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# ***Nanotechnologies in the FP7 NMP\* Programme***

***ENIAC FORUM***

***Monaco***

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**Directorate G – Industrial Technologies**

**\*Nanosciences, nanotechnologies, materials and new production technologies**





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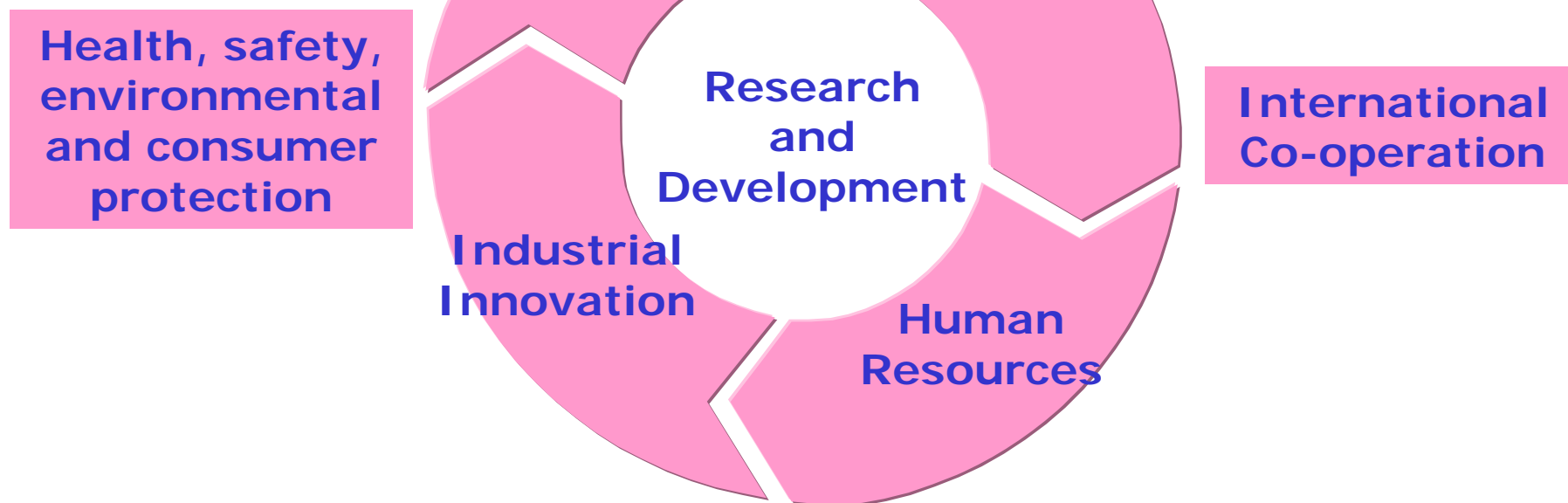
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**The European policy:  
integrated, safe and responsible**

**Two Communications by the European Commission:  
Towards a European strategy for nanotechnology  
and the Action Plan**

**COM(2004) 338  
of 12.5.2004**

**COM(2005) 243  
of 7.6.2005**



<http://cordis.europa.eu.int/nanotechnology/actionplan.htm>

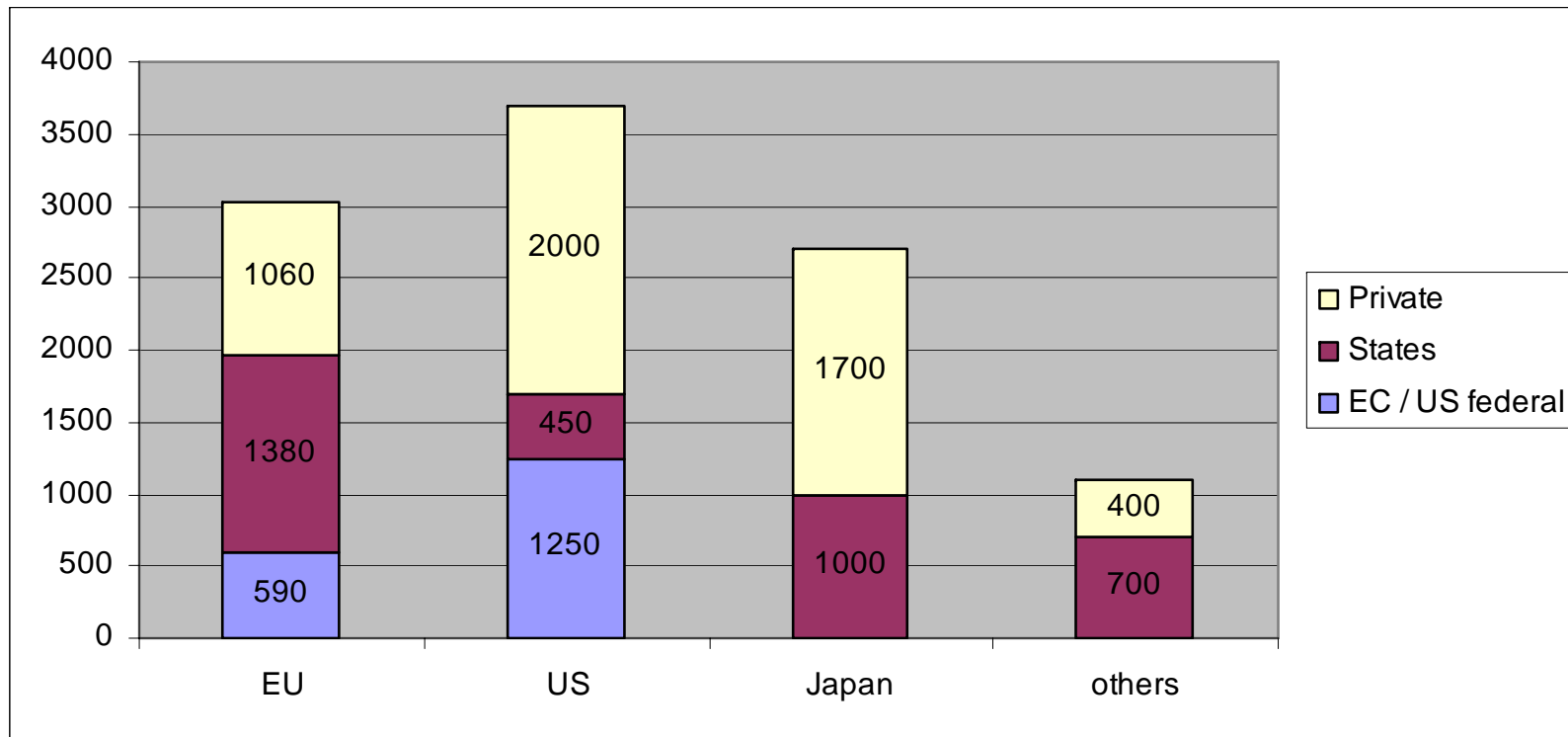


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## Nanotechnology R&D in the World

Global figures for 2005 M\$ (1€ ~ 1.25\$)



**2004**  
**~8 Billion \$**

**2005**  
**~10.5 Billion \$**



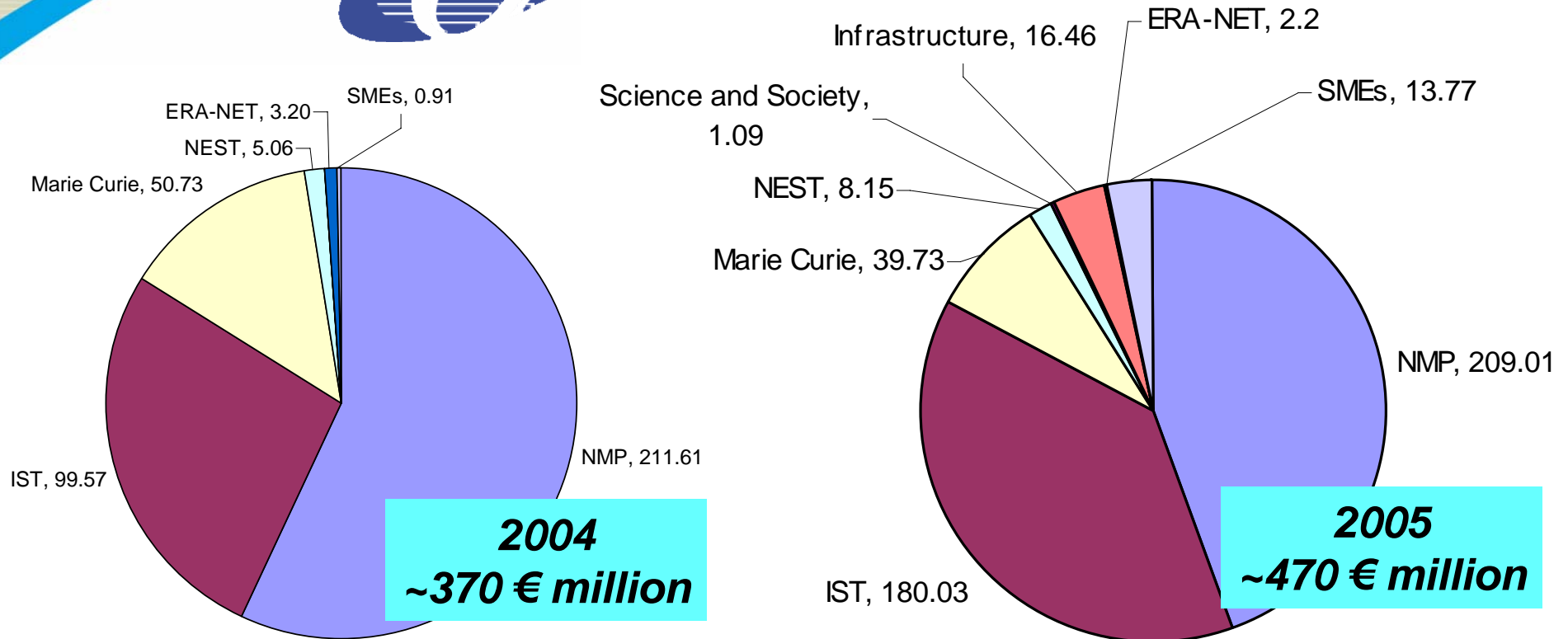


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## Nanotechnology R&D in the EU 6th FP



*and 500 € million estimated in 2006  
for more than **1,3 € billion** for the whole FP6*

## Some examples of FP6 NMP « Nano » projects:

- IP NaPa – *Emerging **Nano Patterning** Methods* – VTT Technical Research Center of Finland
- IP NAIMO: – *Nanoscale Integrated Processing of Self-Organising **Multifunctional Organic Materials*** – Université Libre de Bruxelles
- IP CellPROM: - ***Cell Programming** by Nanoscaled Devices* – Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.
- NoE SANDiE: *Self-Assembled **Semiconductor Nanostructures** for new Devices in photonics and Electronics* - Universität Leipzig
- CARE-MAN: *Healthcare by **Biosensor** Measurements And Networking* - Eberhard-Karls-Universität Tübingen
- Wuppertal Institute for Climate, Energy and the Environment GmbH
- SURMOF: *Anchoring of **metal-organic** frameworks, MOFs, to surfaces* - Ruhr-Universität Bochum
- GANANO: *New Generation of GaN-based **sensor arrays** for nano- and pico-fluidic systems for fast and reliable biomedical testing* - Technical University Ilmenau
- NEWTON: *Enabling Technologies for 3D **Nano Photonics**: New Materials and Process Technology for Real 3D Integrated Optical Circuits, Photonic Band Gap Devices and Photonic Crystals* - Laser Zentrum Hannover e.V.



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# ***SP1 - Cooperation***

## ***9 Themes***

1. **Health**
2. **Food, agriculture and biotechnology**
3. **Information and communication technologies**
4. **Nanosciences, nanotechnologies, materials and new production technologies**
5. **Energy**
6. **Environment (including climate change)**
7. **Transport (including aeronautics)**
8. **Socio-economic sciences and the humanities**
9. **Security and Space**



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## Theme 4: Nanosciences, nanotechnologies, materials and new production technologies

**Overall objective** : improve the competitiveness of EU industry (including SMEs) and ensure its transformation through:

- the effective transition from a resource-based to knowledge-based industry
- generation of new breakthrough, applicable, knowledge
- strengthening EU leadership in nano, materials and production technologies
- emphasis on integrating different technologies and disciplines across many industrial sectors
- ... *Same messages as in FP 6*

Importance of **Technology Platforms** to help establish common research priorities and targets



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# Theme 4: Nanosciences, nanotechnologies, materials and new production technologies

## Four activities:

1. **Nanosciences and nanotechnologies**
2. **Materials**
3. **New production**
4. **Integration of technologies for industrial applications**

**Nanoscience / nanotechnology topics important across these four activities**

***...very good continuity with « NMP » activities in FP 6 !!***



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## Theme 4: Nanosciences, nanotechnologies, materials and new production technologies

### *Budget*

- FP7 Total Budget 2007-2013: 50 521 million €
- Theme 4 budget: 3 467 million €
- Budget of 1st Call: 553 million €



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## *NMP WP – main features*

- NMP addresses all industrial sectors e.g. medical, transport, construction, environment, textile, electronics, photonics, ..
- Favours a multi-disciplinary approach
- Cooperation across the supply chain
- Budget allocation by call (not by Activity/Area)
- Two stage proposal submission for all Collaborative Projects with possible closing dates 1st Call in May 2007 and October 2007



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## *NMP WP – main features* *(cont.)*

- **Funding schemes...**

- **Collaborative projects** (Small / Medium Scale or Large Scale RTD projects)
- **Networks of excellence**
- **Coordination and supporting actions:** coordination and networking, studies, info/com, etc. as well as ERA-NET and specific international cooperation activities.



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# DRAFT of the NMP Work Programme

## A selection of nanotechnology related topics

### Activity 4.1:        Nanosciences and Nanotechnologies

#### 4.1.1: Nanosciences and converging sciences

- Nano-scale mechanisms of bio/non-bio interactions
- Self-assembling and self organisation
- Development of methodology for risk assessment and creation of an observatory (CA and SA)
- Support to Member States' research programmes in nanosciences (ERANET-PLUS)



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# DRAFT of the NMP Work Programme

## A selection of nanotechnology related topics

### Activity 4.1: Nanosciences and Nanotechnologies

#### 4.1.2: Nanotechnologies and converging technologies

- Pilot lines to study, develop and up-scale nanotechnology-based processes from the laboratory
- Equipment and methods for characterisation and operations at the nanoscale
- Analysis of the ethical, regulatory, social and economic environment of nanomedicine (CA and SA)
- Coordination in nanometrology (CA and SA)
- Examining capacity building in nanobiotechnology (CA and SA)



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# DRAFT of the NMP Work Programme

## A selection of nanotechnology related topics

### Activity 4.1: Nanosciences and Nanotechnologies

#### 4.1.3: Health and Environment Impacts

- Development of portable devices for measurement and analysis
- Impact of engineered nano-particles on health and environment



# DRAFT of the NMP Work Programme

## A selection of nanotechnology related topics

### Activity 4.2: Materials

#### 4.2.1: Mastering nano-scale complexity in materials

- Nanostructured polymer-matrix composites
- Nanostructured coatings and thin films
- Characterisation of nanostructured materials

#### 4.2.2: Knowledge-based smart materials with tailored properties

- Organic materials for electronics and photonics
- Nanostructured materials with tailored magnetic properties
- Advanced material architectures for energy conversion (Small or medium-scale focused research projects)



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# DRAFT of the NMP Work Programme

A selection of nanotechnology related topics

## Activity 4.2: Materials

### 4.2.3: Novel biomaterials and bioinspired materials

- Highly porous bioactive scaffolds controlling angiogenesis for tissue engineering

### 4.2.4: Advances in chemical technologies and materials processing

- Nanostructured catalysts with tailor-made functional surfaces



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A selection of nanotechnology related topics

## Activity 4.3: New production

### 4.3.5: Exploitation of the convergence of technologies

- Processes and Equipment for High Quality Industrial Production of 3-Dimensional Nanosurfaces
- Production Technologies and Equipment for Micro-Manufacturing



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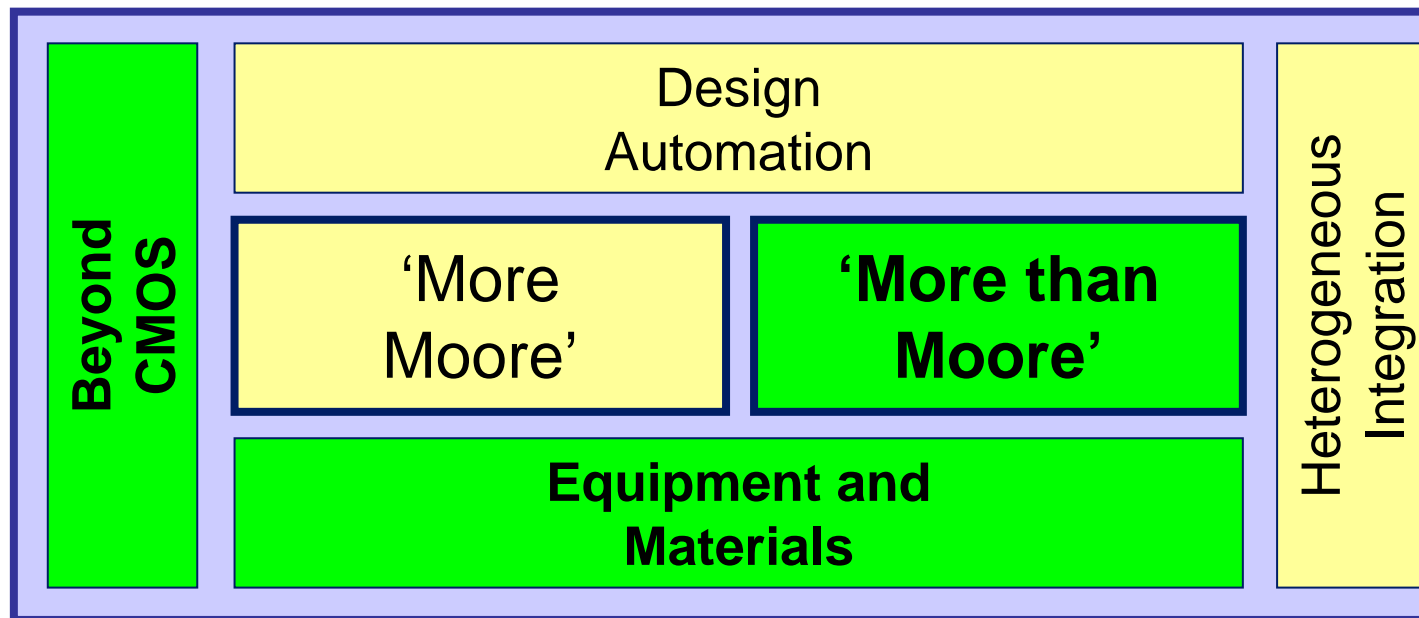
## Activity 4.4: Integration of technologies for industrial applications

- **Substantial innovation in the European medical industry: development of nanotechnology-based smart multi-tasking targeted agents for in vivo diagnosis and therapy – in coordination with Theme 1 “Health”**



## NMP relevance to ENIAC SRA expected mostly in

- “More than Moore”
- Equipment and Materials
- Beyond CMOS





## NMP relevance to ENIAC SRA expected mostly in

- **“More than Moore”**: e.g. nano-sensor technologies for chemical, optical, physical or biological parameters, actuators based on novel nano-materials, etc
- **Equipment and Materials**: e.g., metrology instruments, equipment for manipulation and control on the nanoscale, nano-patterning equipment and processes, organic functional materials, self-assembly processes, novel semiconductor and encapsulation materials, etc.
- **Beyond CMOS**: new knowledge about behaviour of matter at the nanoscale (e.g. spin, magnetism, photonic) could contribute to finding solutions for the « Beyond CMOS » era.

- ...cont'd



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## NMP relevance to ENIAC SRA expected mostly in

**Furthermore**, NMP will strongly contribute to the advancement and general acceptance of nanoscience and nanotechnology, e.g. through research in the field of nano-biomedicine, nanotoxicity, ethics, international dialogue, etc. – of high importance for ENIAC and other ETP's



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# FP7 Information

- **EU research:**  
<http://europa.eu.int/comm/research>
- **Seventh Framework Programme and SPs:**  
[http://europa.eu.int/comm/research/future/index\\_en.cfm](http://europa.eu.int/comm/research/future/index_en.cfm)
- **Information on research programmes and projects:**  
<http://cordis.europa.eu/en/home.html>
- **RTD info magazine:**  
<http://europa.eu.int/comm/research/rtdinfo>





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## Theme 4 Information

- **Cordis NMP activity service - Calls info!**

<http://cordis.europa.eu/nmp/home.html>

- **Industrial Technologies website**

[http://ec.europa.eu/research/industrial\\_technologies/index\\_en.html](http://ec.europa.eu/research/industrial_technologies/index_en.html)

- **Commission Nanotechnologies homepage**

<http://www.cordis.lu/nanotechnologies>

