

ICT TECHNOLOGY PLATFORMS DAY
University of Lugano 5 April 2006

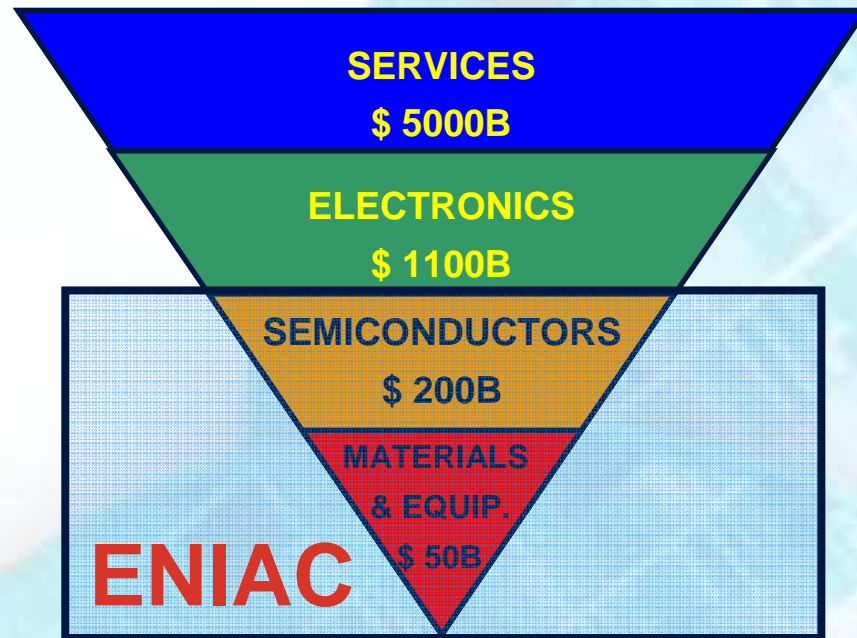


European Nanoelectronics
Initiative Advisory Council

Massimo Claudio Comparini
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European Technology Platform: Nanoelectronics



- Growing market
- Key enabling technology
- Strong European Industry

	Ranking	Company
	1	Intel
	2	Samsung Electronics
	3	Renesas Technology*
	4	Texas Instruments
	5	Toshiba
	6	STMicroelectronics
	7	Infineon Technologies
	8	NEC Electronics
	9	Motorola
	10	Philips Semiconductors

* New company formed by the merger of Hitachi and Mitsubishi EC ac
Source: Dataquest March 2004

Starting Point

“VISION 2020” released on June 29 2004



HIGH-LEVEL GROUP		
 Matti Alahuhta Nokia	 Gabriel Crean NMRC	 Gilbert Declerck IMEC
 Hans-Raimund Deppe AMD	 Doug Dunn ASM Lithography	 Warren East ARM
 Hakan Eriksson Ericsson	 Denis Griot Freescale Semiconductor (ex Motorola Semiconductor Products Sector)	 Thomas Hinderling CSEM
 Heinz Kundert Unaxis	 Erkki Leppävuori VTT	 Timothy McEntee Aixtron
 Scott McGregor Philips Semiconductors	 Krishna Nathan IBM	 Artoine Petit CNRS
 Pasquale Pistorio STMicroelectronics	 Denis Ranque Thales	 Herbert Reichl Fraunhofer Gesellschaft
 Jean Thorne CEA/LETI	 Wolfgang Ziebert Infineon Technologies	
 Philippe Busquin European Commission	 Erkki Liikanen European Commission	

www.cordis.lu/ist/eniac



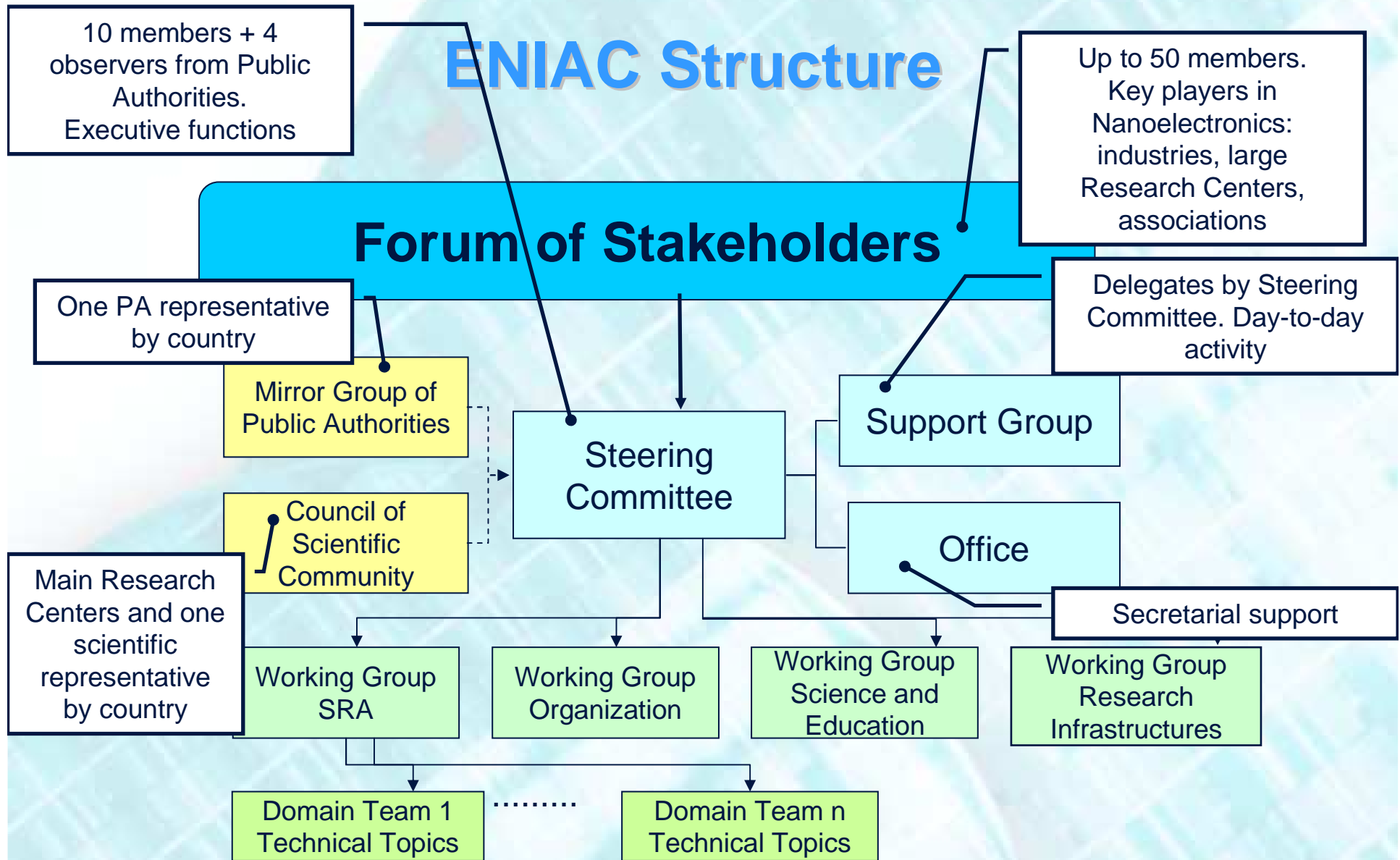
The Vision & Mission for the Future

- ❑ Master the revolutionary transition from Microelectronics to Nanoelectronics
 - Serve the future demands of European society
 - Increase high-skilled employment
 - Reinforce competitiveness of European industry
 - Secure global leadership in high-tech research

- ❑ Make the 2020 Information Society technologically feasible and economically affordable.

- ❑ To drive and coordinate public and industrial research activities in Nanoelectronics, through the Strategic Research Agenda.

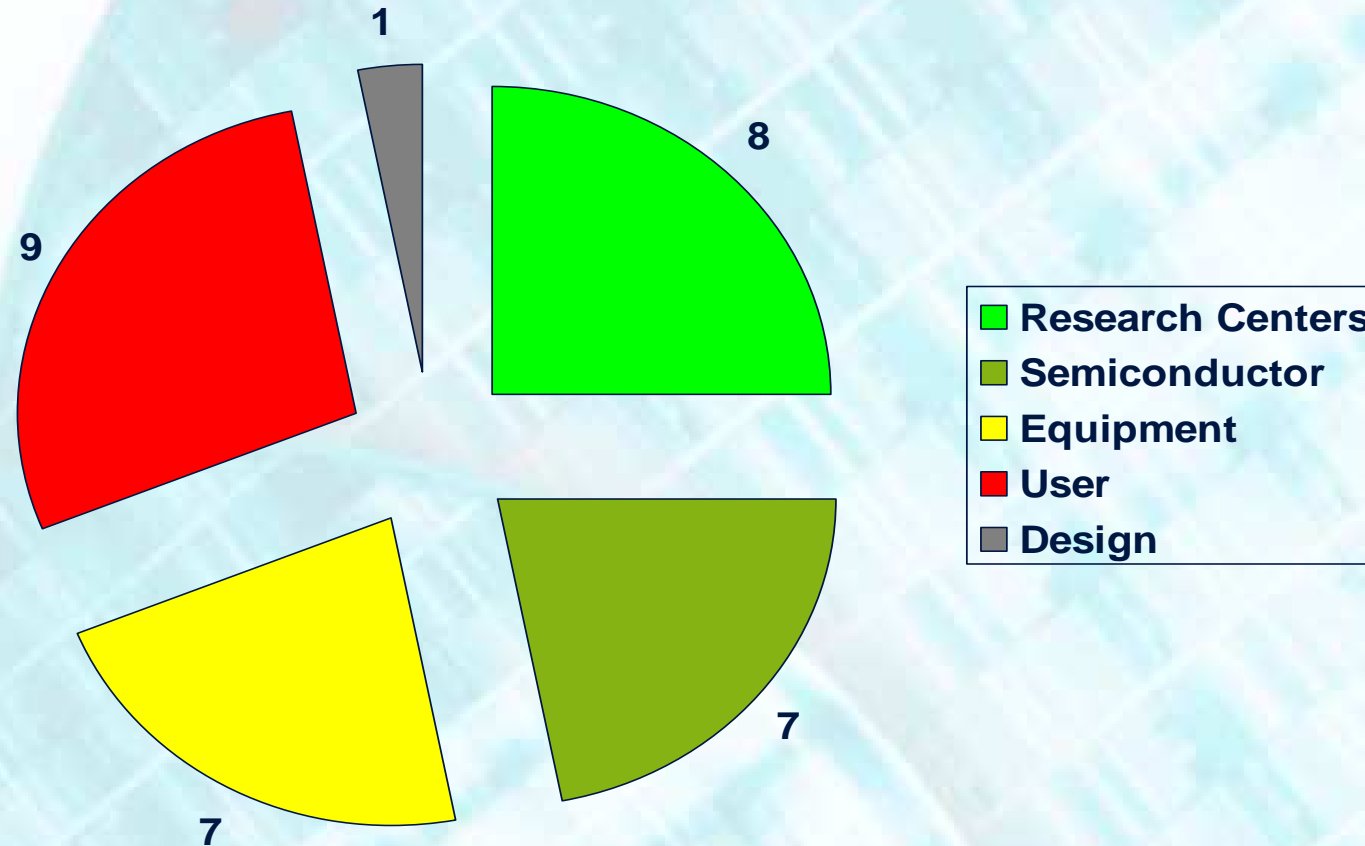
ENIAC Structure



Steering Committee

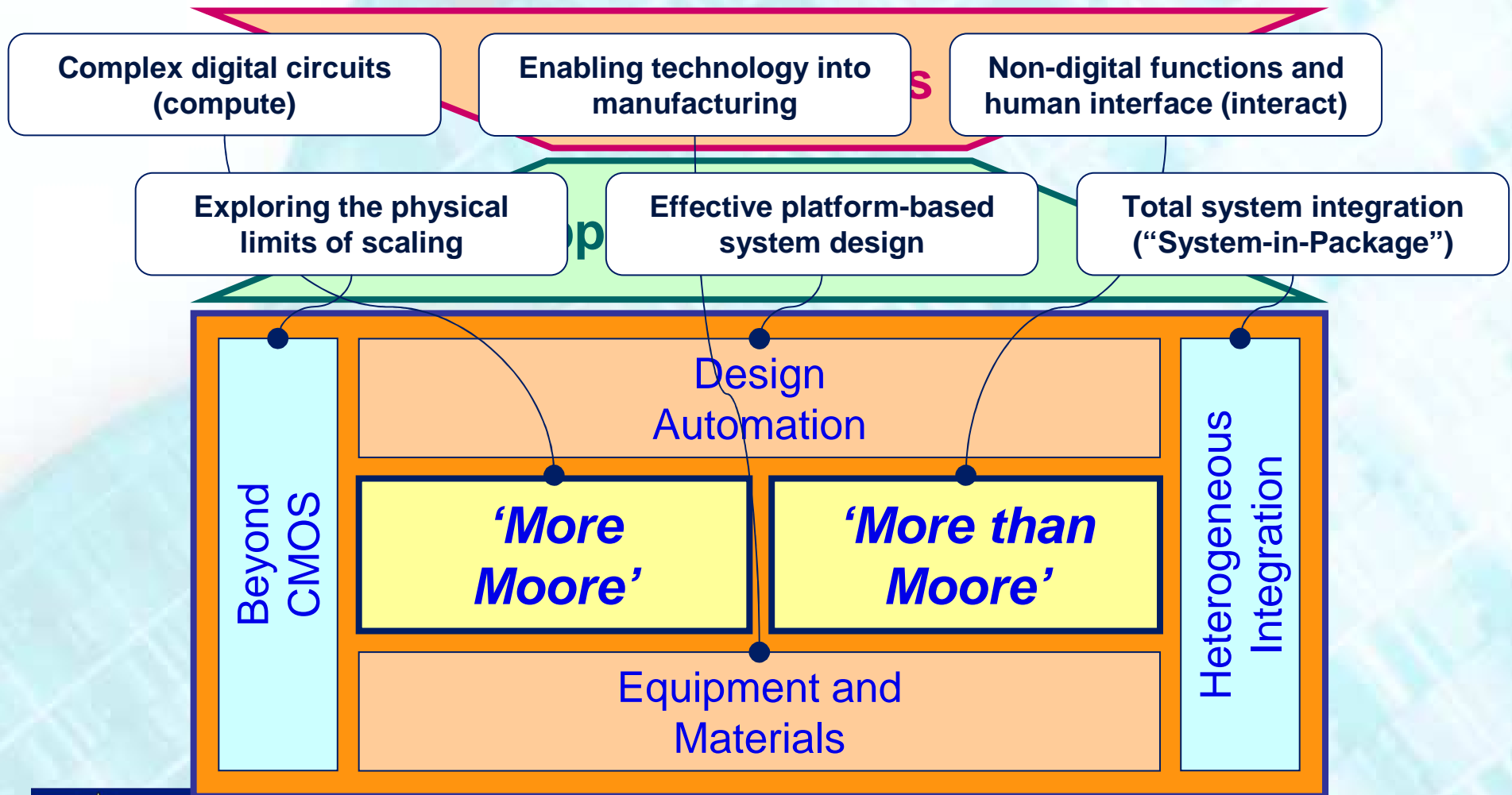
- | | | |
|---|-----------------|-----------------------------|
| <input type="checkbox"/> Chairman: | F. van Houten | Philips Semiconductors |
| <input type="checkbox"/> Vice Chairman | W. Ziebart | Infineon |
| <input type="checkbox"/> Vice Chairman | A. Dutheil | STMicroelectronics |
| <input type="checkbox"/> Users: | S. Dais | Automotive (Bosch) |
| | D. Ranque | Aerospace (Thales) |
| | C. Barraud | Consumer (Thomson) |
| <input type="checkbox"/> Equipment & Materials: | E. Meurice | ASML |
| <input type="checkbox"/> MEDEA+ | A. van der Poel | |
| <input type="checkbox"/> Academia | G. Declerck | MEDEA+ Scientific Committee |
| | To be selected | |
| Observers | | |
| <input type="checkbox"/> Public Authorities | E. Gabla (F) | Chair of Mirror Group |
| | B. Ruck (NL) | Vice-chair |
| <input type="checkbox"/> European Commission: | P. Zangl | DG IST |
| | E. Andreta | DG RTD |

Forum of Stakeholders

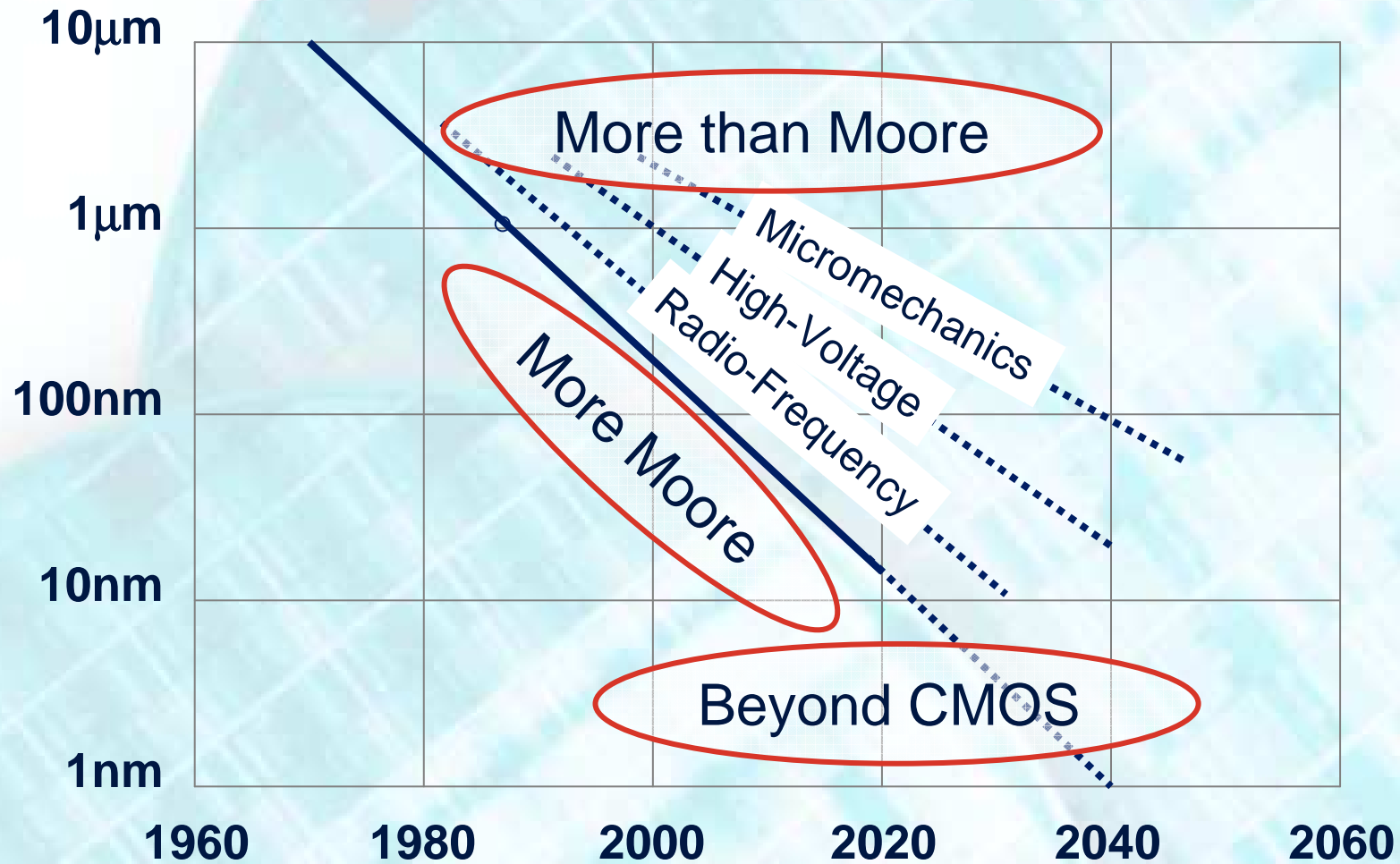


- 32 members till now
- 4 new members (SEMI Europe, Umicore, Indesit, AMI's)

Application-driven technology domains

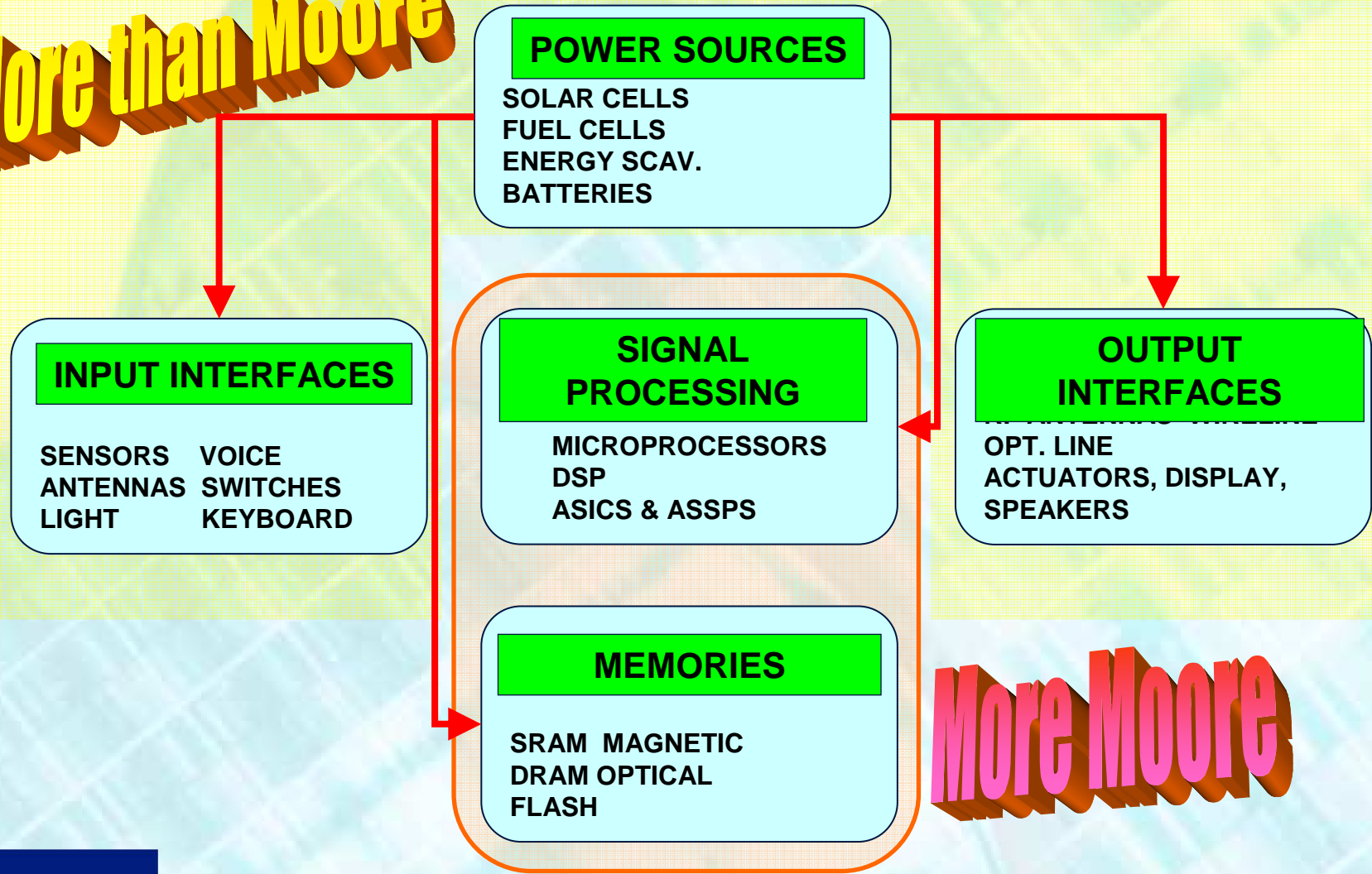


Overall technology roadmap



System Needs

More than Moore



More Moore

Intelligent systems compute and interact

...

CMOS
baseline

memory

RF

HV
Power

passive
integration sensors

fluidics
lighting

Moore's Law

'More than Moore'

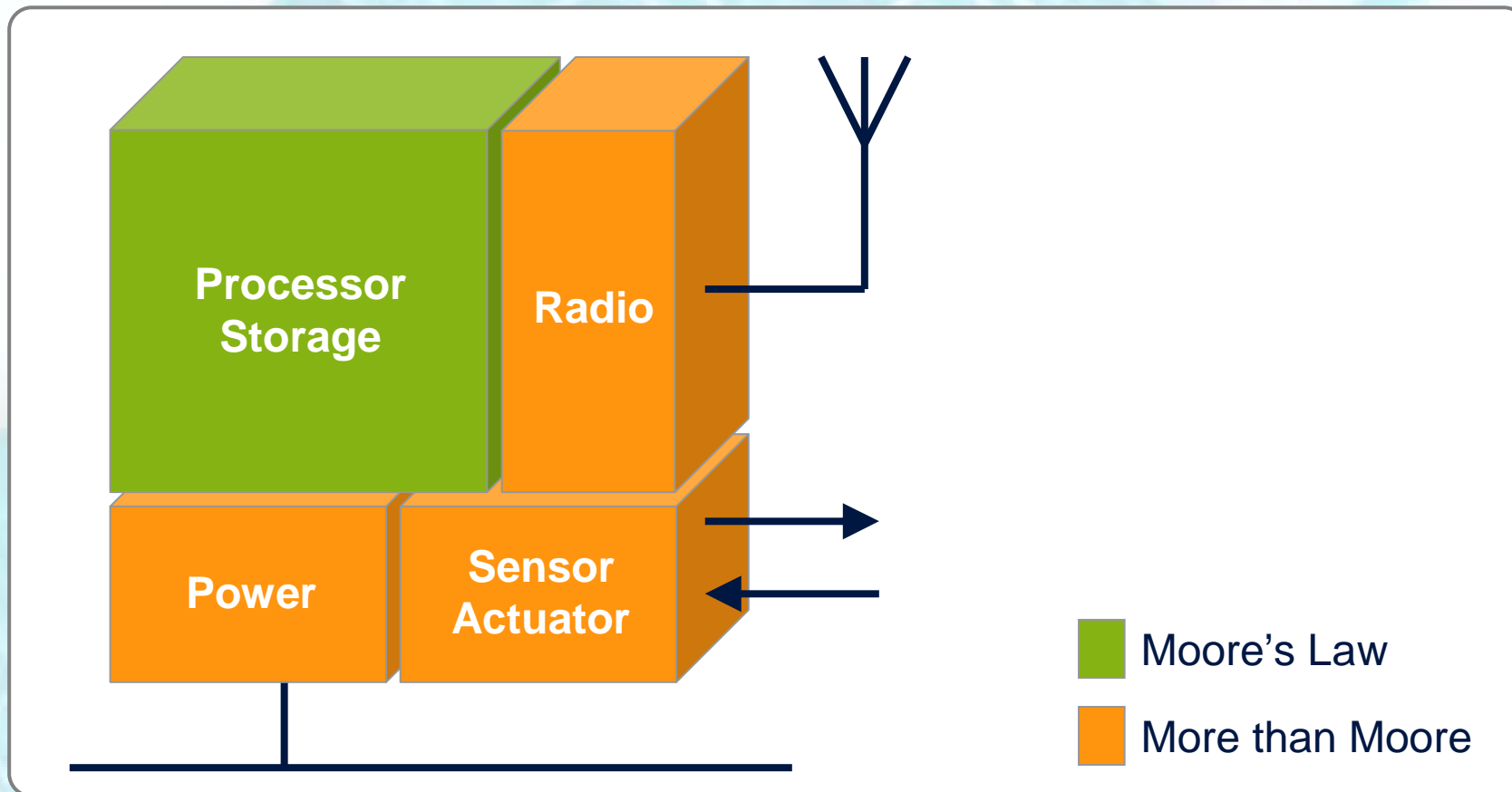
Compute

Interact with user and
environment

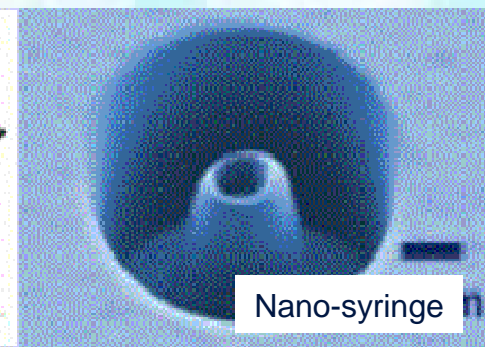
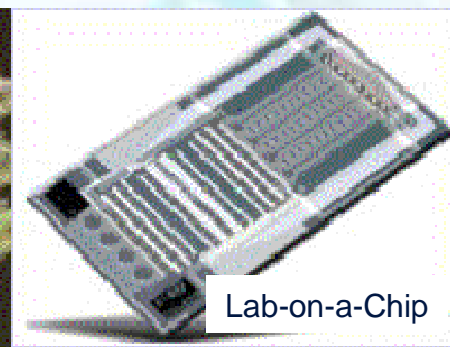
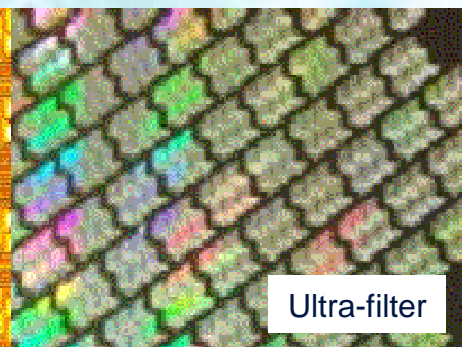
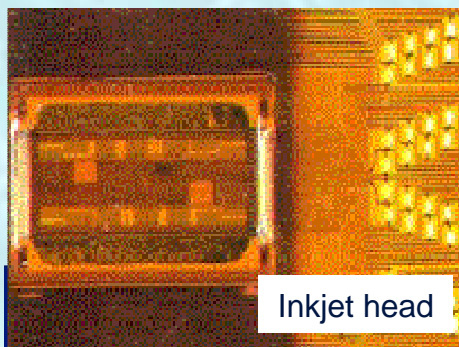
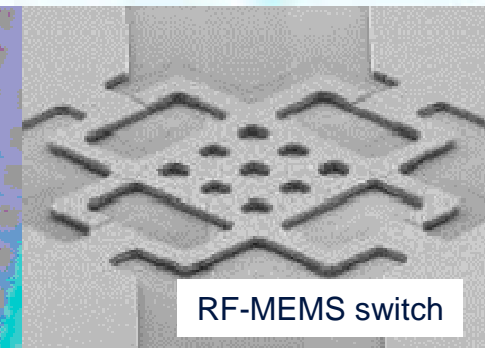
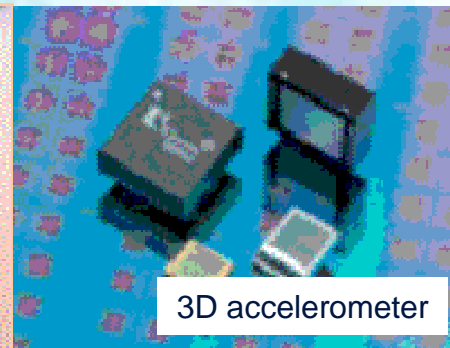
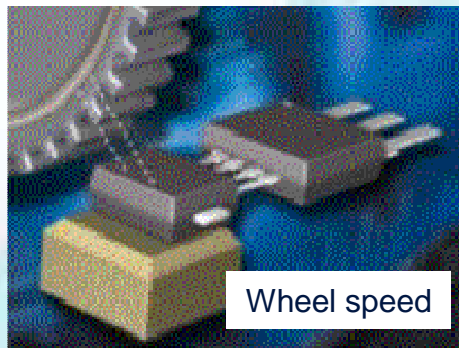
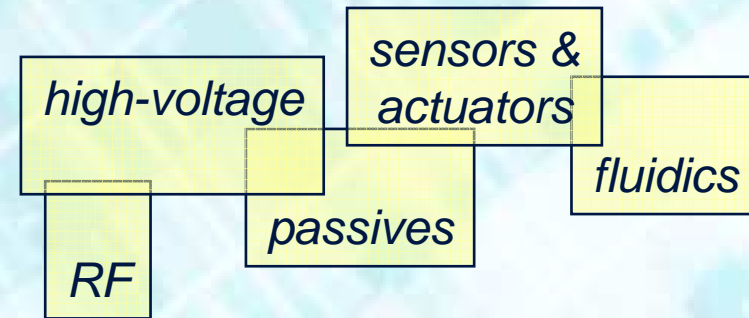
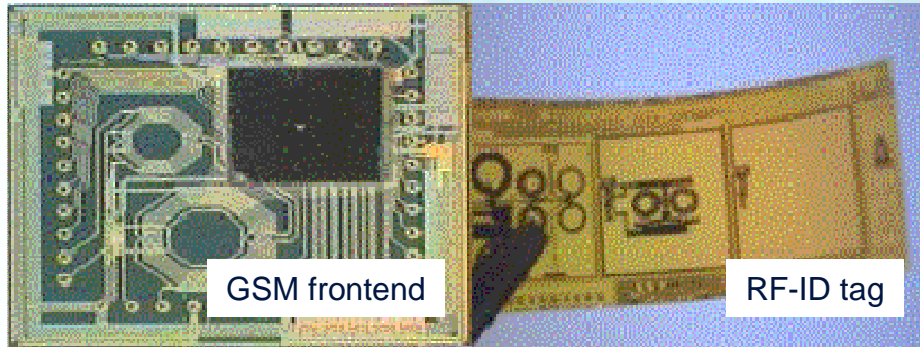
Digital content
Complex circuit (SoC)
Lots of software

Non-digital content
Complex packaging (SiP)
Lots of processes

Heterogeneous Integration: Moore's Law and 'More than Moore' combined



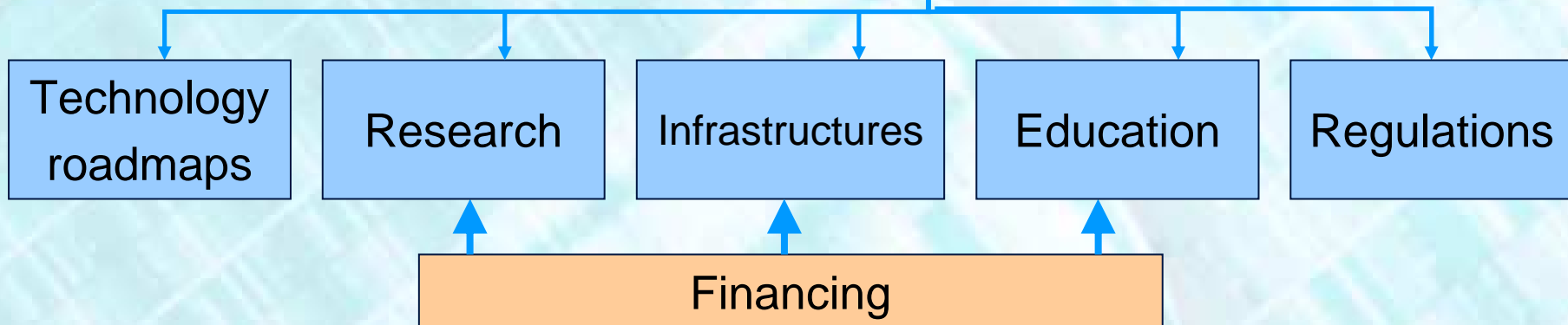
More than Moore examples



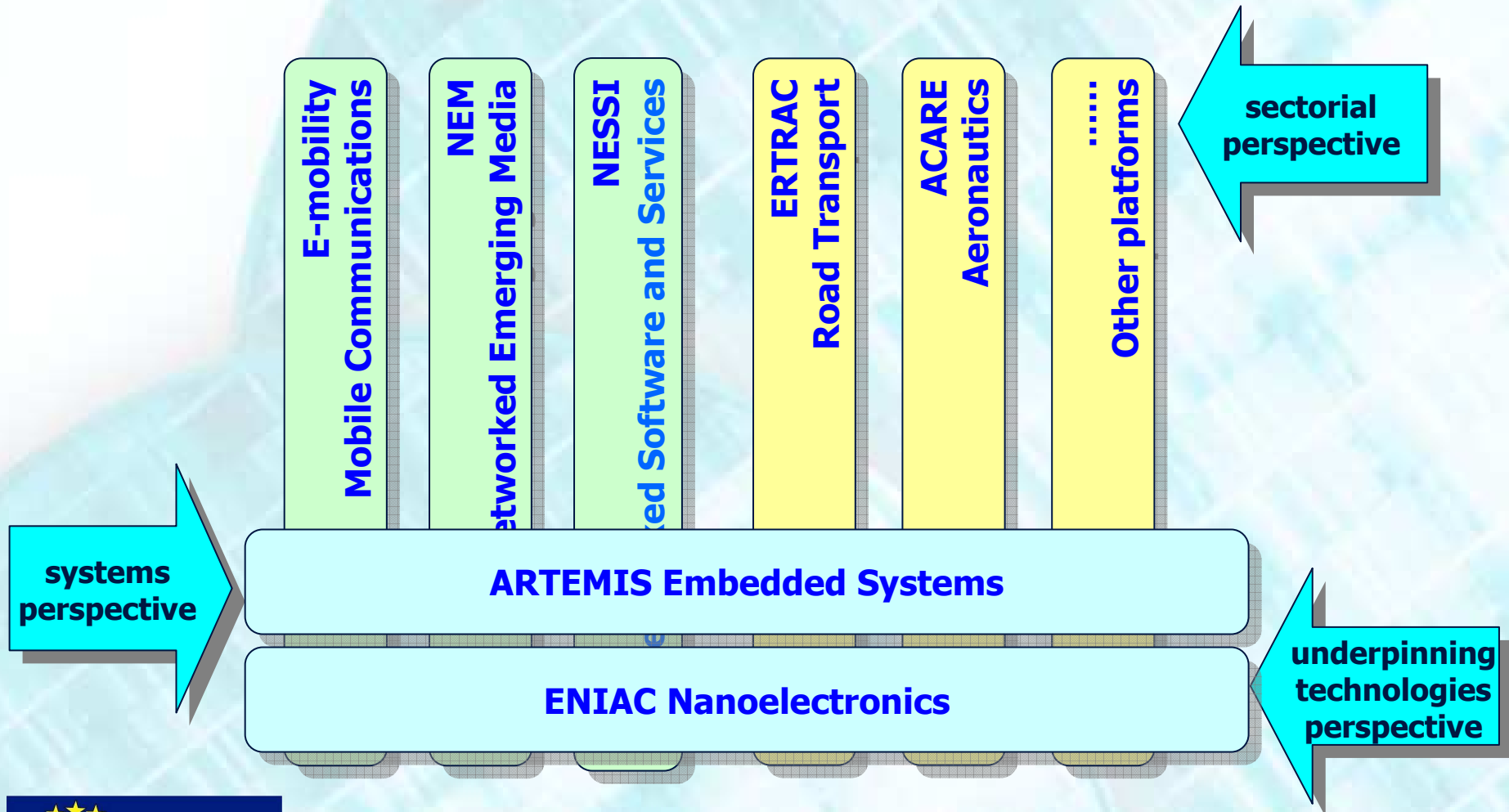
Strategic Research Agenda



Identification
of needs

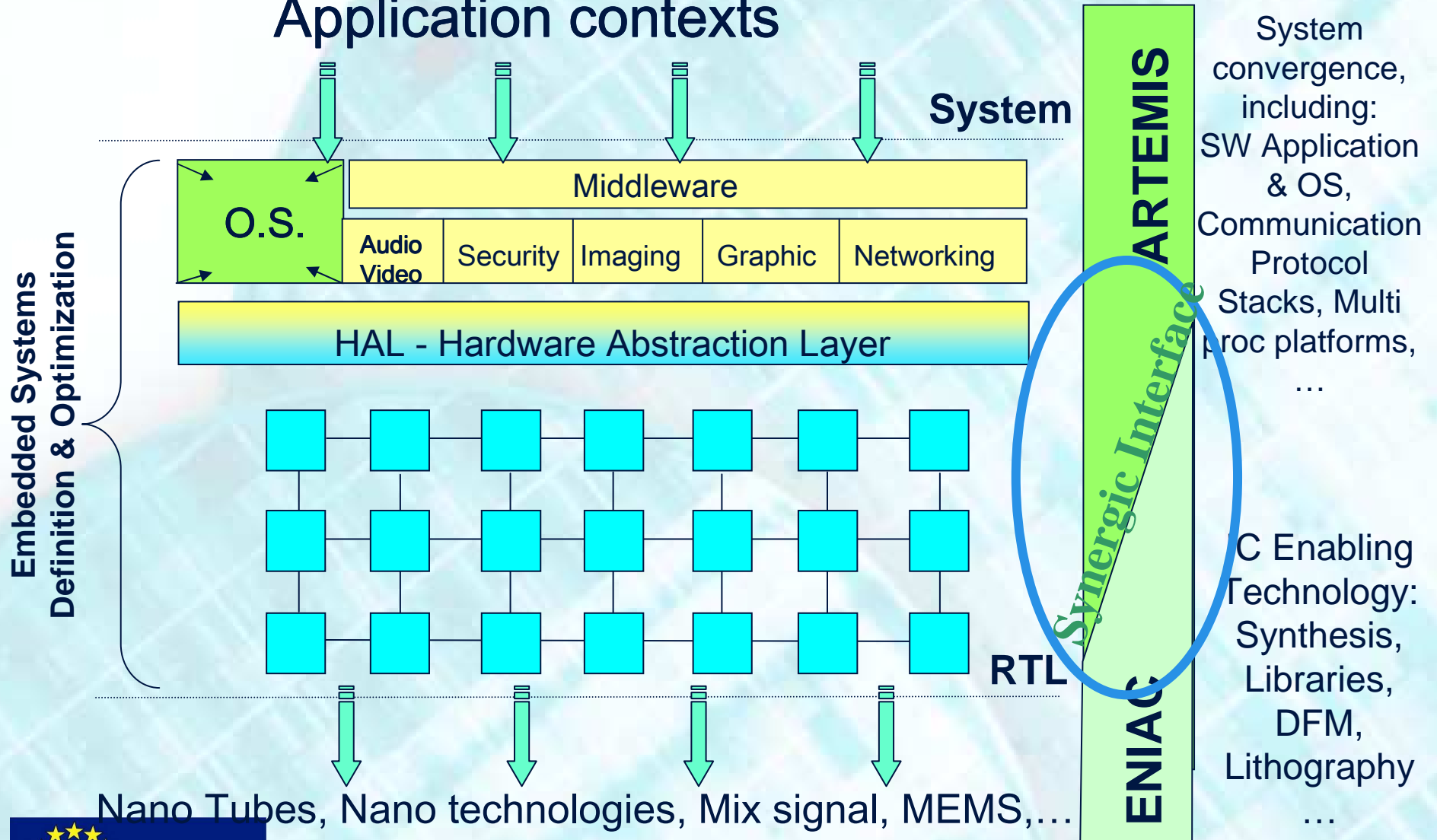


Coordination with other platforms

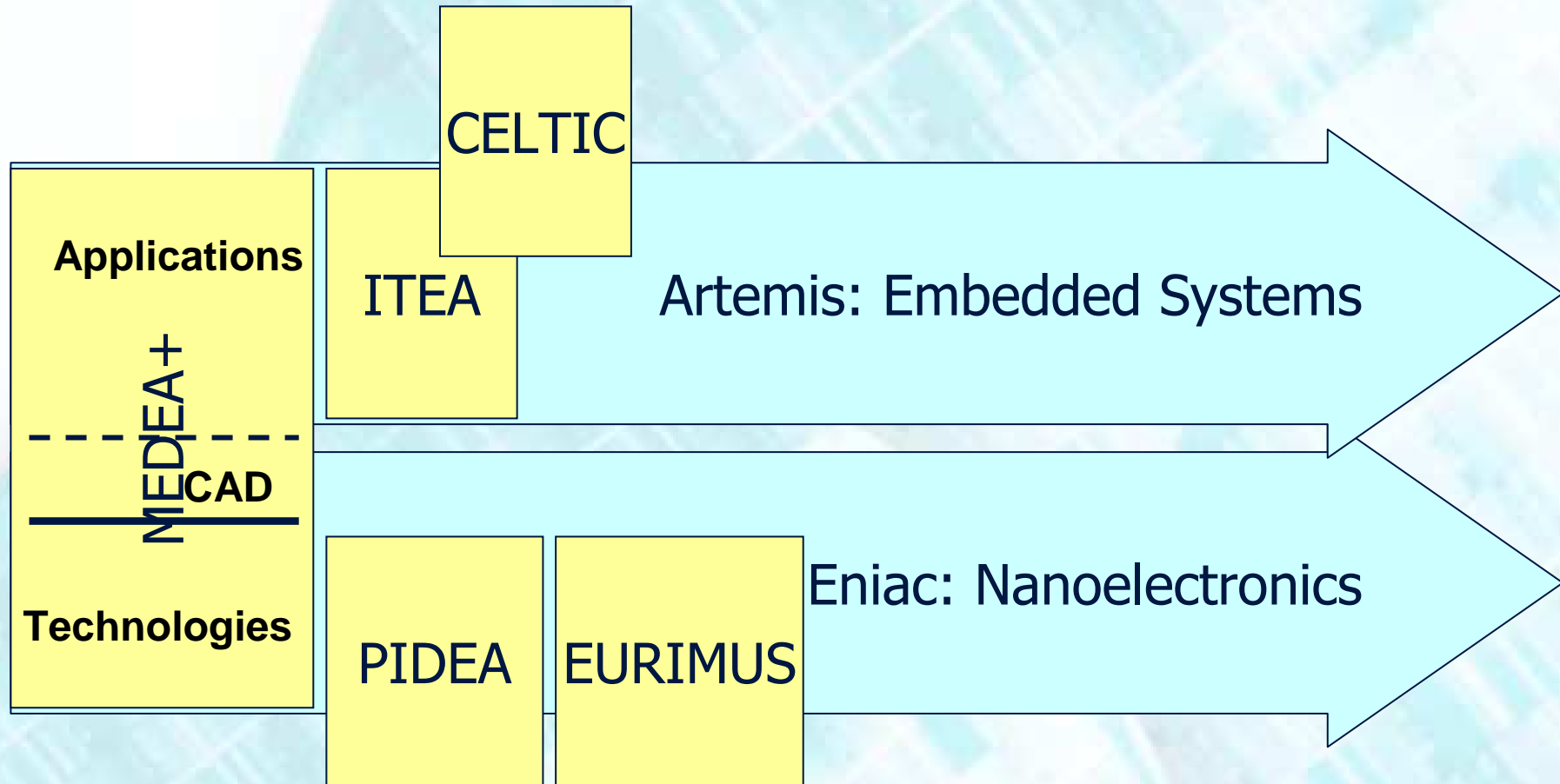


ARTEMIS and ENIAC

Application contexts



EUREKA (yellow) and European Technology Platforms (blue)



History of ENIAC

□ 2004

- Document “Vision 2020” released. June 29
- Kick-off of Steering Committee Dec. 21

□ 2005

- 1st meeting of Council of Scientific Community
March 8
- 1st meeting of Mirror Group
March 11
- 1st release of SRA Executive Summary April 27
- 1st meeting Forum of Stakeholders April 27
- Presentation of SRA at ESSDERC Sept. 16
- Steering Committee and Forum Nov. 23
- Release of SRA Nov. 23

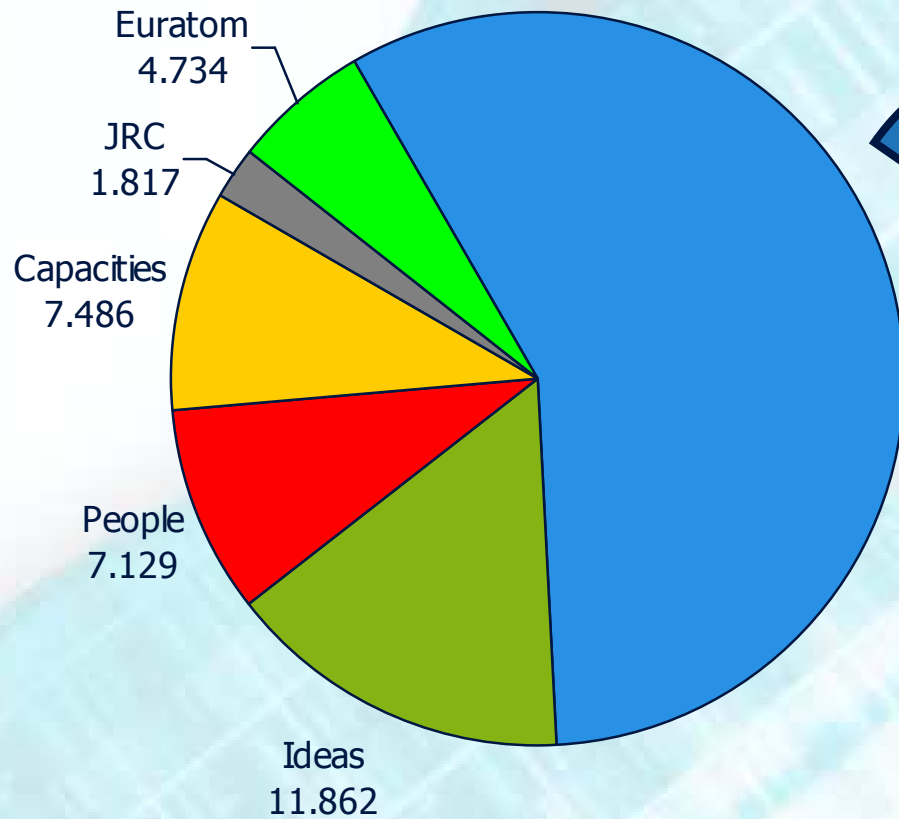
Next Steps

□ 2006

- Set-up the Office January
- Define content of JTI March
- Update SRA November
- Stabilize Council of Scientific Community
- Define Infrastructure needs
- Enlarge the participation

Planned FP7 budget

(€billion, current prices)



Cooperation
44.432

Collaborative research

Joint Technology Initiatives

NEW

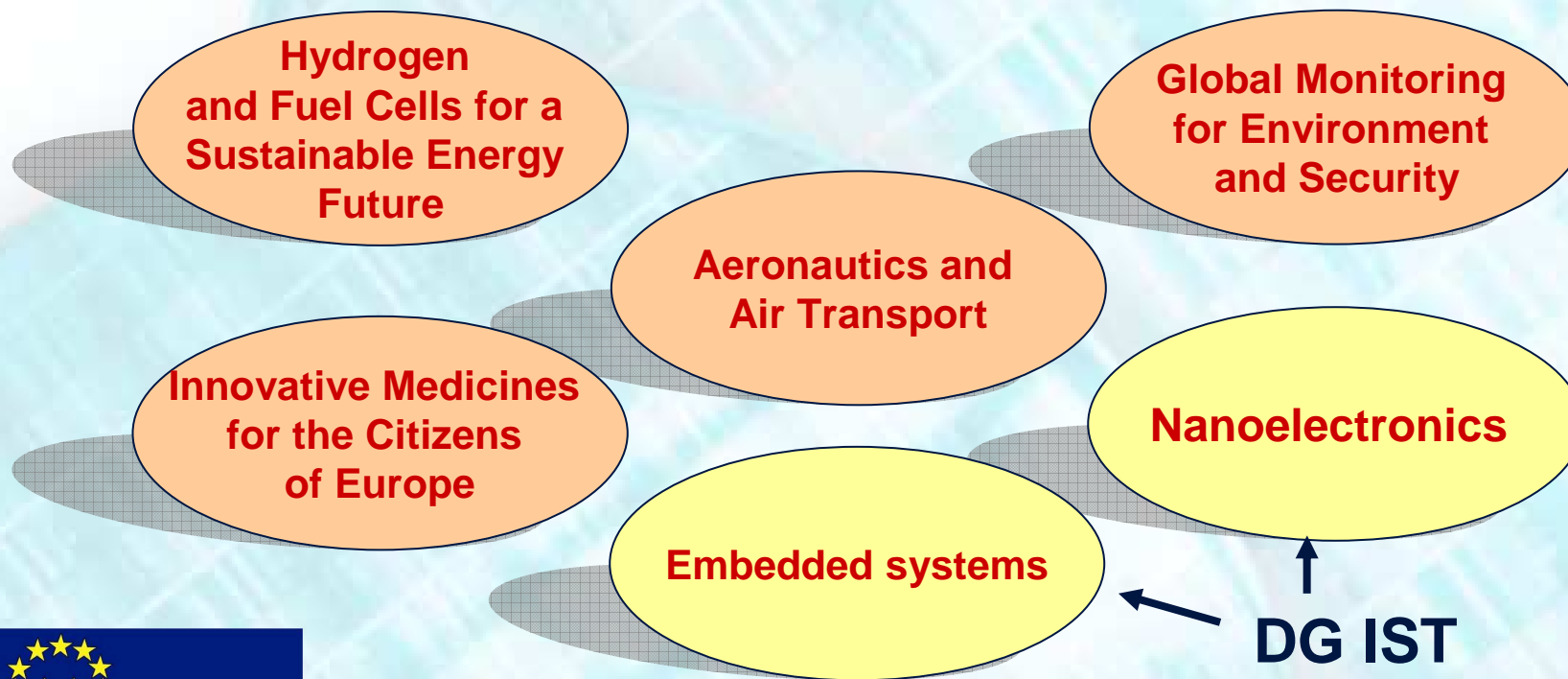
Coordination

International Cooperation

Joint Technology Initiatives

Research Programs:

- Focused on specific issues of the SRA
- Specific Budget;
- Managed by Comission and Industry Partners as a “Joint Undertaking”



Proposed ENIAC governance model

ENIAC ETP

Industry-driven long-term vision
Common pan-European SRA
Joint financing policy and impact assessment
Joint program allocation and monitoring
Overall coordination and policy alignment in ERA

Regular EU instruments

Focus on upstream part of SRA

FP7:

- Projects in ICT theme
- Frontier research via ERC
- Marie Curie actions
- Research infrastructures, SMEs

Structural funds:

- EIB loans, with FP7 risk sharing

Joint Technology Initiative

Cooperation in MEDEA-like program

Focus on downstream part of SRA

Durable industry-led PPP

Ecosystem for Open Innovation

In kind industry commitment:

- RTD staff, governance, operation
- Coordinated national and EU funding for participants via common legal structure of Public Authorities

National programs

incl EUREKA clusters

