European Nanoelectronics Initiative Advisory Council

ENIAC and AENEAS – from the European Technology Platform to the Joint Technology Initiative

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Outline of Presentation

- What is ENIAC
- Organization and governance
- AENEAS
- Financing
- SMEs in ENIAC
- Strategic Research Agenda
- Examples

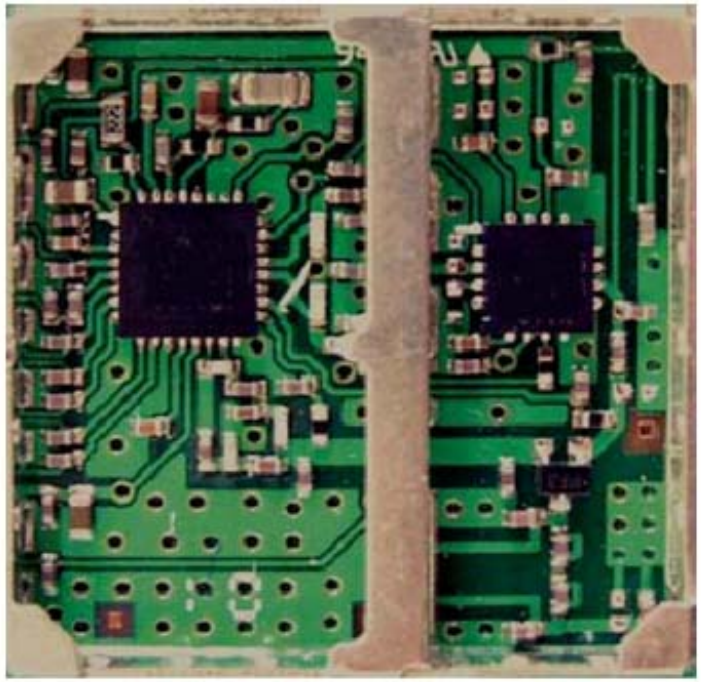
ENIAC: the European Technology Platform for Nanoelectronics

- Large Scale applied research initiative
  mobilizing all European efforts
  in this technology intensive sector
  - Triggered by the Lisbon 2000 agenda objectives
  - Promoting a long term research strategy
  - Integrating all factors needed for final success
    - Research, infrastructures, education, regulations, industrial exploitation, financing
  - Combing public and private resources

- "Make the 2020 Information Society technologically feasible and economically affordable"

ENIAC is about system miniaturization

- More functions per system, less cost per function



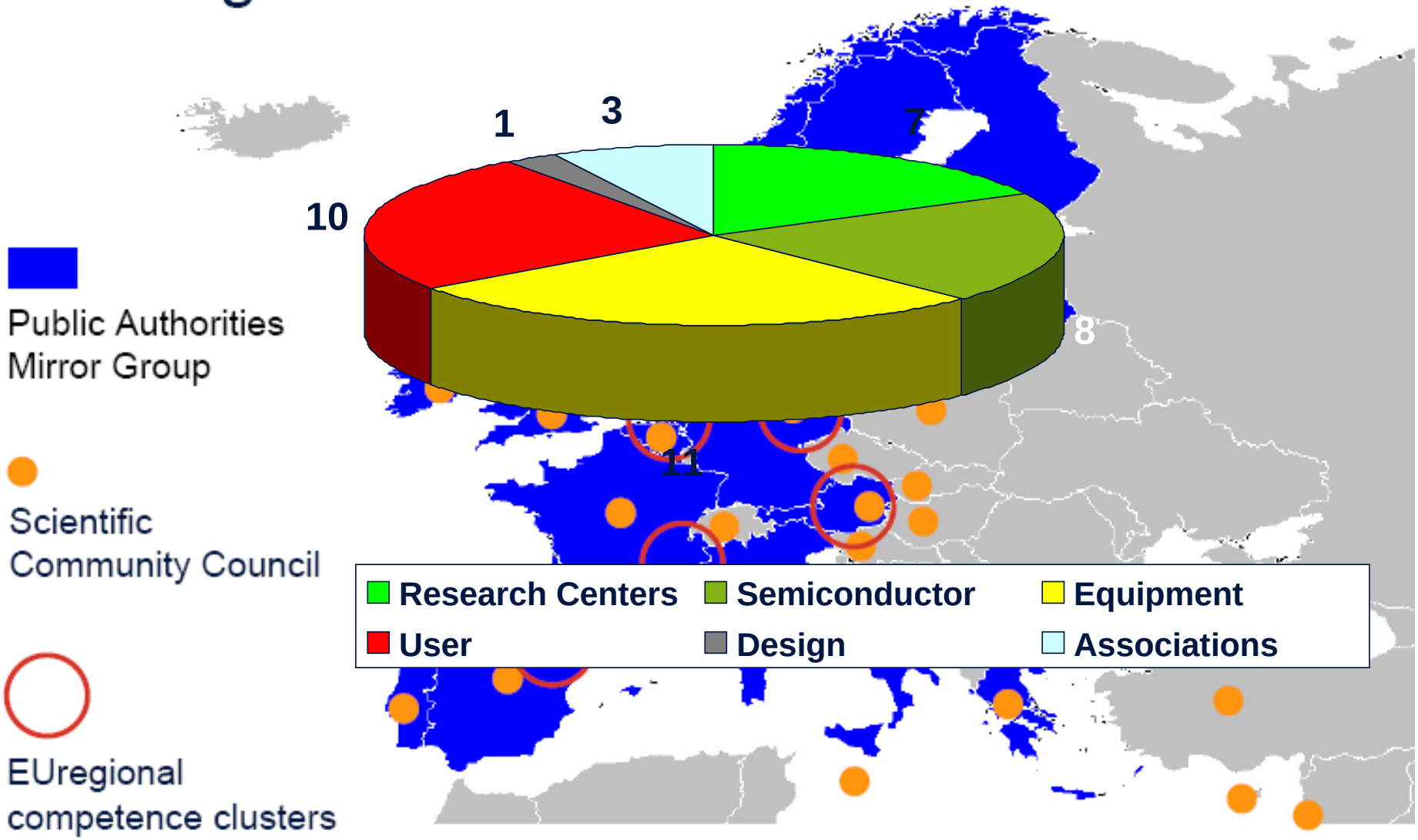
Area x 1/100 in 15-20 years!

Micro ➡ Nano

ENIAC strategic objective: preparing for the European nanoelectronics future

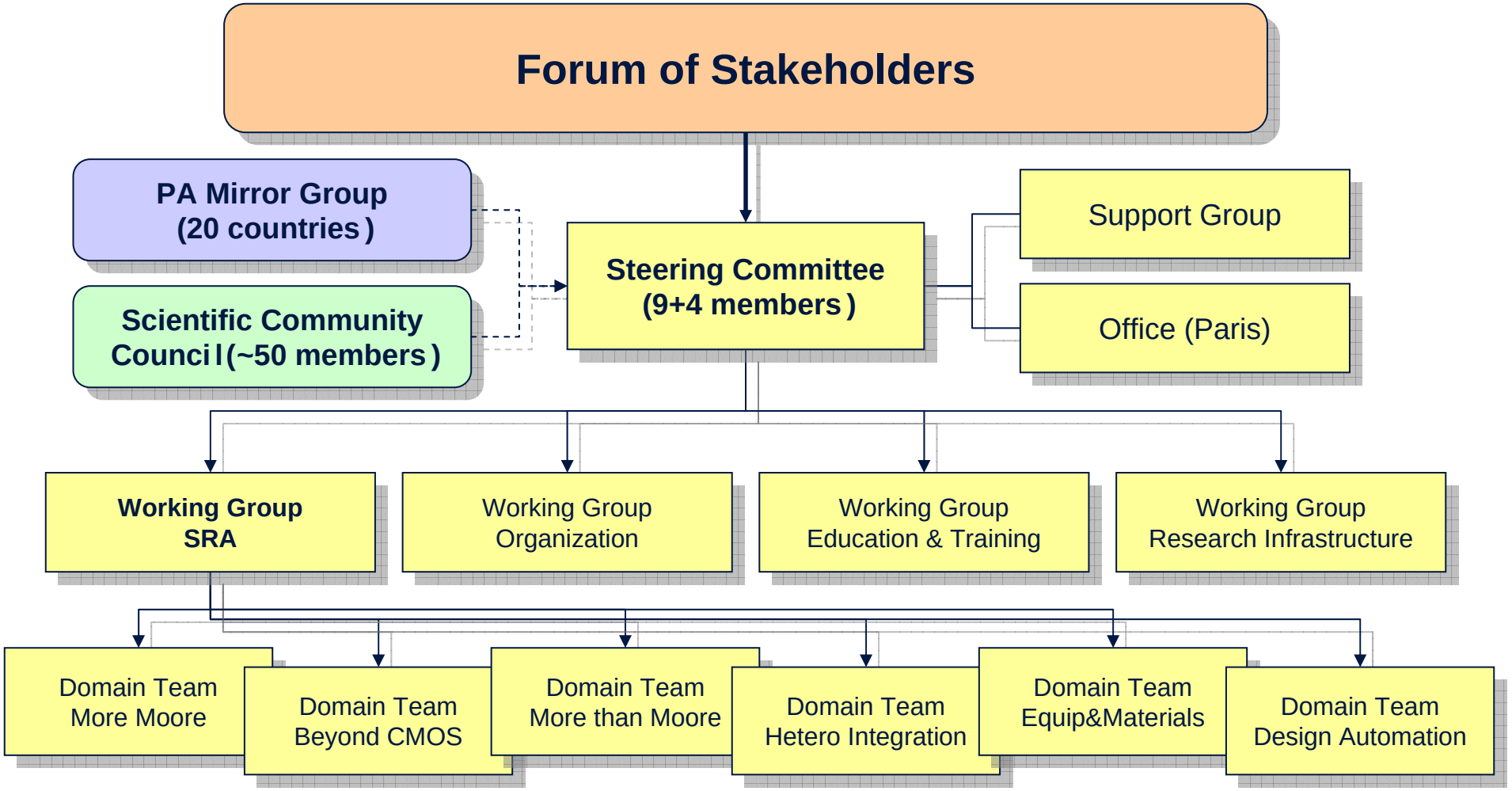
- Serve the European Semiconductor value chain
  - Include suppliers, producers and users
- Connect and strengthen European high-quality competencies
  - Enabling critical knowledge, including SMEs
- Identify disruptive technologies to solve blocking points
  - Guided by SRA Domain Teams
- Focus on research leading to industrial innovation
- Enhance cooperation between industry and academia
  - Strong R&D ecosystems in each sub-domain

Industry, academia, and public authorities must work together

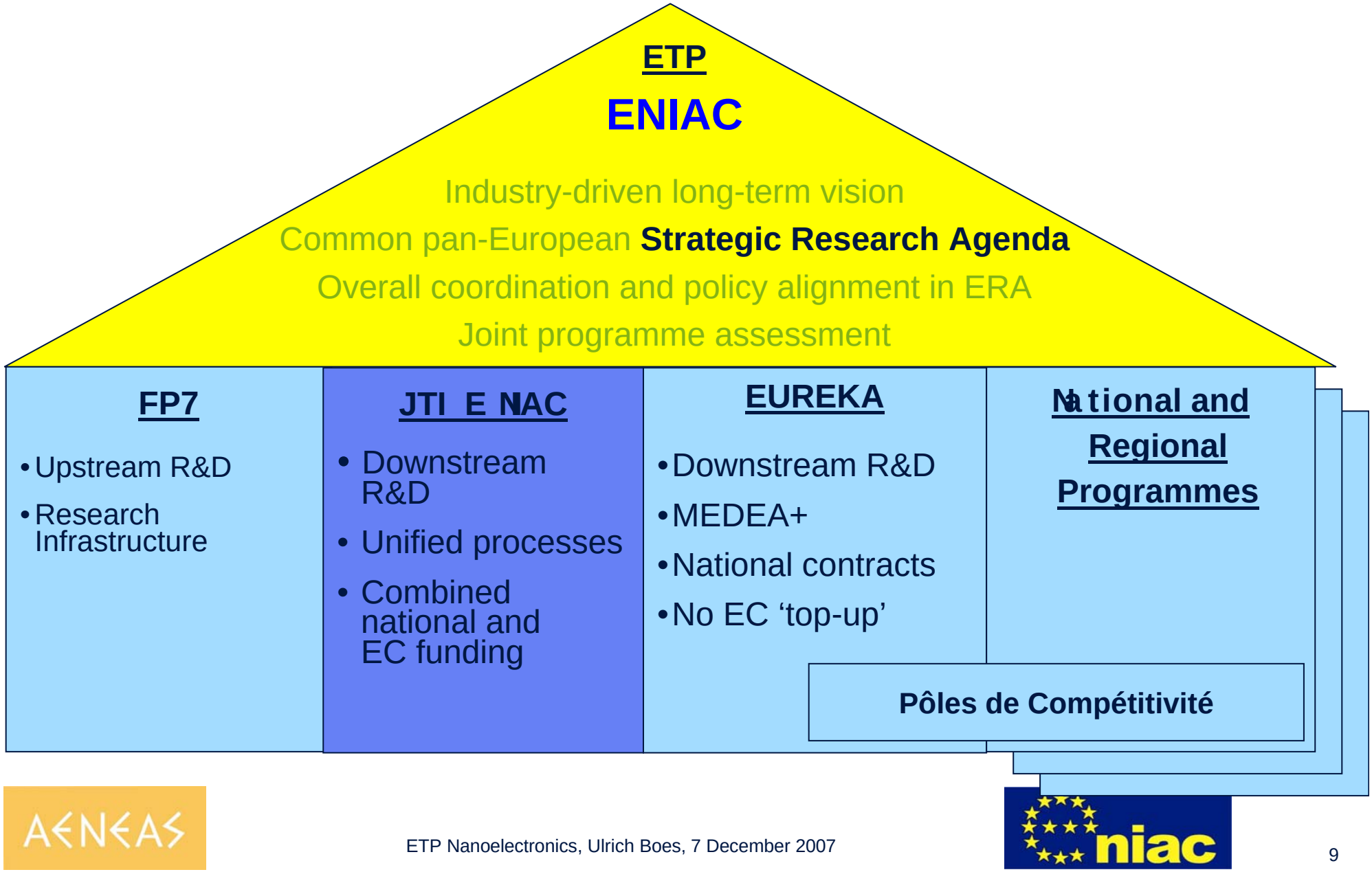


ENIAC - Partnership

The ENIAC Organization



Increased cooperation towards the European research area ….



Names and definitions

- **ENIAC** (European NanoElectronics Initiative Advisory Council) is the name for the **European Technology Platform (ETP).**
- It has been chosen by the Commission as the name for the upcoming **Joint Undertaking** implementing a **Joint Technology Initiative (JTI)**
- **AENEAS** (Association for European NanoElectronics ActivitieS) is the name of the Association, which will participate in managing the **JTI**.
- It is registered in France as non-profit organization under the French law (see Articles of Association and Supplementary Agreement).

Description of tasks

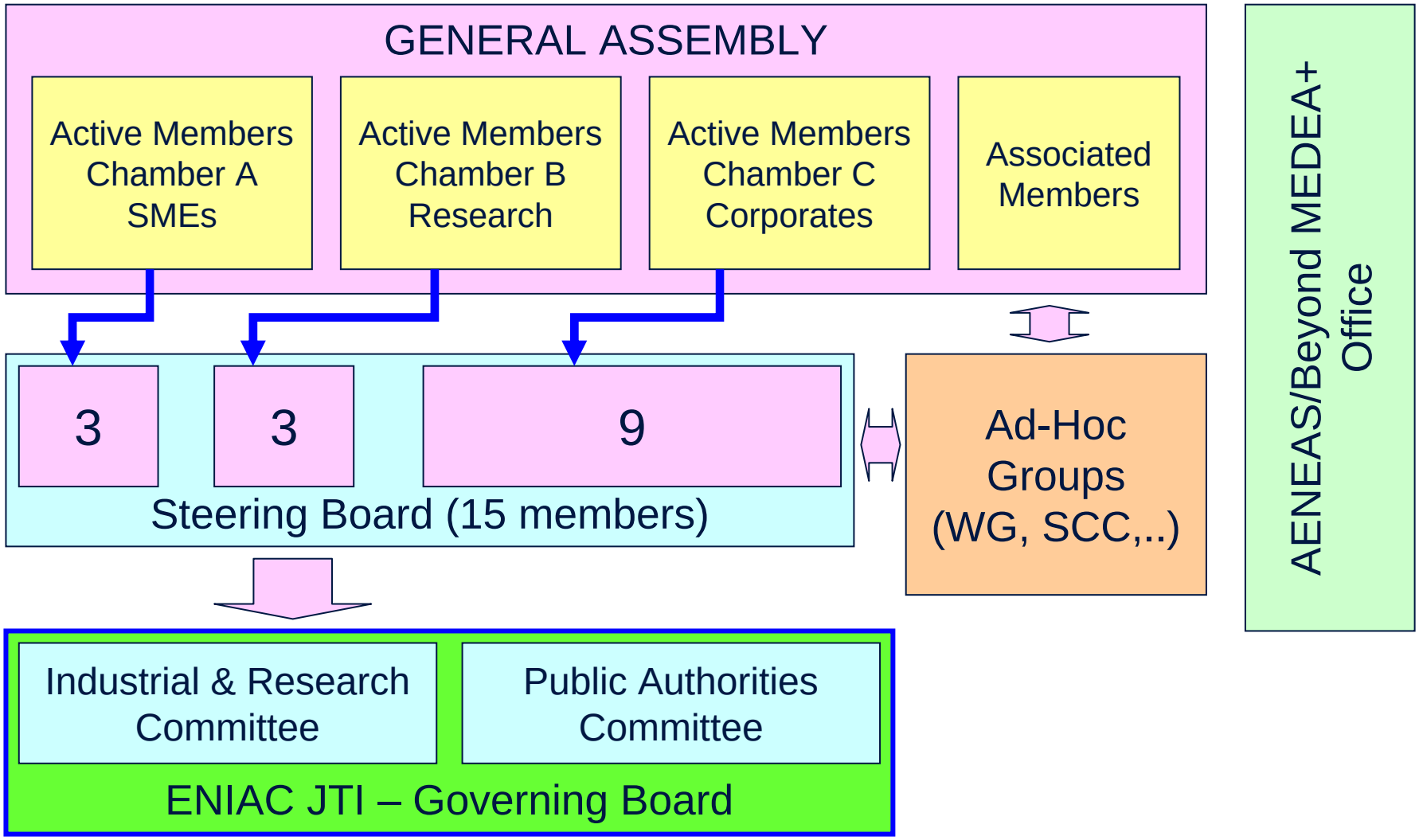
- Tasks of the **ENIAC ETP**:
  - 'think tank' for nanoelectronics in Europe (SRA)
- Tasks of the **ENIAC JTI**:
  - Selection and monitoring of execution of R&D projects in the nanoelectronics domain
  - Animation and dissemination
- Tasks of the **AENEAS Association**:
  - Representation of Industry in the JU (via the Industry & Research Board)
  - cover JTI operations cost
  - Take over any ENIAC ETP responsibilities requiring a legal structure

The AENEAS industrial association

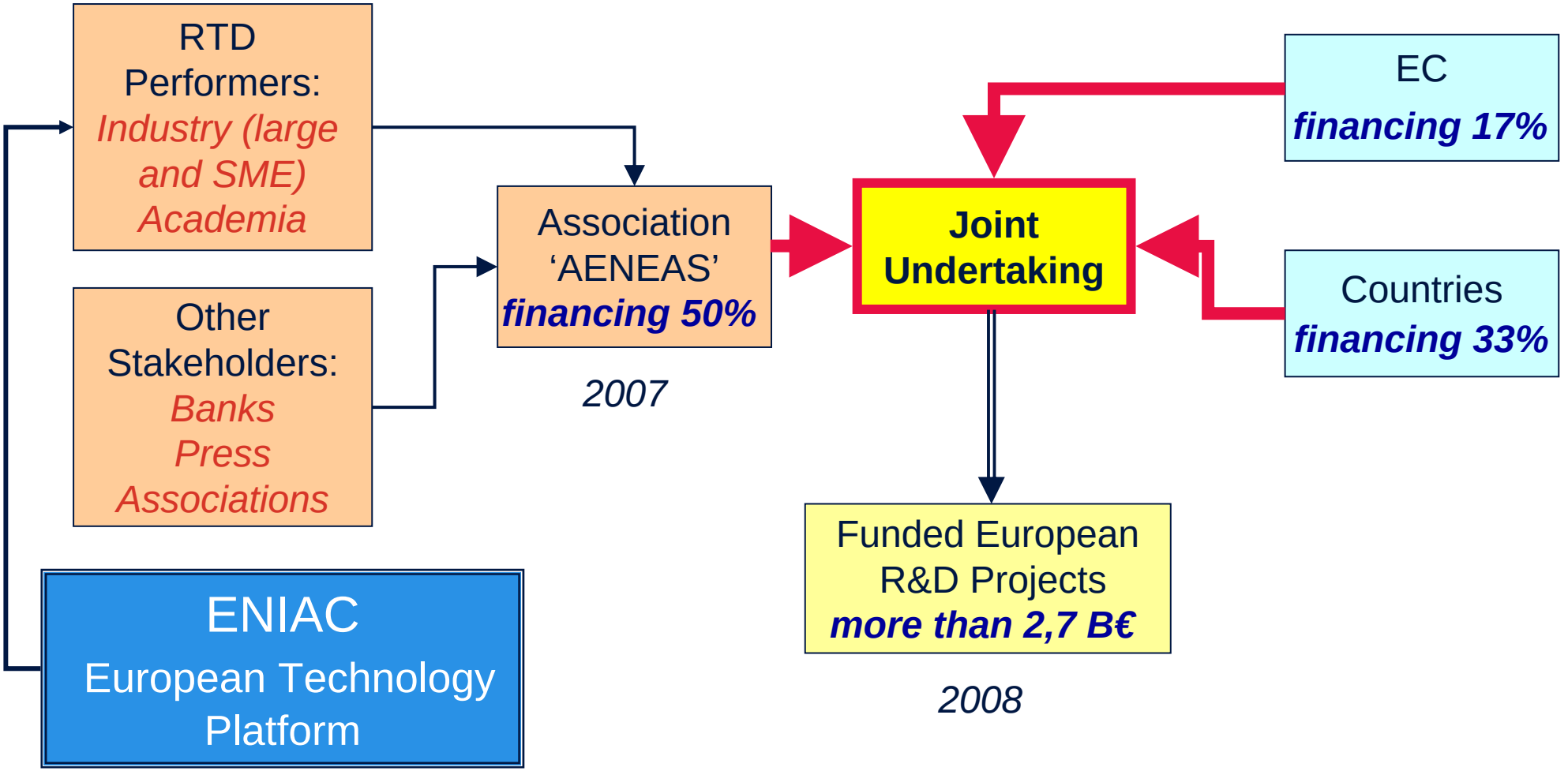
- AENEAS is a non-profit organization under the French law. It forms the legal structure of ENIAC and allows the participation in the PPP (JTI)
- Initial signing partners are industrial members of ENIAC Steering Committee:


- Association is open to ALL stakeholders in Nanoelectronics:
  - Large corporations
  - SMEs
  - Research Organizations, universities
  - Pôles de Compétitivité, national platforms, industry organizations, …
- SMEs will have three seats in the Steering Board
- See General Assembly, Stuttgart, 9 October

AENEAS Governance structure



The new funding and co-operation instrument is the *Joint Technology Initiative* – a trilateral contract, based on the Association AENEAS



Proposed ENIAC R&D effort sharing

Includes operational costs of research infrastructures and pilots

	2005		2015	
	Private	Public	Private	Public
Advanced research	80	175	140	420
Technology integration	490	325	780	780
Application development	1980	0	3390	0
Prototyping	850	0	1290	0
Million Euro per year	**3400**	**500**	**5600**	**1200**

Public-private ratio needs to increase considerably, e.g., to advanced research 75/25, technology integration 50/50

AENEAS Chamber A (SMEs) – Active Members

AIXUV GmbH	Rainer Lebert
AMO GmbH	Heinrich Kurz (Speaker)
Boschman Technologies B.V.	Frank Boschman
DAS GmbH	Horst Reichardt
HAP GmbH Dresden	Steffen Pollack
MEMsstar Technologies	Mike Leavy
Ortner Group	Heinz Martin Esser
Rood Technology Deutschland GmbH + Co	Thorsten Bucksch
Vistec Electron Beam GmbH	Mr Wolfang Dorl

SMEs: The ENIAC/AENEAS approach

- Participation of single SMEs in ENIAC/AENEAS activity could be too expensive both in terms of financial commitment and in time
- Associations among SMEs having similar interest can help to reduce costs and increase impact
- Three major approaches:
  - through existing support actions (e.g. EPISTEP);
  - through associations with specific interests (e.g. SEMI-Europe, member of ENIAC Forum and of AENEAS);
  - through National Platforms
- A “drop-box” on ENIAC web node (www.eniac.eu), to allow SMEs to insert their profiles for partnering in projects –

  See also http://www.eniac.eu/web/documents/ENIACInterest.php

Contact with ENIAC

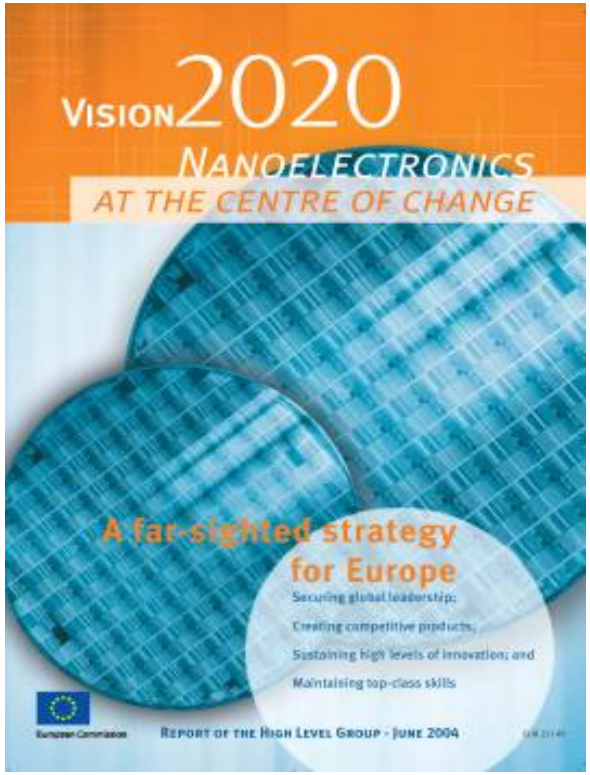
If you are interested to actively participate in ENIAC:

- Expression of Interest
- Consulting and involvement with EPISTEP
- Contacts via national ENIAC members of government mirror groups
- Information from newsletters of the web sites: http://www.eniac.eu

Values and Opportunities

- Formal participation in ENIAC
- Contacts to large enterprises
- Build a contact network
- Participation in FP7 programmes
- Influence work plan and calls for proposals of FP7
- Influence new standards and products

From a Vision …
to a Strategic Research Agenda

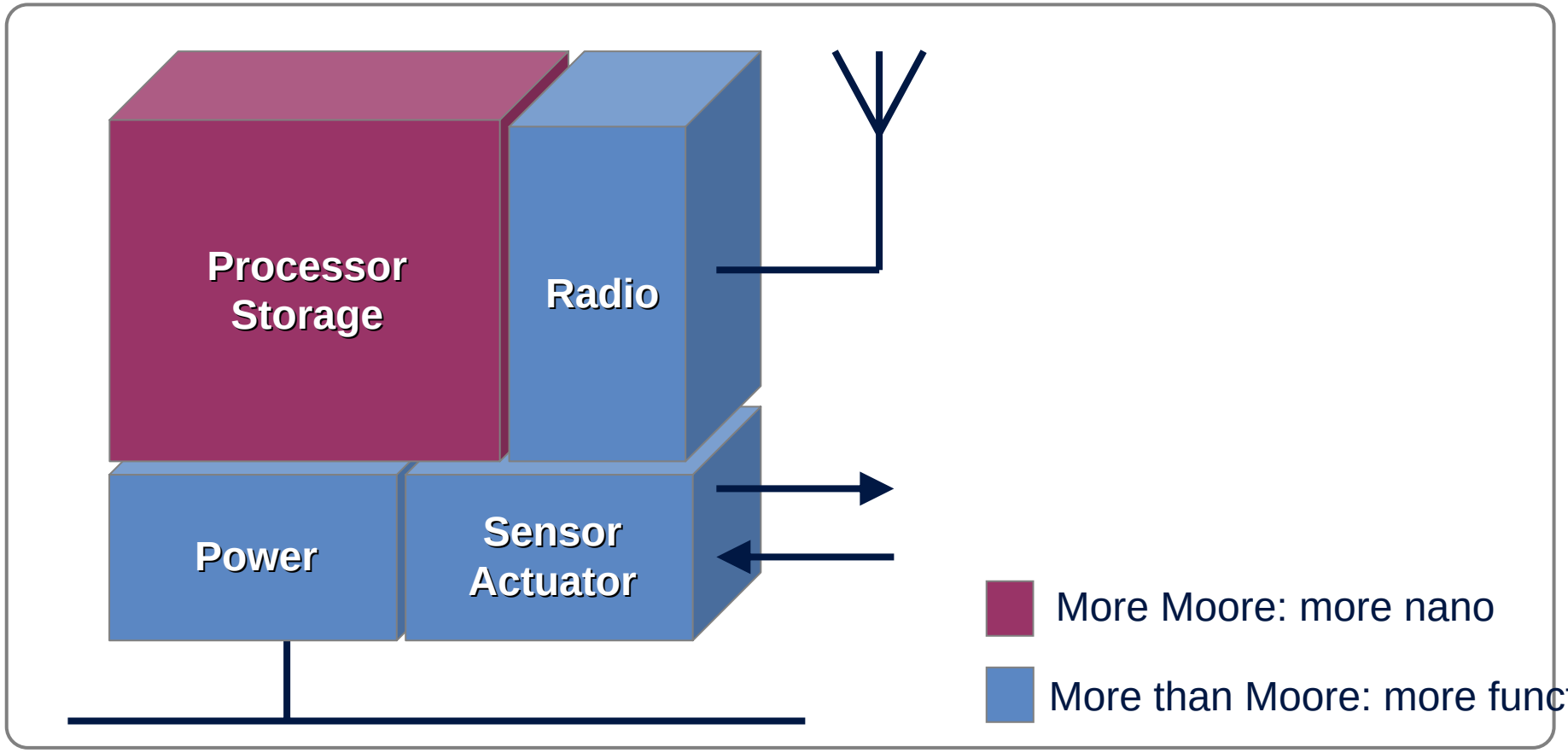


June 2004

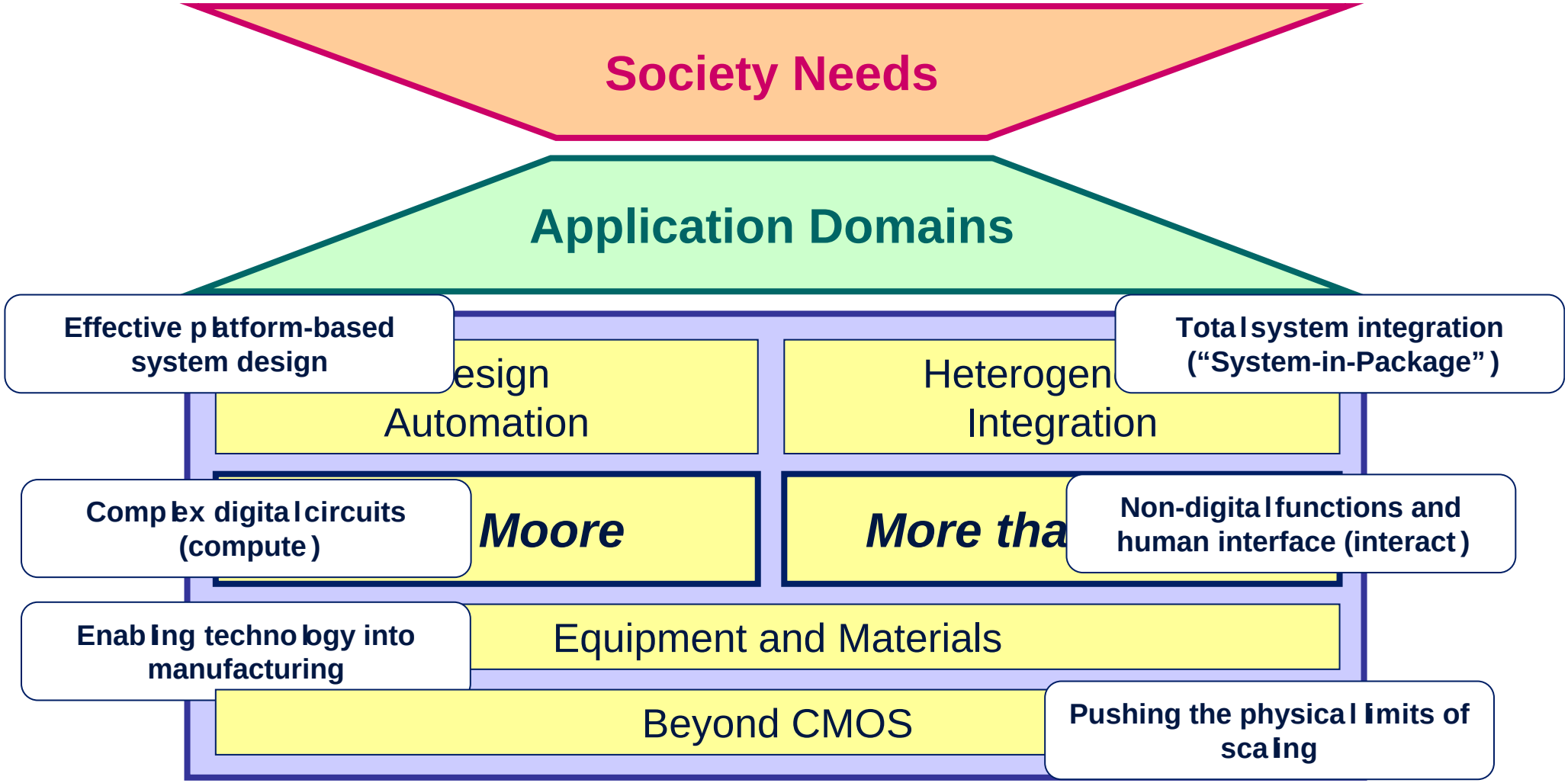
November 2005

November 2006

Intelligent systems need Moore's Law, but they also need more …



The ENIAC SRA domains are application driven



SRA: Outline Full Edition
http://www.eniac.eu/web/SRA/SRA2006.pdf

- The ENIAC Vision
  - Benefits for Europe
- Society needs drive applications
  - Health, Mobility and Transport, Security and Safety, Communication, Education and Entertainment
- Applications specify technologies
  - More MOORE, Beyond CMOS, More than MOORE, Heterogeneous Integration, Design Automation, Equipment and Materials
- Research Infrastructures
- Science and Education
- Making it happen
  - Structuring Research, fostering transnational cooperation

Example – Communication

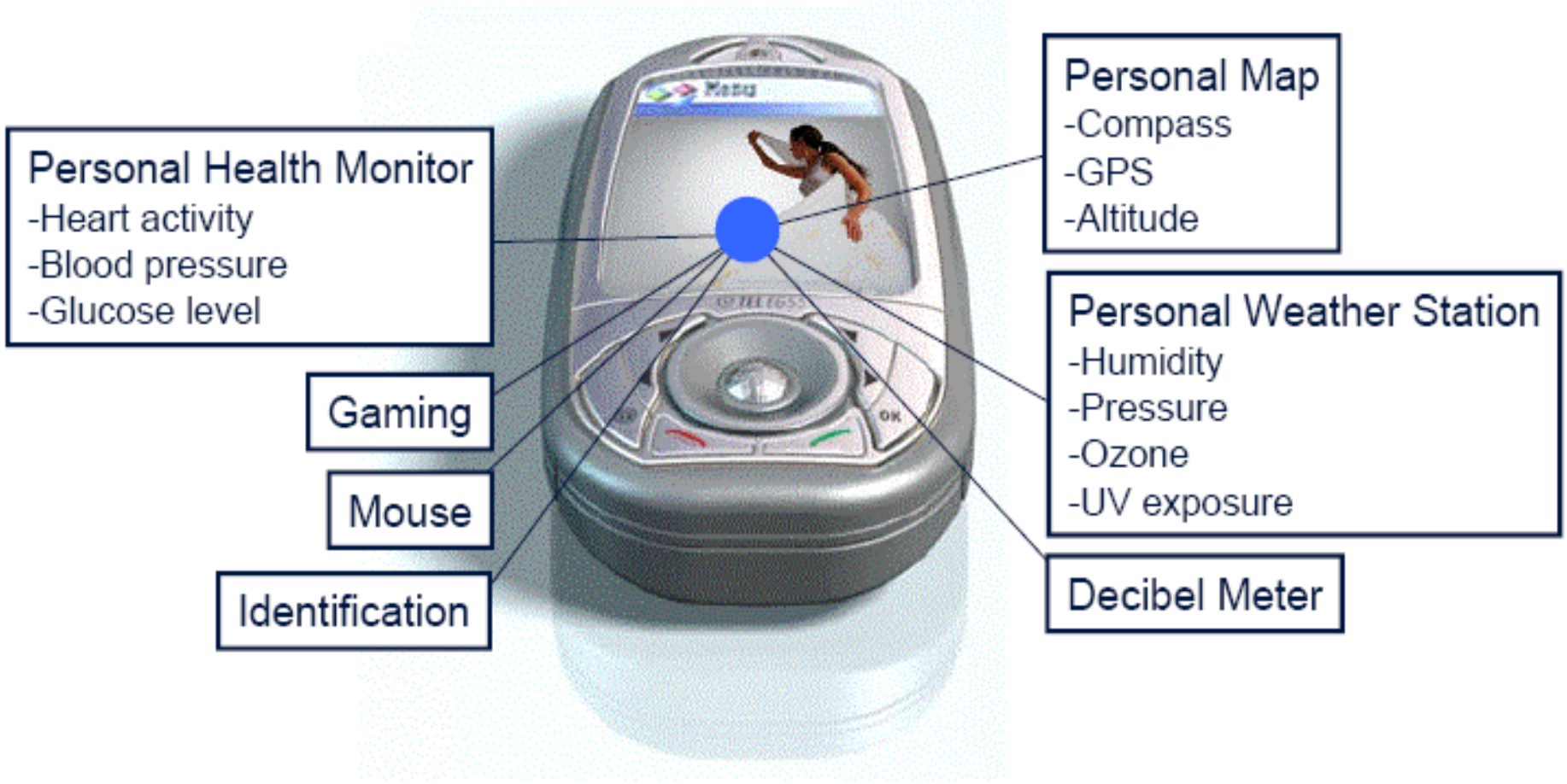
Society Needs

- Availability anywhere any time
- Easy to use
- Safety (personal data security)
- High-perform data transfer
- Multi-functionality

Translation into technical terms

- Miniaturization
- Low power
- High data rate / band width
- Function integration
  - Electrical / optical signals
  - Sensors / MEMS
  - Integrated energy supply
  - Display / sound / touch
- Energy scavenging
- Flexible
- Low cost

Intelligence applied: personal comfort



Example – Health

Society Needs

- Tele-medicine / monitoring
- Diagnostics (in / ex vivo)
- Innovative operation
  - Automation, min invasive
- Therapy (in vivo)
- Prosthetic (in / ex vivo)

Translation into technical terms

- Tough environment
  - Humidity / fluids
  - Thermal load (implants)
  - Bio-compatibility
- Function integration
  - Bio sensors/ actuators
  - MEMS / mechatronics
  - Optoelectronics
  - Energy supply / scavenging
  - RF interface
- High reliability
  - EMC
  - Ultra low failure

Time Table for JTI

- September 3: proposal to Council
- September 27-28: discussion at Council
- November 22-23: approval by Council
- November 20-21: high-level event under Portuguese presidency (Braga, Portugal)
- November 28: ENIAC Forum, Budapest
  - The ENIAC FORUM 2007 focused on:
    - the first complete revision of the ENIAC Strategic Research Agenda + version 2007,
    - the expected ENIAC JTI,
    - the role of Small and Medium Enterprises in the European industrial scenario.
- **First call: Q1 2008**

Thank you for your attention!

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