



Micro/Nano Technology in Framework Programme 6 (2002 - 2006)

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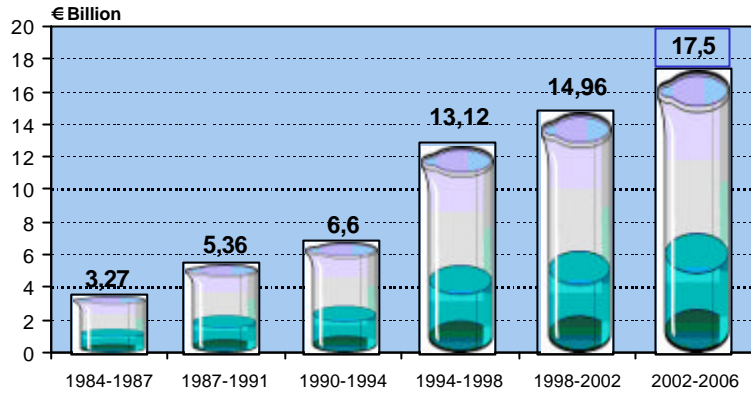


- **FP6 in perspective**
- Micro/Nanotechnology in FP6
- FP6 and its new instruments
- Conclusion

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Evolution of the EU framework programmes

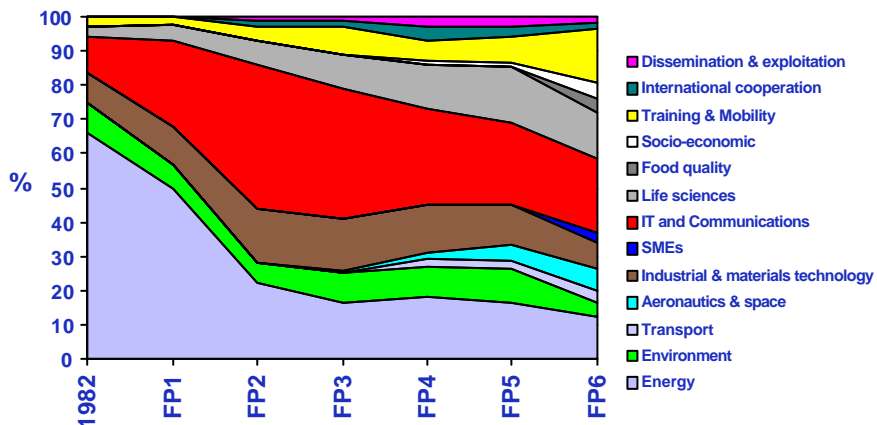


**+ 17% compared with the FP5
= ~ 6% of the EU's budget**

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Community RTD: the changing priorities



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FP6: A changing role for EU Research Programmes

Objective "Lisbon":

to allow the Union becoming the
most dynamic and most competitive
knowledge-based economy within 10 years

Objective "Göteborg":

sustainable development
(environment, economy, employment)

European Research Area (ERA):

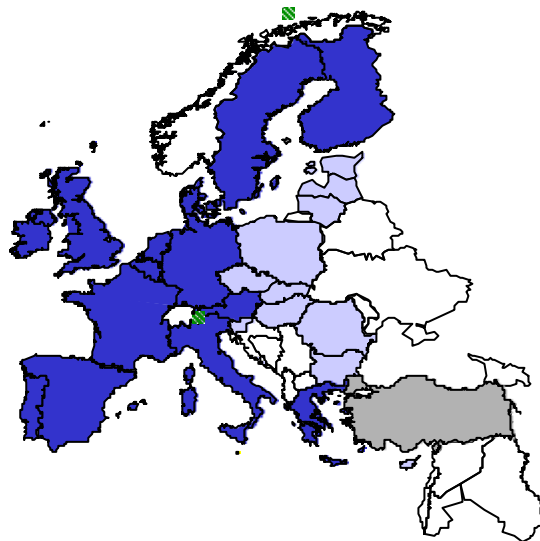
...Integrating, reinforcing, structuring... and
stimulating investment in R&D (1,9% > 3,0%)

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Enlargement

- EU
- Candidate countries:
 - Bulgaria
 - Cyprus
 - Estonia
 - Hungary
 - Latvia
 - Lithuania
 - Malta
 - Poland
 - Czech Republic
 - Romania
 - Slovenia
 - Slovakia
 - Turkey



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The 6th Framework Programme - an instrument to implement ERA

Specific programme

(a) INTEGRATING EUROPEAN RESEARCH
AROUND KEY OBJECTIVES
(13245 M€)

(b) STRUCTURING ERA
(2605 M€)

(c) STRENGTHENING ERA
(320 M€)

EURATOM (1230 M€)

Europa.eu.int/comm/research/fp6/index_en.html

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Eight Priorities to integrate RTD activities of which several cover Micro/Nano-technology related research

- | | |
|---|------|
| • <i>genomics and biotech for health</i> | 2255 |
| • <i>information society technologies</i> | 3625 |
| • <i>nanotechnology, materials, production</i> | 1300 |
| • <i>aeronautics and space</i> | 1075 |
| • <i>food safety and health risks</i> | 685 |
| • <i>sustainable dev & global change</i> | 2120 |
| • <i>citizens and governance</i> | 225 |
| - <i>wider field of research (INCO, CRAFT, ...)</i> | 1300 |

see web site: <http://www.cordis.lu>

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Enormous Potential of Micro / Nano Technology

- Breakthrough with new products, processes & materials
- Solutions for societal problems and improvement of the quality of life
- Applications in virtually all sectors, e.g. IT peripherals, biomedical and health, transport and aerospace, household, telecom, chemical, environment, ...
- Multi-disciplinary approach required incl. micro-electronics, software, (wireless) communications, materials science, chemistry, electro-optics, biology, fluidics, packaging and interconnection.
- MST Applications market growing at ~20% / year

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Main Priorities Areas for Micro / Nanotechnology in FP 6

Priority 3

Nanotechnology, materials and new production processes

- Long term interdisciplinary research
- Nano-engineering, structural and functional materials, devices
- Nano-biotechnology
- Tools and techniques, nano-precision-manufacturing, sensors
- Applications in health, industry, environment, ...

An opportunity for integrating and reinforcing research activities on micro / nanotechnology covering **materials, production processes, instruments, devices and applications** for many sectors.

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Main Priority Areas for Micro / Nanotechnology in FP 6...cont'd

Priority 1: Genomics & biotechnology for health

- Nano-biotechnology related to genomics, proteomics
- Biochip development, interfaces to cells
- Diagnostics and therapeutic tools

Priority 2: Information Society Technologies

- Nano-electronics, opto-electronics, photonics
- Micro-nano technologies – ambient intelligence

Priority 4: Aeronautics and Space

- GMES - Mostly applications and services oriented
- Galileo satellite navigation system
- Satellite communications

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Micro / Nanotechnology requires an integrated approach

Uptake of novel high-technology in existing sectors

Effective technology transfer and industrial uptake of progress in existing fields

Foster new breakthroughs

Through multi-disciplinarity, long-term research, create new opportunities, new applications, new products, new industries

Wider aspects

Educational and societal aspects, funding structures, reinforcement of research infrastructures ...

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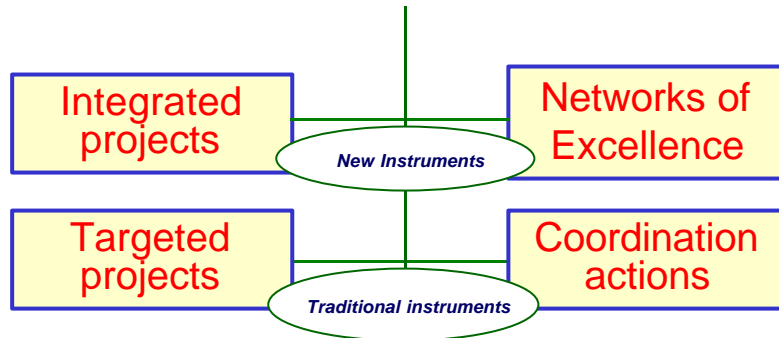
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Four major instruments

will implement the different thematic areas and should ensure high European impacts on selected technico-socio-economic issues



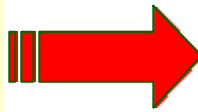
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Integrated Projects in Priority 3

Objectives

*Real breakthroughs,
Support to Industry,
Sustainable Developmt*



**Clear and Quantified
Deliverables and
Integration...**

... across Activities

*Research
Support to SMEs
Technology transfer
Dissemination
Training, Take-up Actions...*

50% EC Funds

... across Technical Areas

*Design, life-cycle aspects,
Advanced Materials
Nano-
and micro-manufacturing,
Applications*

... among Participants and funding bodies

governments, structure owners, contractors, industry, universities, research institutes,



Networks of Excellence

Objectives

To assemble EU
Research Capacities
and strengthen S & T
Excellence



Advancing
Knowledge
and Integration ...

Joint Program of Activities (JPA)

Ambitious and merging
national or
regional activities

100% EC Funds
for Integration of
resources

... to strengthen EU poles of
excellence

New Materials
Nanotechnologies
New technologies

**Participants Wishing a Progressive and Lasting
Integration of Research Capacities**



Traditional Instruments

will help preparing more ambitious and
strategic projects

Targeted
projects

Coordination
actions

Research at frontier of
knowledge or supporting
high-tech SMEs

EC funds to RTD activities

Stimulating cooperation &
coordination between EC
and MS activities / Eureka

EC funds only for
coordination actions



Support to SME aspects is important ...

- ◆ At least 15% of the total budget of FP priorities will be allocated to SMEs;
- ◆ Large possibilities exist
 - to include either high-tech SMEs in consortia, and / or to support start-ups, or
 - to consider specific “modules” for SMEs in future projects (e.g. 15% of budget) and / or
 - to develop specific actions & measures
- ◆ Role of industrial associations within Member States (MS) to be highlighted

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In conclusion - 1

General

The European Commission aims to create a very favourable climate for micro / nano-science and nanotechnology research:

- A co-ordinated approach by the Commission services
- Long-term and pre-competitive, application-oriented research – reinforcement of infrastructure
- Academia / industry consortia of significant European dimension
- Focus on multi-disciplinary aspects
- Integration of educational and wider societal aspect

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In conclusion - 2 for Space

- The EU FP 6 will significantly improve the know-how and infrastructure for micro- and nano-technology related research and product development in Europe. This is also for the benefit of the Space sector.
- The space sector can also benefit by utilising generic Micro/Nano technologies developed for other sectors.
- Priority 4 “Aeronautics and Space” addresses specific research for space e.g. Galileo, GMES and Satellite Communications. Possibly some scope for micro / nano RTD.

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Further Information Sources

EU Funded research

[www.cordis.lu / nanotechnology](http://www.cordis.lu/nanotechnology)

- Information on EC activities for nano-research community
- Includes list of EC funded projects and co-operations

EC Sponsored MST Network NEXUS

www.nexus-mems.com

EC Accompanying Measure MINANET -

www.minanet.com

International co-operation

- USA www.nano.gov, www.nsf.gov
- China www.delchn.cec.eu.int/s&t/index.htm
- Russia www.fp5.csrs.ru/english