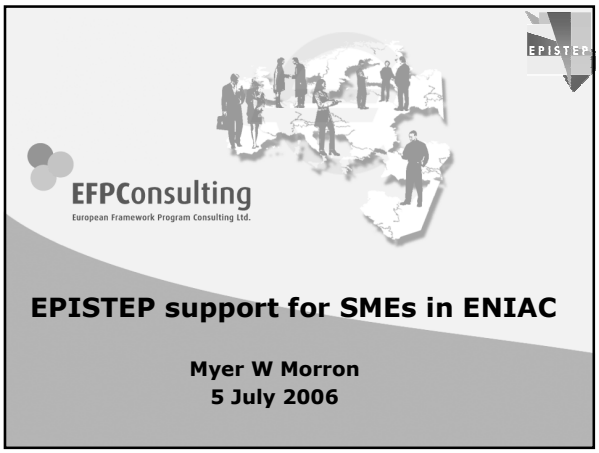

EPISTEP support for SMEs in ENIAC

Myer W Morron
5 July 2006

Outline

- Framework Program 7 R&D Funding
- Overview of ICT ETPs
- ENIAC Background
- ENIAC Strategic Research Agenda
- Why it is important
- EPISTEP
- EPISTEP available support
- ENIAC Strategic Research Agenda
- Further information

Framework Program 7 R&D Funding

Intention here is to dispel myths up front and give you a brief overview

Myths:

1. Participation is to gain funding **NO!**
2. You can lose your IP or have to share it **NO!**
3. You have to provide matching funding **NO!**
4. Participation forbidden by Chief Scientist **NO!**
5. Everyone has to do research **NO!**

Overview 2

Reasons to participate:

1. All business based
2. Collaborate with future partners
3. Collaborate with future customers
4. Enhance company to investors
5. Gain business/marketing intelligence
6. Influence standards/regulation
7. Increase market credibility/exposure

Overview 3

Basic facts about the Program:

1. Funding is all a grant
2. Should be positive cash flow most of project
3. You own the results
4. Excellent leverage on resources
5. No restrictions on exploitation
6. Israeli participants have full rights
7. Largest civil R&D program in the world
8. ICT funding approx 1.5 Billion Euros per year

Overview of ICT ETPs 1

What is an ICT European Technology Platform?

- Provide a framework for stakeholders, led by industry, to define research and development priorities
- Play a key role in ensuring an adequate focus of research funding on areas with a high degree of industrial relevance. As such, they are proving to be powerful actors in the development of European research policy, in particular in orienting the Seventh Research Framework Program to meet the needs of industry.
- Address technological challenges and new technological breakthroughs necessary to remain at the leading edge in high technology sectors and the restructuring of traditional industrial sectors.

Overview of ICT ETPs 2

There are currently nine in ICT out of 31

1. **Mobile Communications (e-Mobility)**
2. **Embedded Systems (ARTEMIS)**
3. **Nano-electronics (ENIAC)**

4. *European Initiative on Networked & Electronic Media (NEM)*
5. *Networked European Software & Services Initiative (NESSI)*
6. *The European Robotics Platform (EUROP)*
7. *The Photonics Technology Platform (Photonics21)*
8. *Integral Satcom Initiative (ISI)*
9. *European Technology Platform on Smart Systems Integration (EPoSS)*

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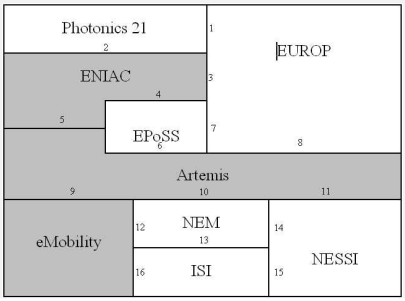
Overview of ICT ETPs 3

Interfaces between the ICT ETPs



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Overview of ICT ETPs 4

In addition there are several other non-ICT platforms related to Nanotechnology

- NanoMedicine - Nanotechnologies for Medical Applications
- EuMaT - European Technology Platform for Advanced Engineering Materials and Technologies

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ENIAC Background 1

ENIAC was set-up in 2003/2004 by the following major players in conjunction with the Commission:

Industry :

- Aixtron, AMD, ARM, ASML, Ericsson, IBM, Infineon, Motorola, Nokia, Philips, STMicroelectronics, Thales, Unaxis

Research organisations :

- CEA/LETI, CNRS, CSEM, Fraunhofer, IMEC, NMRC, VTT

Other :

- EIB, MEDEA+

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ENIAC Background 2

The principle **mission** of ENIAC was to:

- Provide a **strategic research agenda** to achieve the 2020 vision
- Set out **strategies and roadmaps** to implement the SRA
- **Stimulate** increased and more effective public and private R&D **investment**
- Contribute to the **convergence** between public and private **R&D actions**
- Enhance **networking and clustering** of the R&D capacity in Europe
- Promote Europe as an **attractive location** for researchers
- Interact with **other policies** and actors that influence **competitiveness**

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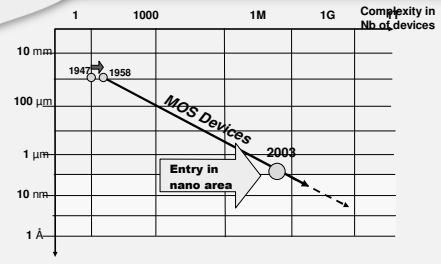
The great Challenge



Nanoelectronics:
nanoscale structures + Gigabit complexity

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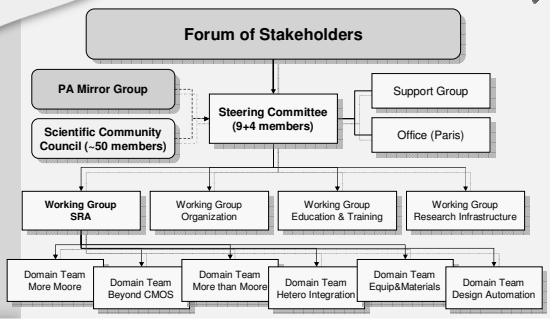
The ENIAC Organization



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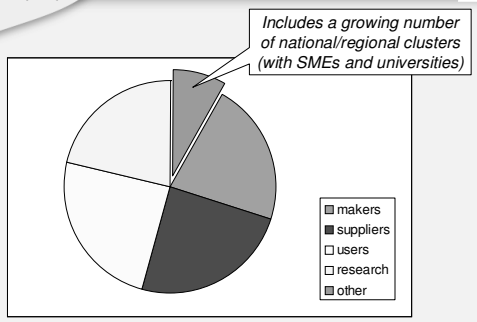
37 members in ENIAC Forum of Stakeholders



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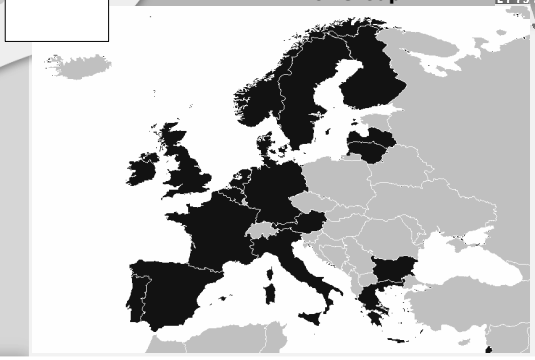
20 countries now in the Mirror Group



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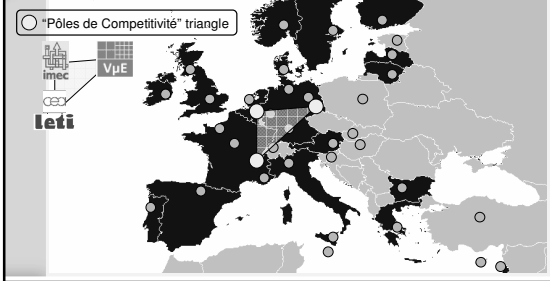
Industry, academia, authorities working together



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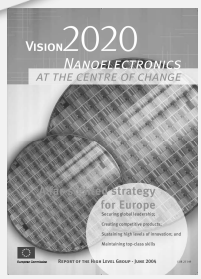
From a Vision to the Strategic Research Agenda



June 2004

November 2005

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What is the Strategic Research Agenda?

A comprehensive projection of future technology needs for the advancement of Nanoelectronics in Europe, to:

- Serve the European Semiconductor value chain
  - Include suppliers, producers and users
- Connect 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

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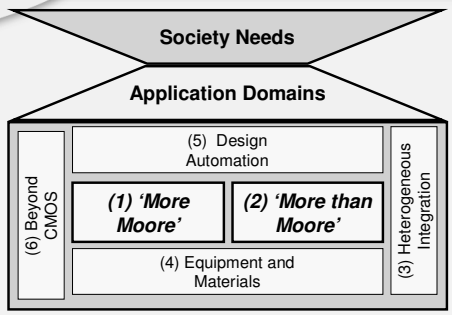
The six Themes



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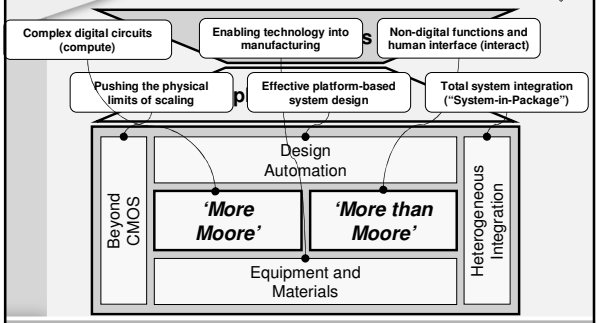
Application driven enabling technologies



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Why "another" roadmap?

- ITRS roadmap is a well accepted standard and a useful tool for driving research activities.
- SRA research agenda will build on it (several contributors to ITRS are in SRA teams), but;
  - More focus on critical technologies for Europe;
  - Stronger link with final applications, and added value for European society;
  - Extended to fields minimally covered by ITRS (e.g. power, heterogeneous systems, sensors,..);
  - Indicating priorities for research investments;
  - Not limited to research, but covering also infrastructures, education, etc.

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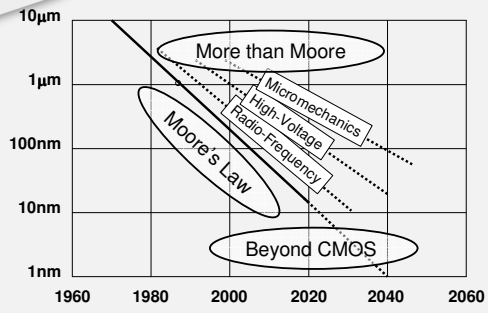
Multi-dimensional technology roadmap



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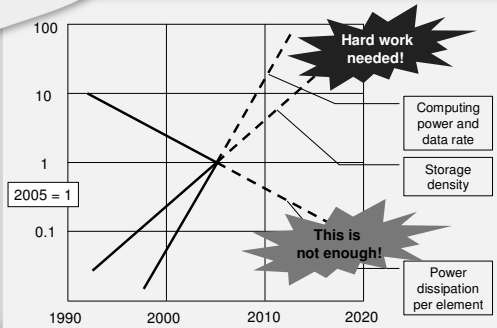
CMOS scaling is not for free...



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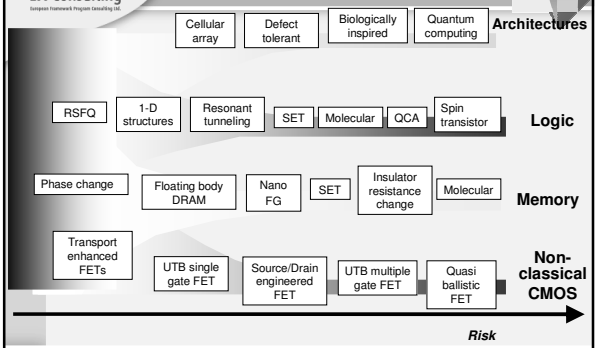
Beyond CMOS: New Devices Everywhere



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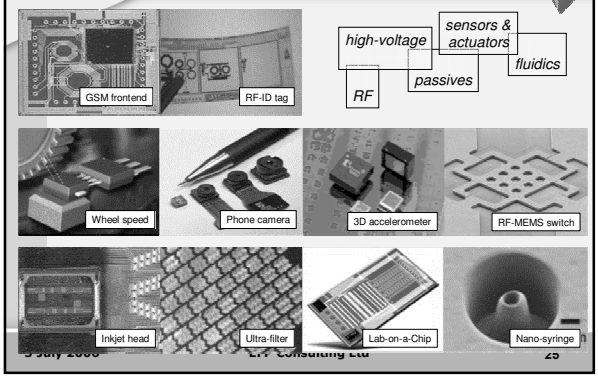
More than Moore examples



Lithography roadmap

Half pitch (nm)		90	65	45	32	22	16	11	8
Year		2003	2005	2007	2009	2011	2013	2016	2019
λ (nm)	NA								
193	0.85	0.40							
	0.93		0.31	0.22					
	1.20		0.40	0.28					
	1.35			0.31	0.22				
	1.50				0.25				
13.5	0.25				0.59	0.41	0.30		
	0.35						0.41	0.29	

pitch relaxation or double patterning

Fluid/material challenge

low k1 challenge

infrastructure challenge

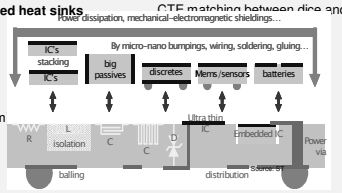
likely opportunity

Substrate Level Integration Technology

2006+: Embedded devices (MEMS, passives, antennas,IC´s)

Integrated heat sinks

2008+: New Materials
High k and low k dielectrics, High Tg polymers
CTE matching between dice and substrate



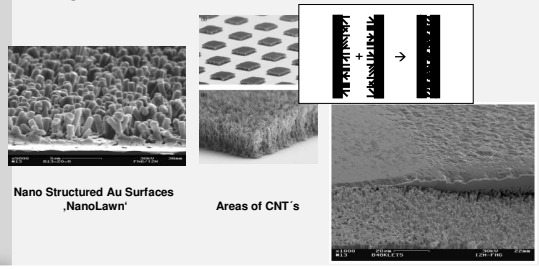
2008: Substrate and Interposer
Low cost finer line & smaller via (25 µm

2015:
Printable electronics

2012: New Substrate Technologies
Flexible substrates (reel to reel)
Integrated optical interconnects

Heterogeneous Integration – micro meets nano

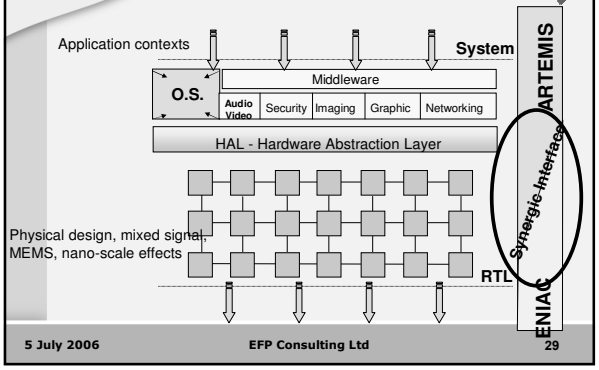
- 'NanoVelcro' Room-temperature solder-free interconnect
- Using carbon nanotubes enables extreme low resistance



Nano Structured Au Surfaces ‚NanoLawn'

Areas of CNT´s

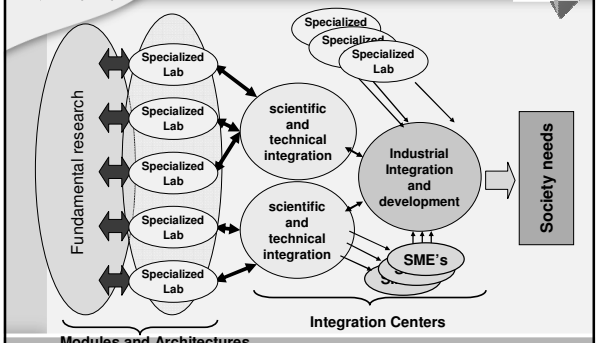
Design Automation integrated with ARTEMIS



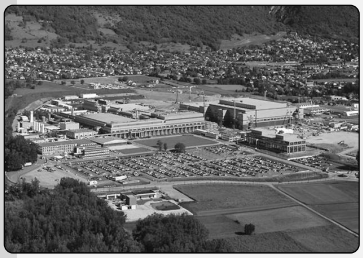
Strong Public-Private partnerships

- Industrial Research Centres managed jointly by competing companies.
- Pôles de Competitivité associating large and small industry and Research Centres in key areas.
- A network of open innovation institutes, connected with Universities.
- National ENIAC initiatives, joining SMEs, Universities and Research Centres.
- Coordinated cooperation inside national, EUREKA and Framework Programs.

Focused research organisation



New business partnerships: 300-mm advanced CMOS

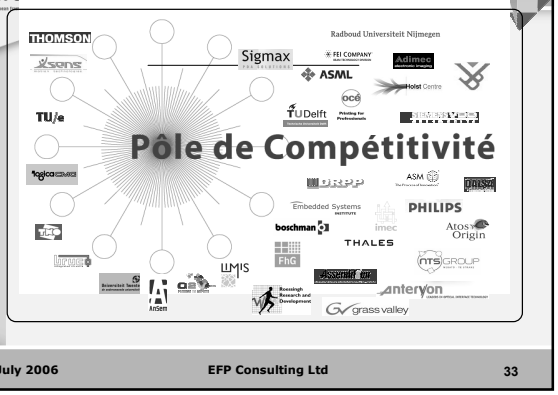


Crolles2 alliance

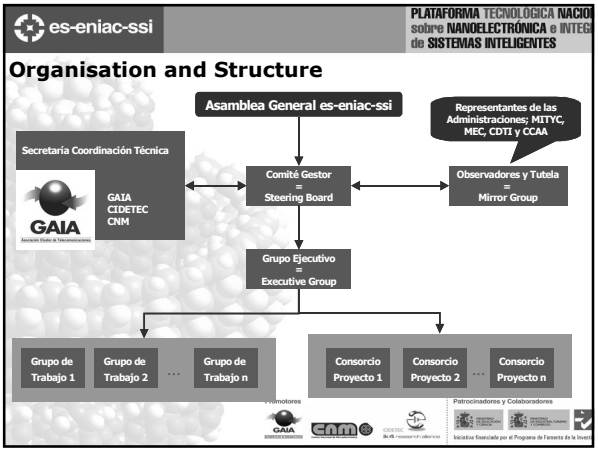
- STMicroelectronics
- Philips Semiconductors
- Freescale

- And JDP with TSMC

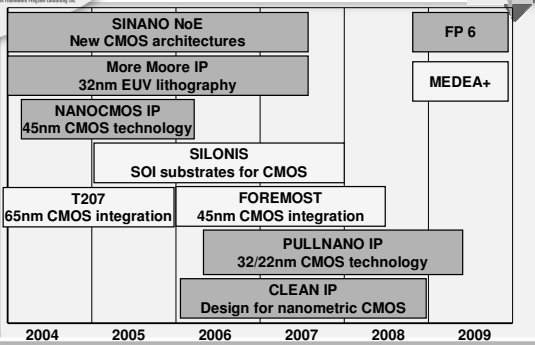
Pôle de Competitivité in the Netherlands



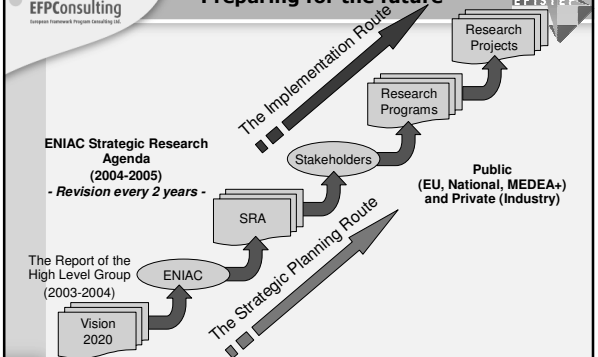
Organisation and Structure



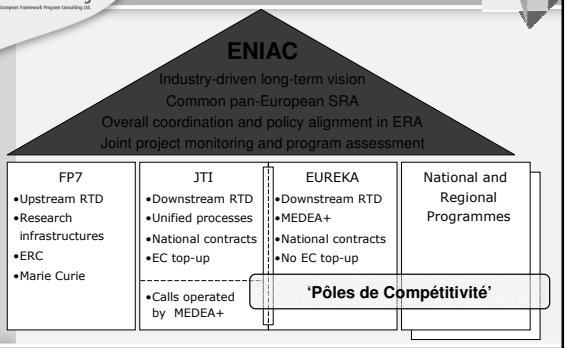
An example of integration: CMOS domain



Preparing for the future



Synergetic approach for the SRA



Eureka MEDEA+

Israeli organisations can also participate in MEDEA+ Eureka cluster

In the industry-driven MEDEA+ Programme, 384 partners as of July 2006 from 22 European countries are working on the most advanced research challenges in microelectronics applications and their enabling technologies.
MEDEA+ runs from 2001 – 2008 with budget of 4 BEuro
In MEDEA+ partners:
- 40% are small companies,
- 34% are large companies.
- 26% are research institutes and universities

Currently there are 3 Israeli participants:
- Jordan Valley Semiconductors
- Nova
- Runcom

Conclusions

- The European Technology Platform for Nanoelectronics is a serious attempt to promote public-private partnership in research in Europe.
- It builds on existing cooperation inside EUREKA and Framework Programs.
- The Strategic Research Agenda will be the main tool for driving research activities in Europe.
- It is still in its building phase: the main challenge will to combine effectiveness with the broadest possible participation.

Why is ENIAC important 1

- R&D Projects will be funded along the lines suggested by ENIAC
- Main major projects likely to be via Joint Technology Initiatives (JTIs) – however this may take into 2008
- Starting earlier and continuing in parallel will be more traditionally funded FP7 R&D projects from 2007
- Both supplemented via Eureka MEDEA+ work
- It is clear that all three types of projects will be dominated by ENIAC actors

Why it is important 2

By being close to ENIAC you increase your chances of involvement in those projects
For Startups, this will:
- Enable you to work with major customers
- Allow you to focus your R&D
- Attract interest of major players
- Be closer to what others are doing
- Be more aware of opportunities
- Make it easier to raise capital
- Increase your R&D spending
- FP7 funding will be much more attractive for SMEs (e.g.75% grants instead of 50%)

Why it is important 3

- Israel could set up a National parallel initiative like Spain, Holland, France etc.
- Increasing importance of Eureka (MEDEA+) to partnering and JTIs

COMBIMEXX from FP5 in which Jordan Valley was the key player and beneficiary

Start Date: 1 Mar 2001 Duration: 18 months Project Funding: 2.92 MEuro

Coordinator CEA LETI	France
Participants	
JORDAN VALLEY	ISRAEL
STMICROELECTRONICS SA	FRANCE
PHILIPS FRANCE S.A.S.	FRANCE
SEMATECH, INC.	UNITED STATES
INFINEON TECHNOLOGIES AG	AUSTRIA

The objective of the SEA project COMBIMEXX is to assess and to improve a revolutionary semiconductor metrology tool for in-line monitoring of the thickness, roughness and elemental composition of thin and thick layers up to production mode for front end processes and back end processes.

ORAMIR were in a similar type of project in FP4

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EFPConsulting
European Framework Program Consulting Ltd.

EPISTEP

Enhanced Participation of SMEs in IST European Technology Platforms

EPISTEP Project

- The EPISTEP Project is a Specific Support Action financed by the European Commission Innovation Programme in FP6
- Project start date: 15 September 2005
- Project duration: 28 months
- Participants: 25 members from 15 different countries

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EPISTEP Abstract

Enable SMEs participation in the Sixth and Seventh Framework Program with the goal to enhance their presence in IST European Technology Platforms (ETP).

ETPs addressed in the EPISTEP project are:

- Mobile Communications (e-Mobility)
- Embedded Systems (ARTEMIS)
- Nano-electronics (ENIAC)

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EPISTEP Participants

UK: Targeting Innovation Ltd (co-ordinator); National Microelectronics Institute; SOA Services Ltd; Innovation Centres (Scotland) Ltd
IT: European Business Associates; APRE; CoC Torino
FR: ALMA
IE: Enterprise-Ireland; Investnet
DE: Steinbeis-Europa Zentru; Zenit GmbH
FI: Turku School of Economics and Business Administration; ICT Turku Oy; Turku University
EE: Archimedes Foundation
RO: Eurograph Ram Impex Srl
BU: Ursit Ltd
IL: EFP Consulting Ltd.
A: Austrian Research Promotion Agency; Eutema
LI: Lietuvos Inovaciju Centras
SL: STUBA Ltd
BE: Brussels Enterprise Agency
SE: The Swedish EU/R&D-council

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EPISTEP free support for SMEs

1. Commercialy neutral proxy – as needed – for ENIAC interface
2. Organisation of Information and Brokerage events
3. On going awareness of ENIAC plans
4. Ability to comment/contribute to SRA
5. Training workshops, as required
6. Capabilities fed to ENIAC actors
7. Identification of suitable opportunities
8. Assistance in joining suitable consortia
9. Assistance in contract negotiation
10. Training in project management as required

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What to do now

- Download the current ENIAC SRA
- Apply to join ENIAC as appropriate
- Provide input to the update of the SRA
- Register your organisations interest in the EPISTEP data base
- Fill in our EPISTEP interest study

EPISTEP ENIAC SRA study

1. More Moore	22 research topics
2. More than Moore	39 research topics
3. Heterogeneous Integration	48 research topics
4. Equipment & Materials	19 research topics
5. Design Automation	12 research topics
6. Beyond CMOS	49 research topics
Altogether	179 research topics

Please fill in the survey!

Further information

- http://cordis.europa.eu/technology-platforms/
- http://cordis.europa.eu/ist/eniac
- http://www.iserd.org.il
- http://www.epistep.org
- http://cordis.europa.eu/ist/nano/
- http://cordis.europa.eu/nanotechnology/home.html
- http://www.eureka.be
- http://www.medeaplus.org/
- http://www.finance-helpdesk.org
- http://www.ipr-helpdesk.org
- http://www.efpconsulting.com