

Sixth Framework Programme Thematic Priority 3 - NMP

Nanotechnology & nanosciences, knowledge-based functional Materials, new Production Processes & devices

Overview, Instruments and Prospects

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Structure of Presentation

- Sixth Framework Programme (FP6)
- Thematic Priority 3 (NMP)
- Instruments
- SMEs
- Associated States
- International Co-operation
- Next Calls





FP6: a change in EU Research Programmes

- *Objective "Lisbon":* to become the most dynamic and most competitive knowledge-based economy by 2010
- Objective "Göteborg": sustainable development (environment, health, economy, employment)

European Research Area (ERA): 'Integrating, reinforcing, structuring and stimulating investment in R&D...'

...from 1,9% to 3,0% of Gross Domestic Product (GDP) by 2010!



FP6:

Buciget 2002 – 2006 (excluding Euratom)

Focusing and Integrating ERA	<u>13345</u>
 Pr 1 genomics and biotech for health 	2255
 Pr 2 information society technologies 	3625
 Pr 3 nanotech, intelligent mat, production 	1300
 Pr 4 aeronautics and space 	1075
 Pr 5 food safety and health risks 	685
 Pr 6 sustainable dev & global change 	2120
 Pr 7 citizens and governance 	225
 Pr 8 anticipating needs (INCO, CRAFT, JRC, etc) 	2080
Structuring the ERA	<u>2605</u>
research & innovation, human resources, infrastructures, scien	ce & society
Strengthening the Foundations of ERA	<u>320</u>
coordination of activities, development of policies	
TOTAL (Millions €)	<u>16270</u>



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FP6: eight Thematic Priorities







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Thematic Priority 3 concentrates on:

- i) Nanotechnology, as a flagship of the next industrial revolution
- ii) Multi-functional knowledge-based Materials, as critical drivers of innovationiii) New Production processes and devices, as the key to sustainable development







Thematic Priority 3 (1300 million €)

Overall approach and general objectives

To support integrated research activities on nanotechnologies, materials, production processes, instruments, devices and applications for <u>many sectors</u>...

towards Knowledge-based Enterprises !





Thematic Priority 3 *Specific objectives*

- **Transformation of EU industry with a view** to sustainable development
- From resource-based to knowledge-based
- Promote real breakthroughs not just incremental research
- Integration of production and consumption patterns
- Integration of education and skills development





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Instruments

to implement the thematic area and to ensure high European impacts on selected technical and socio-economic issues





New Instruments

Integrated Projects (IP)

Aim: flagship, ambitious, leading to radical *innovation* and *transformation of industry* in the long term

- Strong **industrial** participation and even **leadership**
- From fixed objectives to new **applicable** knowledge
- Positive image of industrial research
- Include inter-related activities



Instruments

EUROPEAN COMMISSION Evaluation criteria for Integrated Projects

	Minimum
	individual score
Relevance to call	3/5
Potential impact	3/5
S & T excellence	4/5
Quality of the consortium	3/5
Quality of the management	3/5
Mobilisation of the resources	3/5
Minimum overall score	e 24/30
Common for all Priorite	



New Instruments

Networks of Excellence (NE)

- **Aim: Lasting integration** of long-term research to overcome **fragmentation:** appropriate size (institutes, <u>NOT</u> individuals)
- Contribution to advancing knowledge for sustainability, competitiveness and dynamism of EU industry
- Scientific excellence is imperative
- Include Joint Programme of Activities to induce organisational change
- Research included, only if contributing to durable integration



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Instruments

Networks of Excellence (NE)

Minimum

3/5

individual score

•	Relevance to call	3/5
•	Potential impact	3/5
•	Degree of integration & the JPA	4/5

- Excellence of participants
- Organisation and management 3/5

Minimum overall score

Common for all priorities



New Instruments

Integrated Projects





?

- Address societal problems and competitiveness
- Aim at exploitation
- Implementation plan (predefined results)
- Limited in time
- Critical mass for problem solving
- Dependence on estimated costs
- 50% EC funds

- Strengthen excellence in a research domain
- Aim at integration
- Joint Programme of Activities
- Seek continuity
- Autocatalytic knowledge mass for excellence
- Dependence on integrated resources
- 100 % EC funds for integration of resources



New Instruments

Two Stage Evaluation (IP & NE only):

Stage 1 : Outline proposal (max <u>20 pages</u>), with <u>3</u> criteria only:

> Integrated Projects

- Relevance to the specific topic of the call
- ✓ Potential impact

✓ S&T excellence

Networks of Excellence

Objectives

Relevance to the specific topic of the call & JPA

Potential impact

Stage 2 - S&T and financial details, including work/financial plan for first 18 months; further details to complete proposal- all six criteria will be applied



Traditional Instruments

- Specific Targeted REsearch Projects (STREP) at frontiers of knowledge: support long-term innovation and transformation of industry
- Coordination Actions (CA) strengthen links between national, regional and EC RTD projects, co-ordination with EUREKA, COST and ESF actions: CA ≠ NE!!!
- Specific Support Actions (SSA) preparing future research activities and scenarios, effective communication, road-maps



Instruments

Specific Targeted Research Projects (STREP)

(b) (b) (b) (b)

Aim : research exploring the frontiers of knowledge and supporting long-term innovation

- **Multidisciplinarity** and **complementarity** of participants
- Highlight industrial benefits/impact
- Role for high-tech SMEs
- Think of possible follow-up : further research/incubator for an IP



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Evaluation criteria for Specific Targeted Research Projects

Minimum

individual score

•	Relevance to call	3/5
•	S&T excellence	4/5
•	Potential impact	3/5
•	Quality of the consortium	3/5
•	Quality of the management	3/5
•	Mobilisation of the resources	3/5
	Minimum overall score	21



Instruments

Coordination Actions (CA)

Aim: strengthen links and coordination between different research initiatives

- **Multidisciplinarity** and **complementarity** of participants (European, national, regional etc.)
- **Pilot** projects to explore methods of coordination with EUREKA, COST and ESF initiatives etc. are encouraged

see: <u>www.eureka.be</u> ; <u>www.kp.dlr.de/EUREKA/FACTORY</u> , <u>www.esf.</u>org http://cost.cordis.lu/src/home.cfm

EF EEF EEF

COST : European Cooperation in the field of Scientific and Technical Research

ESF : European Science Foundation



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Instruments

Evaluation criteria for Coordination Actions

Minimum

individual score

•	Relevance to call	3/5	
•	Quality of the Co-ordination	4/5	
•	Potential impact	3/5	
•	Quality of the Consortium	3/5	
•	Quality of the management	3/5	
•	Mobilisation of the resources	3/5	
	Minimum overall score	21/3	80



Instruments

Specific Support Actions (SSA)

Aim: studies (time horizon 2010-2015) to support long-term research activities

- A clear **international dimension** is recommended
- Examples: future scenarios, technology road maps, analysis of factors improving interaction between researchers and public authorities, regulators or standardisation bodies
- Check in the Work Programme the areas open for SSA

167 167 <u>16</u>7

67 67 67 6

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SMEs

SME dedicated activities in NMP

Aim: participation of SMEs, to receive at least **15% of funding**

SME dedicated modules / tasks

• Dedicated calls for IP for SMES: Ied by SMEs with RTD potential to induce transformation and modernisation of SME-intensive traditional industries





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SMEs role and instruments in FP6

Instrument	SME main role		
Integrated Projects (IP)	Support to SMEs, Technology		
	Transfer and exploitation		
Networks of Excellence (NE)	Specific dissemination or training activities for SMEs		
Integrated Projects/SME (IP/SME)	Led by high tech SMEs for the		
	exclusive benefit of SMEs		
Specific Targeted REsearch			
Projects (STREP)	Technology validation, exploitation		
Co-ordination Actions (CA)	Technology benchmarking as		
	members 6666		
Specific Support Actions (SSA)	Accompanying measures		



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Associated States

Associated States (AS) to the Framework Programme

 participation with the same rights and obligations as proposers from Member States (Norway, Iceland, Lichtenstein, Switzerland, Israel)

Associated Candidate Countries (ACC)

Work Programmes underline the importance of involving Associated Candidate Countries in the Community's research policy and in the European Research Area (ERA) (dedicated Specific Support Actions)

see specific annex of the Work Programme See INCO page on Cordis: http://www.cordis.lu/fp6/inco.htm



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COMMIsinternational Co-operation

Aim: broader international co-operation in FP6

INCO countries: Mediterranean countries, Russia and Newly Independent States, Western Balkans, Latin America, etc.

Bi-lateral S&T agreements with Argentina, Australia, Canada, China, India, Russia, south Africa, United States

Special implementing arrangements with US and China, more under preparation (Japan, Brazil, etc.)

The Intelligent Manufacturing System (IMS) initiative with Australia, Canada, Japan, South Korea, Norway, Switzerland, US





in Materials Sciences and Nanotechnology

Aim: Implementing **arrangement** between European Commission and the National Science Foundation (NSF) addressing <u>materials sciences</u>, including <u>nanotechnology</u> (signed in 1999)

- comparable opportunities to participate in each other's programmes
- extensive exchange of information
- reinforced co-operation
- co-ordinated calls for proposals
- joint organisation of conferences, workshops
- support for training





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First NMP calls in 2003: very large participation

- NMP 1: 260 M€ (NI); 140 M€ (TI)
- NMP-SME 1: 40 M€ (IP)
- NMP-IST 1: 25 M€ (NI); 10 M€ (CA, SSA)
- In total over 1000 proposals involving 21960 participants, 20% of all FP6

NMP - highest number of participations under FP6 in 2003 for all Thematic Priorities!





Next Calls

First Calls: lessons learnt

- Good response, but high subscription
- Good S&T quality
- Good coverage of topics
- Need for more industrial participation, however very good SME participation
- Need for selective use of instruments and increased concentration of topics
- Networks of excellence, not always understood; need for better information
- Two stage procedure to be simplified
- Need for better training of coordinators as well as experts; importance of NCPs





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First NMP calls in 2003

Comparison between FP6-FP5

Count of Part Legal Name	
TYPE	Total
HE	3417
RES	2553
SME	2265
IND	1654
OTH	355
Grand Total	10244

Count of Part Legal Name	
ORGTYPE	Total
IND	1588
HES	1450
REC	1281
SME	1108
OTH	275
Grand Total	5702







What's new? - (i) Revision of 2-stage submission and evaluation procedure

- Simpler, shorter "Stage 1" Incomplete outline
- Full proposal in "Stage 2"
- Go/No-go after "Stage 1"





What's new? - (ii)

Next Call 2004

- More emphasis on industrial participation
- Selective use of instruments (usually only one single instrument per topic)
- More topics addressed by IPs than by NE
- Higher **integration** of topics (see Area 4)
- Emphasis on integration and multidisciplinarity





Most significant changes in RTD areas (according to the Work Programme 2004 for NMP Priority)

- Area 1 Nanotechnologies and nanosciences: *re-focused topics*
- Area 2 Knowledge-based multi-functional Materials: *re-focused topics*
- Area 3 New Production processes and devices: *re-focused topics*
- Area 4 Integration: focus on construction, chemicals, surface transport
- Area 5 NEW AREA cross priority activities: steel processes; electro-mechanics; bio-sensing systems;

nano-photonic/nano-electronic circuits





AREA 3: New Production Processes and Devices

Focus on:

5 11 R O P F A N

- New and user-friendly production technologies, and their incorporation into the factory of the future (IP, CA)
- New production technologies for high added value products, exploiting and using nanoscale precision engineering techniques (IP)
- Support to the development of new knowledge based added value products and services in traditional less RTD intensive industries (IP for SMEs)
- Hazard reduction in production plant and storage sites (IP)
- Support to the development of new knowledge based and sustainable processes and eco-innovation (IP for SMEs)
- New life-cycle optimised safety and environmental technologies for industrial production (STREP)
- Increasing the "user awareness" for sustainable consumption (CA, SSA)



Safety related projects

- DETEX "Tandem" chemo-sensor system for ultra-trace detection of Explosives STREP
- SHAPERISK Risk management for industrial CA
- FIT & UPTUN Fire safety in tunnels TN & RTD
- RIMAP Risk based inspection and maintenance RTD
- SAMCO Structural assessment monitoring and control TN
- PRISM Human factors in the process industry TN
- S2S Gateway for plant and process safety TN
- SAFERELNET Safety and reliability of industrial products, systems and structures TN
- FITNET Fitness for service network TN
- HEADSAVE Safety helmet CRAFT
- OMNIITOX Eco/toxicological impact assessment





Topic for the call now open (1)

Hazard reduction in production plant and storage sites - IPs with industrial relevance commitment and participation

Objectives of work

- •Support life cycle safety
- •Improve working conditions
- Prevention of accidents and diseases
- Civil protection





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WP 2004 and next calls

Calls 2003-2004

Call Code	Instrument	Deadline	Budget (provis.)
FP6-2003-NMP-NI-3	IP and NE	March 2, 2004 June 22, 2004	245 M€
FP6-2003-NMP-TI-3	STREP, CA, SSA	May 12, 2004	105 M€
FP6-2003-NMP-SME-3	IP for SMEs	March 2, 2004 June 22, 2004	80 M€
FP6-2003-NMP-STEEL-3	IP	March 17, 2004	30 M€ (20 for P3)
FP6-2003-IST-NMP-3	IP,NE,STREP	to be defined	180 M€ (90 for P3)





Four Golden rules

- Study objectives and content of the individual bullet point carefully
- Understand the purpose of the « instrument »
- Be clear in your presentation
- Keep to the guidelines





Next Calls EUROAEABest Practice EXAMPLE for

Networks of Excellence Relevance: lasting Integration, producing an EU "Virtual" Institute on a specific area (eg. 'bionanotech virtual centre')

Potential Impact: ambitious research activity & breakthrough application in different societal dimensions

Scientific Excellence of participants: all relevant areas of topic covered

Degree of Integration: exchange of personnel/ equipment, training, dissemination

Organization & Management: legal form as a new institute (Working Groups + Board Structure)



Next Calls

A Best Practice EXAMPLE for Specific Targeted Research Project

- Relevance: at the frontiers of knowledge (eg. cutting-edge nanotech devices)
- **Potential impact**: strengthen EU position in the field, impact on employment & social quality of life
- **S&T excellence:** clear S&T goals, realistic plan for achievement of the associated deliverables
- **Consortium Quality** : publications from all partners
- Quality of the Management: good organization of work programme & task distribution
- Mobilisation of resources: optimal correlation man/month efforts



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Next Calls in 2004

Estimation of number of projects to be selected

Instruments		2003			2004	
	No. of topics			No. of topics		
	covered			covered		
IP	15	14		15	25	
NE	18	15	282 M€`́	3	3	340 №€`́
STREP	16	57		12	50	
CA	13	6	150 M€ ^(a)	6	4	120 M€ ^(a)
SSA	4	8		5	6	
IP SMEs	1	7	40 M€	2	15	80 M€
			475M€			540M€

(a) including the joint calls





Next Calls WP 2004 and next calls

Key-recommendations for submission of next proposals

- Be sure that your objectives fit properly the call topic
 For the New Instruments:
 - ensure the appropriate critical mass
 - ensure sufficient industrial participation
 - be sure that supporting modules for RTD actions are included!
 - (e.g. training, TT, spin-offs, IPR, ethics, etc.)
- Develop an ambitious plan of activities
- Ensure effective management
 - e.g. board of management, permanent secretariat
- For IP: highlight how results can be translated into products and services
- For NE: long lasting integration (different from coordination!) is CRUCIAL
- **REMEMBER:** in **STAGE 1** only **KEY-ELEMENTS** of **IP** and **NE** emphasizing the <u>ADDED VALUE</u> for Europe





In conclusion ...

- FP6 represents a real change: contributing to the European Research Area (ERA)
- NEW INSTRUMENTS (IP, NE) to develop this
- Thematic Priority 3 (NMP) takes a long term view: NEW areas, NEW evaluation procedure and criteria
- Aim: transforming European industry to increase competitiveness and sustainability
- Promotes real breakthrough and not just incremental research
- Continued importance of SME participation and full rights for Associated States