

Objective ICT-2007.3.1

# **Next-Generation Nanoelectronics Components and Electronics Integration**

ICT Proposers' Day  
Köln, 1 February 2007



# Expected Outcome

To advance miniaturisation in baseline CMOS technology targeting digital components and complex digital Systems on Chip ("*More Moore*");

To master diversification targeting non-digital applications, heterogeneous integration in Systems-on-Chip or Systems-in-a-Package ("*More than Moore*")

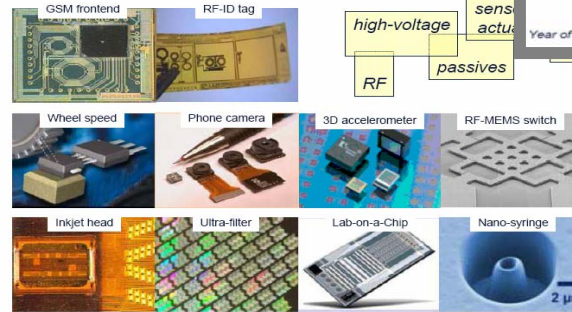
To prepare for the technology generation beyond the CMOS scaling limits ("*beyond CMOS*").



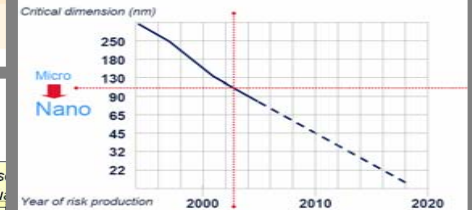
# Next-Generation Nanoelectronics Components & Electronics Integration

- Smaller, higher performance, lower cost:
  - More Moore
  - Beyond CMOS
- Integration & diversification:
  - More than Moore

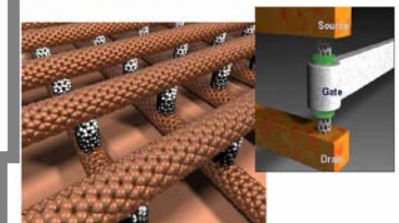
## More than Moore: Heterogeneous technologies



## More Moore: Baseline CMOS technology roadmap



## Beyond CMOS: This could be nanotube devices



**Technology**  
materials, processes,  
metrology, interconnects,  
modelling, packaging,  
architectures

**Design**  
increased complexity, changed  
performance, heterogeneity in  
SiP & SoC, productivity &  
“Design for Manufacturing”

**Manufacturing**  
Cost-efficient, flexible production  
for silicon < 45 nm; for SoC & SiP;  
450 mm wafer size; small batch/fast  
cycle time; equipment assessment

# Expected impact

**Strengthened competitiveness of European nano-electronics industry across a complete value-chain in the context of ITRS roadmap.**

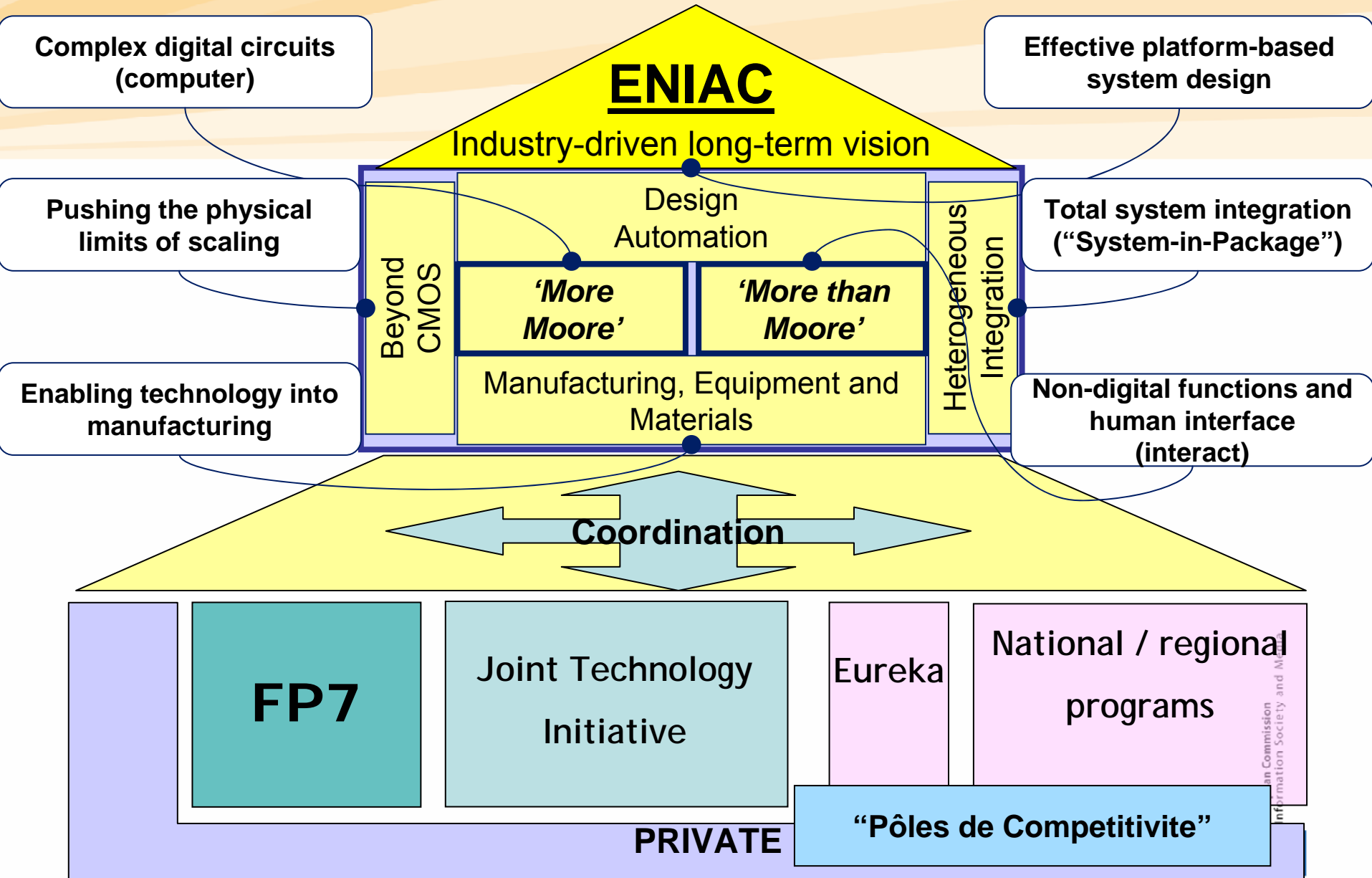
**New electronics applications of high economic and socio-economic relevance in e.g. communications, health, environment, energy, transport and security.**

**European research organisations in leading positions**

**Coordination of European Research and Innovation in Nanoelectronics at all levels**

**Increased number of high-skilled jobs**

# Coordinated approach to SRA implementation



# Link to the overall Challenge

- The challenge is to strengthen Europe's position as a leading supplier of electronic components and systems, e.g. for automotive, avionics, energy, industrial automation, consumer electronics, telecoms and medical systems.
- In all these domains Europe's leadership depends heavily on the capacity to engineer and produce **further miniaturized Nanoelectronics components** supplying the intelligence, memory, sensing and communication capabilities to these systems.



# Cross-objective Opportunities and other funding schemes within FP7

- Micro/nanosystems Objective IST-2007.3.6 in the context of heterogeneous integration
- Embedded Systems Design Objective IST-2007.3.3
- FET proactive Objective IST-2007.8.1 : Nano-scale ICT devices and systems
- NMP programme
  - Manufacturing for electronics
  - Equipment
  - Electronics materials
- Capacities programme (Research Infrastructure, ...)
- ERA Nets



# Recommendations

- Be aware of ENIAC's SRA (<http://www.eniac.eu>)
- Look at the recommendations of the FP7 consultation workshops on Nano-electronics Design & Manufacturing (<http://cordis.lu/ist/nano>)





# Instruments & budget

- Funding schemes:
  - More Moore, More than Moore, Beyond CMOS: CP, NoE;
  - Support measures: CSA
- Indicative budget distribution: 86 M€\*:
  - CP 70 M€\* of which a minimum of 27 M€\* to IPs and a minimum of 21 M€\* to STREPs
  - NoE 8 M€\*
  - CSA 8 M€\*
- ICT Call 1

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



# Further Information & Contact

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