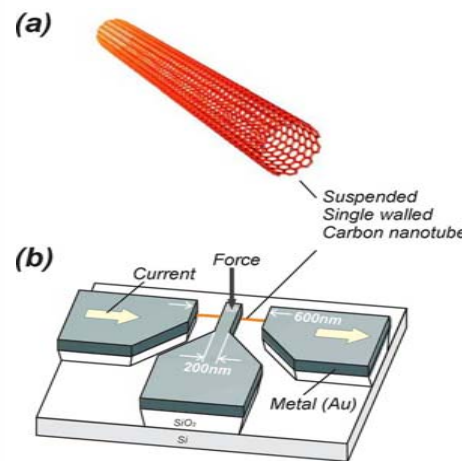
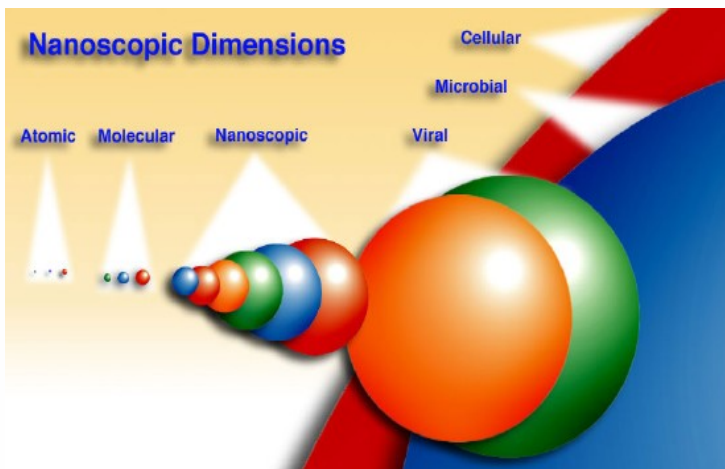
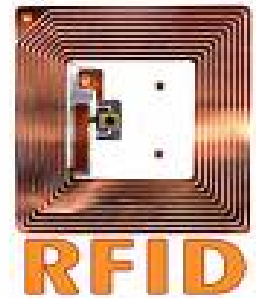
Image courtesy of project INTELLIDRUG  
Courtesy INTELLIDRUG



Courtesy STELLA

# Expected Outcome II

- **From smart systems to viable products**  
Microsystems manufacturing technologies
- **Smart systems for communications & data management**  
Smart micro/nanosystems enabling wireless access & facilitating intelligent networking
- **Support actions**  
Technology access, education & training, coordination & dissemination at EU level



Force sensing at nanoscale



# Expected Outcome III

## Nanosensors: unprecedented perspectives

**A VISION: towards a genuine nanorobot**  
**communication** of **nanodevices**  
with each other  $\Rightarrow$  **nanorobots**

$I_{\max} \sim 10^9$  bits/sec bandwidth  
requirement

anticipated 1-1000 pW  
power budget of typical in  
vivo medical nanodevices.

**A nanorobot: still far away**



Animation showing how a nano-robot could  
travel inside the body and destroy harmful cells.

<http://www.coasttocoastam.com/shows/2004/12/04.html>



# Expected Impact I

- **Improvements in smart systems integration**
  - Reliability, miniaturisation, integration and functionality, cheaper, higher speed, low power, shorter time-to-market
- **Transformation of industrial production**
  - Adding intelligence to process control and the manufacturing
  - Improving logistics and distribution
- **Increased market share for European companies across different industrial sectors**
  - Systems with new functional capabilities
  - Improved quality
  - Competitive timeframe



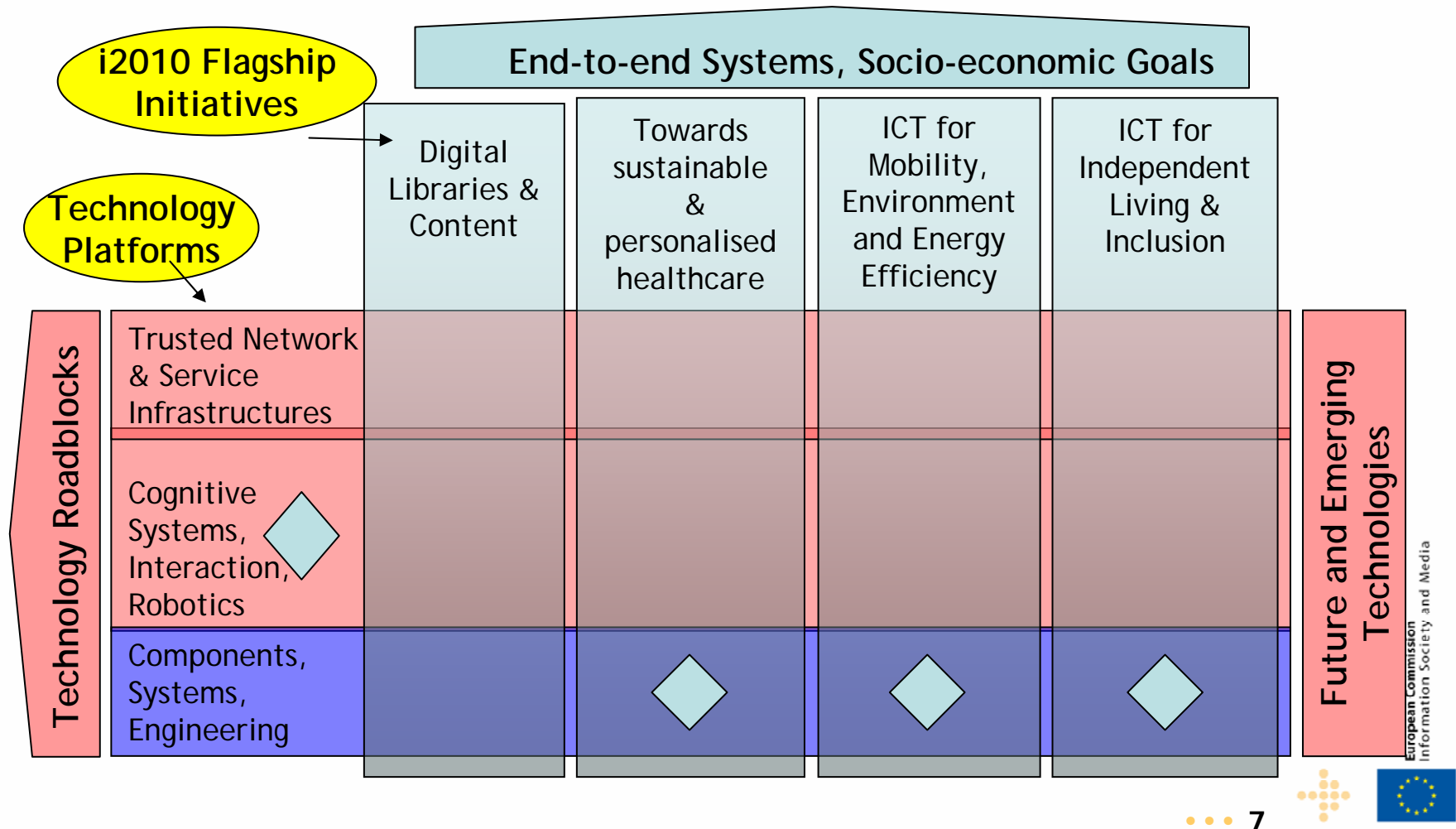
# Link to the overall Challenge

The Objective **Micro/nanosystems** contributes to the overall Challenge through:

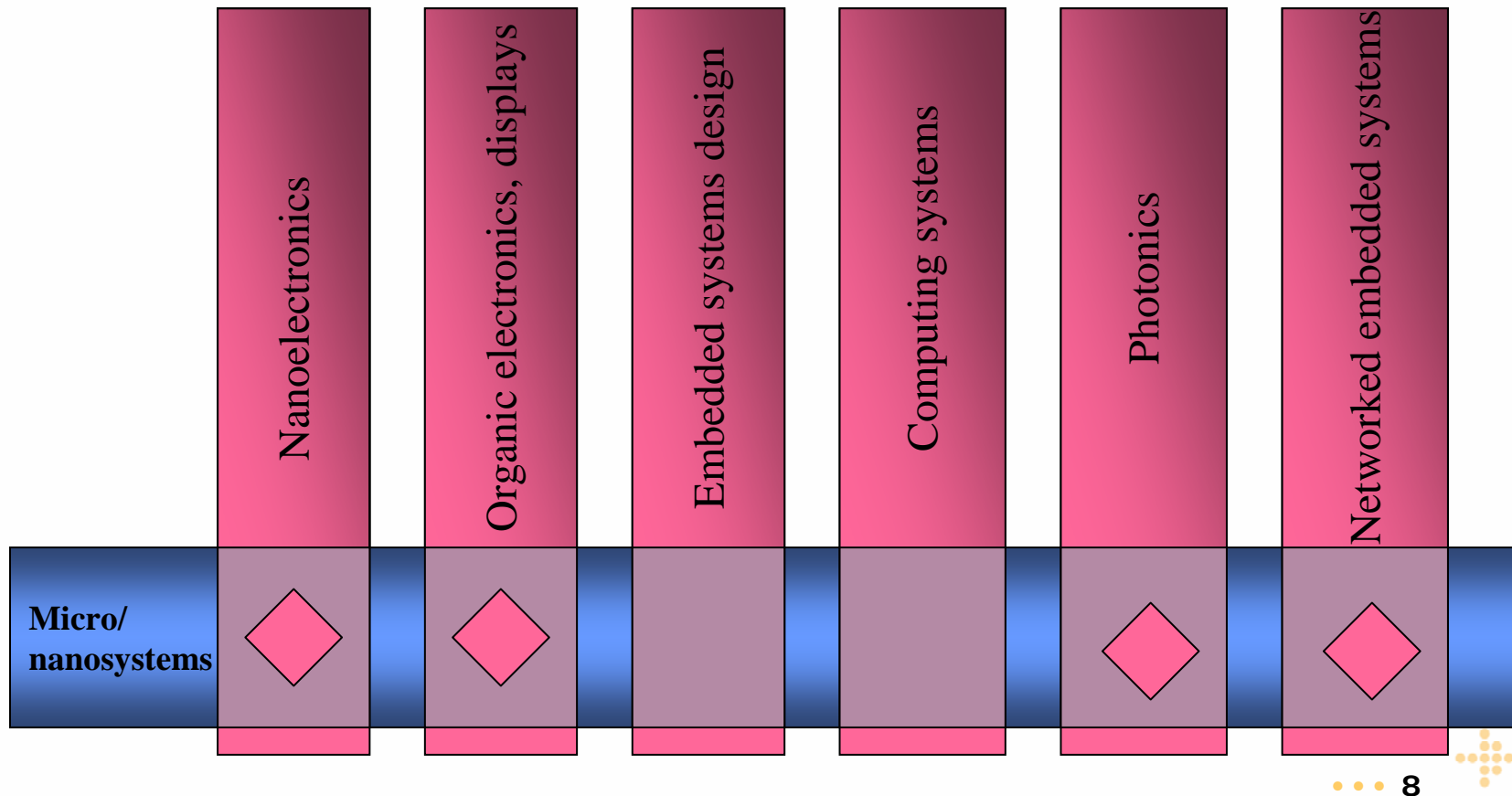
- Further miniaturisation
- Combination of silicon and non-silicon materials
- Sensing and actuating
- New functionality
- Integration at several levels (materials, technologies, components, functions)
- Multi-disciplinarity (scientific disciplines)
- Combining micro-, nano-, bio and ICT
- Adding intelligence and communication
- Contributing to networked smart systems and hence to more competitive products



# Cross-challenge Opportunities



# Cross-objective Opportunities





# Recommendations

- **To strengthen the European industrial sectors to manufacture SMART products improving the quality of life.**
- **Be aware of and make relation to the ongoing research projects.**



# Budget & Call Information



Indicative budget distribution: 83 M€\*

**Collaborative projects:** 75 M€\* of which  
IPs min. 20 M€; STREPs min. 32 M€

**Networks of Excellence:** 4 M€\*

**Coordination and Support Actions:** 4 M€\*

**Call 2; FP7-ICT-2007-2**

Closure date: Sep/Oct 2007



\* Amount is to be confirmed after the Commission decision on 2008 budget



# Further Information & Contact

## European research on the web:

<http://cordis.europa.eu>

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

<http://ec.europa.eu/comm/research/future/>

## Information Society and Media:

[http://ec.europa.eu/information\\_society/](http://ec.europa.eu/information_society/)

<http://cordis.europa.eu/ist>

## Micro & Nanosystems:

<http://cordis.europa.eu/ist/mnd/>

## Contact:

[Francisco.Ibanez@ec.europa.eu](mailto:Francisco.Ibanez@ec.europa.eu)

[Thomas.Sommer@ec.europa.eu](mailto:Thomas.Sommer@ec.europa.eu)

