

NANOSCIENCES, NANOTECHNOLOGIES AND NANOSYSTEMS PROGRAMME

P3N

2009 Edition

Call for projects closing date
17/03/2009 at 1:00 p.m.

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**PARIS – MARSEILLE – GRENOBLE –
TOULOUSE**

Certifié conforme NE VARIETUR à la pièce originale ci-jointe,
(en langue anglaise) à Grenoble, le 02 février 2009

No. XB13899-aa/02/02/2009

Eric S. BON

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IMPORTANT DATES

CLOSE OF CALL FOR PROJECTS

Proposed projects must be submitted in electronic format (submission documents A and B)
before the closing date for call for projects:

ON 17/03/2009 AT 1:00 P.M. (PARIS TIME)

on the electronic submission server
(see §5 " Submission terms and conditions")

HARDCOPY SUBMISSION DOCUMENT A

A printed version of the submission document A signed by all partners must be sent by
registered letter with acknowledgement of receipt at the latest:

On 17/04/2009 at midnight, postal stamp as proof,

to the following address:
Délégation ANR/PNANO
Programme P3N 2009
CEA/Grenoble – Bâtiment 50 B - 17 rue des Martyrs
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Read this entire document carefully as well as the regulations concerning allocation conditions for ANR¹ funding prior to submitting a research project.

¹ Can be downloaded from:

www.agence-nationale-recherche.fr/documents/uploaded/2007/reglement-modalites-attribution-aide.pdf

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1. CALL FOR PROJECTS CONTEXT AND OBJECTIVES

1.1. CONTEXT

There have been significant research and development efforts worldwide in the field of nanosciences and nanotechnologies, as well as an increasing number of publications and patents. The scientific and technological breakthroughs of the last decade are conveyed by change and development of research fields from passive nanostructures (which are currently at the product stage) to nanostructures which offer more functionalities, assembled in more and more complex architectures referred to as "nanosystems". Nanosystems make it possible to imagine new communication and information processing strategies effective in several sectors with a strong impact on society and industry.

Depending on the high or low assumptions, analysts forecast strong contract opportunities associated with nanotechnologies ranging between USD 1,000 and 3,500 billion, with a rapid increase around 2010. The share of these contracts is broken down as follows: 46% for tools, 21% for nanomaterials, 6% for nano-biotechnology and 27% for nano-devices. Nano-biotechnology (24%) and nano-devices (15%) will especially increase in the future.

There is currently worldwide competition in the field of nanotechnologies and recent² studies have highlighted significant clusters:

- In the United States
- In Europe
- In Asia. The Asian region will be a serious competitor as extremely high growth rates, as regards scientific production and innovation, have been reported.
- In Russia

Europe and, more precisely, France has called on its research capacities and has focused its research effort on innovation in the field of nanoelectronics due to the growing momentum of production capacities in Asia and competition from emerging market countries. The goal is therefore to consolidate and develop R&D capacities in the area while reinforcing the continuum between research and industry. Moreover, Europe and France are very well-placed in the area of embedded systems and that of architectures which must be reassessed to take into account new effects (multi-physical coupling, energy quantification, field enhancement). All the strategic roadmaps currently concentrate on the "system" even "system of systems" dimension that must be taken into account: one example relates to introducing new functionalities in the systems not only in the digital but also analog area as this provides more flexibility while allowing energy savings. Heterogeneous integration of communication and information processing devices, and actuators and sensors, must be especially sustained given that France, having a small advance and high level expertise

² Prime excellence network from 6 PCRD, www.prime-noe.org

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can play a major role in this area and take the opportunity to generalise legal criteria which protect individual liberties.

From a technological standpoint, these “smart” miniature systems may be developed through new heterogeneous integration approaches where increased innovation is expected and where products may be developed by high-tech SMEs that are a lot less affected by globalisation and by loss of business in favour of regions where working cost is lower.

Finally, it should be highlighted that these system integration technologies will address dual objectives and will concern strategic sectors like transport and defence, and such sectors must stay under control if we are to maintain our political and economical independence.

The Nanosciences Nanotechnologies programme was started in 2005. 259 research projects were supported in three years and the first assessments show very satisfactory results: two thousand scientific papers were published concerning the 2005 projects. The programme also strongly promoted innovation: approximately 40 patents connected with the 2005 projects were filed. The “nano” sectorial committee decided to enhance the “systems” vision in order to take into account the scientific developments and the national and international context, as this seems to be a promising area where many scientific breakthroughs can be expected. For 2009, the French national research agency, ANR (“Agence nationale de la recherche”), renamed the “Nanosciences, Nanotechnologies and Nanosystems” programme “P3N” and launched a call for projects in conjunction with the French general armament authority, DGA (“Délégation Générale pour l’Armement”). The P3N programme must contribute to creating functions (calculation, sensor, actuator, etc.) requiring less material, less energy, in exchange for more complexity and at a more cost-effective price. An upstream analysis must be carried out concerning the conditions required to enable this change by using practical solutions in terms of materials selected, product life cycle, use, and even ethics.

All economic stakeholders are involved, from the producer to the consumer.

- The value of a product may be increased by adding new functions (calculation, sensor, communication, visualisation) made possible by adding embedded systems.
- Economic activities intended to satisfy needs such as sustainable developments through new products with controlled lifecycles that are traceable, energy self-sufficient, the development of “soft” processes, the ability to replace rare raw materials, etc. may be an option.
- Special mention must be made of nanoelectronics due to their multiplier effect. This sector estimated at more than USD 200 billion will be materialised by contracts in the leisure, services, games, communication areas amounting to USD 5,000 billion.

P3N is a mixed academic and partnership programme aimed at increasing efficiency of technological and knowledge transfer. This must result in an increase in innovations in the nanosystems field geared towards:

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- creating innovative businesses
- consolidating existing businesses

In the longer run, a more widespread transfer of innovations linked with nanosciences to equipment manufacturers and end-users can be expected, where gains will no longer concern technologies or physical effects, but the end system.

Concentrating on two major challenges, that is health and the environment is proposed in the programme. With respect to health, P3N proposes that new generations of sensors and actuators be explored. These new generations will have an impact on the nanomedicine sector with breakthroughs in early diagnosis, preventive medicine, medications and prosthetics. The second challenge relates to sustainable development, as nanotechnologies are a major factor for optimising energy conversion and storage devices (photovoltaics, fuel cells, etc.). Furthermore, it is important to be able to “probe” the environment with greater accuracy or develop more environmentally friendly processes. The P3N programme can contribute to providing answers for all these sectors or implementing new ANR projects in the health, biology or sustainable development sector. It should be highlighted that multidisciplinary aspects, prominent at a modelling, simulation, manufacturing and characterisation level will enable development of new areas of knowledge and expertise which may be widely implemented by industrial partners and especially by small and medium enterprises which may discover new fields of activities and thus become more competitive. Finally, it should be highlighted that special consideration is given to emerging research fields dealing with impact on society and regulation mechanisms associated with nanotechnologies.

Given the strategic challenges in this sector, collaborations must be started with other major stakeholders in the area. Therefore, on a European level the Agency participates in ERANET NanoSciera and on an international level, openings in the nanosciences and nanotechnologies areas are planned with China, Japan, Taiwan, and Canada in the scope of the international phase of the programme Blanc (white programme).

Given the specific aspects of the P3N programme concerning nano-engineering, development of partnerships was planned with the United States and especially the NSF. Therefore, projects involving American teams funded by the NSF in the area of fundamental research and engineering³ are expected for 2009.

³ Additional information may be found on the NSF international relations website (www.nsf.gov/oise). The list of projects supported by NSF may be consulted at www.nsf.gov/nano

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1.2. PROGRAMME OBJECTIVES

The Nanosciences, Nanotechnologies Nanosystems (P3N) programme has 5 objectives:

- Exploring the exceptional properties of the matter on a nanometer scale and using them to create new functions notably in the information processing and communication area. "Descending" and "ascending" approaches must be combined;
- Designing and developing technological processes, instrumentation and simulation;
- Exploring the "smart" micro and nanosystem concept for applications with a high impact such as health and environment which are the subject of a specific thematic field;
- Improving transfer between fundamental research and industrial research;
- Responsible development⁴ of nanosciences through analysis of the role of stakeholders, the impact of nano or micro creations on society and associated regulation mechanisms.

1.3. CALL FOR PROJECTS OBJECTIVES

The call for projects is aimed at:

- Promoting quality fundamental research by privileging **multidisciplinary projects**;
- Increasing the number of projects aimed at bringing together **research bodies and companies** including in the area of fundamental research, a key factor in nanosciences
- Increasing involvement of numerous **SMEs especially start-ups** in these disciplines and proposing **major innovations**.
- Increasing feedback in light of the **scientific and technological breakthroughs which have a high impact on society** by continuing the effort started in 2007, and reinforced in 2008. It could involve specific aspects in a predominantly technical whole or projects entirely related to these questions as provided for in the last thematic field of this call for projects.

Projects defended must contribute to keeping France in its position of excellence, reinforcing the structuring of the scientific community through projects, preparing laboratories and companies better for call for projects applications for the 7th PCRD and finally furthering economic activity.

⁴ It should be noted that the study of toxicity risks is mentioned in the CES programme.

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To this end, in 2009, ANR has set the goal through this AAP (call for projects) that partnership projects between research bodies and companies⁵ represent 60% of the number of projects selected and that funding granted to companies reaches 25% of the total amount of ANR funding. Through this AAP, ANR moreover wishes to fund a significant number of fundamental research projects conducted in partnerships between research body(s) and company(companies). There will also be the objective that at least one-third of the projects selected involve industrial research or experimental development.

2. THEMATIC FIELDS

The 2009 call for projects focuses on six main thematic fields which are mentioned below:

- Effects and phenomena appearing in nanometric dimensions,
- New manufacturing materials and technologies,
- Micro-Nano-devices and Micro-nanosystems,
- Instrumentation, modelling and simulation,
- Convergence between nanotechnologies– medicine and nanotechnologies – environmental sciences,
- Impacts on society and regulations.

2.1. THEMATIC FIELD 1: EFFECTS AND PHENOMENA APPEARING IN NANOMETRIC DIMENSIONS

This thematic field focuses on exploring chemical, physical and optical properties appearing in nanometric dimensions which may be used in information processing and communication architectures. The call will focus on the following priorities:

- Elementary interactions, interfaces and collective phenomena:
 - The study or use of interfaces and/or interactions between nanometric components of hybrid materials or between nano-objects enabling new or improved functionalities to be obtained (electronic transport, conduction, energy storage or conversion, catalysis, magnetic or multi-ferroic properties, metamaterials, mechanical properties, biocompatibility, etc.);
 - Generation of specific chemical reaction sites;
 - Description of interfaces between the nano-object and its environment and between nano-objects;
 - Modifications of interactions due to collective modes (plasmonic, magnetism, electronics);
 - Interactions at a molecular level.

⁵ See definition in Appendix

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- Fundamental self assembly mechanisms:
 - Ordered group of objects (i.e. beyond simple interaction between two objects), for example: in a pore, on a line, a surface or in three dimensions (epitaxy, confinement, spontaneous self assembly); controlled deterministic location of nano-objects;
 - The laws which govern self assembly and creation of ordered networks;
 - 1D, 2D or 3D growth of nano-object networks;
- New or enhanced optical properties stemming from sub-wavelength structuring:
 - Control of spontaneous or stimulated emission in nanometric structures
 - Enhancement of non-linearities
 - New concepts for emission, detection, modulation or control of optical signals

2.2 THEMATIC FIELD 2: NEW MANUFACTURING MATERIALS AND TECHNOLOGIES

This thematic field involves exploring the properties of new materials (carbon nanotubes, graphene, nanowires, piezoelectrics, ferroelectrics, ferromagnetics, “high k”, phase change materials, etc.) and related manufacturing technologies. The call will especially concern:

- Development of CMOS 22nm, 16nm processes
- Hybrid integration,
- “Clean” manufacturing processes from an environmental standpoint,
- Nano-manufacturing and nano-structuring techniques,
 - Spontaneous nano-structuring, self assembly (polymers, biomaterials, collective surface phenomena, bio-inspirations)
 - Nanotechnology and nanolithography in a function demonstration approach (nano-chemistry, catalysis, nanoparticles, etc.).

2.3 THEMATIC FIELD 3: MICRO-NANO DEVICES, MICRO-NANOSYSTEMS

This thematic field concerns integration of material properties, technological processes in component architectures and micro and nanosystems for information processing. It will also concern various electron, photon and phonon control approaches. Reducing static and dynamic energy consumption will be a focal point as well as approaches enabling it to be better dissipated. The call will especially concern:

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- Component architectures for nodes (22nm, 16nm),
- Alternative architectures and quantum devices,
- Components for advanced memories,
- Organic components and microsystems,
- New generations of sensors and actuators,
- Photonic, phononic crystal components and metamaterials,
- Components for infrared and in the Terahertz area,
- New generations of imagers,
- Reliability of nanodevices and nanosystems,
- Energy micro sources (micro cells, photovoltaic, energy recovery, etc.),
- Nanorobotics and bio-inspired systems.

2.4 THEMATIC FIELD 4: INSTRUMENTATION, MODELLING AND SIMULATION

Development of new structural and functional nano-characterisation tools including metrological aspects and failure mechanisms appearing in nano-devices and nanosystems will be the focal point of this field. Special consideration will be given to improving spatial and/or time resolution of techniques. The developments inherent to health and energy applications will also be especially considered. Experimentation development using large instruments will also be explored. In parallel to these nano-characterisation tools, the call will focus on modelling the properties of nanomaterials, nanodevices and nanosystems as well as simulation methods and techniques including coupling with large calculation infrastructures.

The call will concern:

- instrumentation for optical, mechanical and electrical micro and nano-characterisation (in situ and ex situ),
- instrumentation based on new or recently developed concepts such as cold atoms, quantum entanglement, spintronics, high Tc superconductors, time reversal, etc.
- Multi-physical and multi-scale simulation techniques,
- Simulation of growth, technological processes and components including failure mechanisms (from the nanomaterial to the nanosystem).

2.5 THEMATIC FIELD 5: CONVERGENCE BETWEEN NANOTECHNOLOGIES -MEDICINE AND NANOTECHNOLOGIES-ENVIRONMENTAL SCIENCES

This field will be focused on exploring the impact of nanotechnologies to propose technological and architectural breakthroughs for health and environmental monitoring. The call will concern:

- Micro and nanofluidics, surface, particles functionalisation and interfacing with the living organism or environment,
- Development of multi-parameter lab on chip,

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- Development of new optical, magnetic, mechanical or chemical sensor generations for health and the environment,
- Nano-imagery (or molecular imagery), nanotracers for imaging,
- Development of nanodevices and nanovehicles for active substance transportation,
- Design, manufacturing and characterisation of "smart nano-biomaterials" for ex vivo and in situ tissue engineering.

2.6 THEMATIC FIELD 6: IMPACTS AND REGULATIONS

Nanotechnologies entail scientific and technical promises, new markets, well-being perspectives for some but risks and uncertainties for others. The cultural, social and economic effects on the environment of research carried out in terms of nanosciences and nanotechnologies are becoming more and more visible. In parallel, there are more and more calls for responsible development which involves more thorough investigation of ethical, philosophic, legal and socio-economic aspects of research and technologies in this area.

Irrespective of whether they are from the public or private sector, stakeholders invest in new processes or products which incorporate nanotechnologies. The resources for developing these products or services, for carrying out research which integrates the methods or results of several distinct disciplines, company business models as well as organisation of scientific work and regulations on a national, European and worldwide scale must consequently be thoroughly developed.

This field will concern the following priorities:

- Analysing research, innovation and production from the standpoint of resources and skills implemented:
 - hybridising conditions of scientific disciplines and technologies during work on a nanometre scale, the conditions of innovation on a nanometre scale,
 - industrial and economic development models and dynamics: diversity of business models for companies, respective roles of large firms and start-ups;
 - the adaptation conditions for economic stakeholders from pre-existing markets to the effects of nanotechnologies, considered as generic technologies that are hard to reduce to former standard scope;
 - merger of sciences and engineering and its effects: new work organisations, new institutions, new territorial layouts, etc.
- Understanding and analysing the impact of nanosciences and nanotechnologies:
 - multiplying societal anticipations and their effects: literary fictions, social unrest, conditions for civil society mediators to become involved;

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- the emergence conditions for critical and alert movements;
 - the emergence conditions for convergent anticipations in scientific disciplines and technological fields which up to now were disconnected;
 - the conditions for "public bodies" to become involved in creating socio-technical priorities and implementation of R&D works; etc.
- o Understanding regulation mechanisms and their effects
- regulations concerning construction and management of work contracts in nanotechnologies: law, regulations and standards, case law, insurance and wise innovations, role of consultants and managing methods;
 - Standards and regulations at stake in all development stages of nanotechnologies; etc.

As regards the connections with other programmes it was decided for 2009:

1. to abandon the functional studies of molecules or bio-molecular complexes as these aspects rather fall within the PCV programme.
2. that studies that are too close to application in the health area, notably those calling clinical tests into play, fall within the TECSAN programme as in 2008.
3. Moreover, that studies concerning toxicity of nanoparticles are introduced into the CES programme.
4. that nanomaterial studies which do not call into play functional aspects do not fall within the P3N call and concern the MatetPro programme.
5. that photonic and microwave components for communications will be included in the VERSO programme in 2009, as P3N concentrates on demonstrating technologies, principle and concepts concerning generic components

3. ASSESSING THE PROPOSED PROJECTS

The main stages of the selection procedure are as follows:

- **Projects admissibility** assessment by ANR according to criteria outlined in §3.1.
- **Eligibility** assessment of projects by the assessment committee according to criteria outlined in § 3.2.
- Appointment of external experts by the assessment committee.
- Drafting of opinions by the external experts, according to criteria outlined in § 3.3 (refer to the analysis grid on the call for projects publication site whose address is indicated on Page 1).
- Assessment of the projects by the assessment committee after receipt of the expert's opinions (see assessment grid on the call for projects publication site).

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- Assessment of projects by the steering committee and proposal of a list of projects to be funded by ANR.
- Drafting of the list of projects selected by ANR (main list and any additional list) and publication of the list on the ANR site on the page dedicated to the call for projects.
- Sending a summary opinion from the works of the committees to coordinators of the projects not selected.
- Finalising scientific, financial and administrative files for the selected projects.
- Publication of the list of projects selected for funding on the ANR site on the page dedicated to call for projects.

The respective roles of the main participants of the selection procedure are:

- External experts, appointed by the assessment committee, give a written opinion on the projects. At least two experts are appointed for each project.
- The assessment committee, made up of members from the research communities concerned, French or foreign, from the public or private sector, is responsible for assessing the projects on the basis of the external expert's analyses and dividing them into three categories A (recommended), B (acceptable), C (rejected).
- The steering committee, made up of qualified individuals and institutional representatives, is responsible for proposing a list of projects to be funded by ANR from the works of the assessment committee.

The provisions of the ANR professional ethics code must be complied with by persons involved in selecting projects, especially provisions connected with confidentiality or conflicts of interest. The ANR professional ethics code is available on its website.

Conditions for operation and organisation of the steering and assessment committees are described in documents available on the ANR website⁶.

The composition of the programme committees will be displayed on the ANR⁷ website.

3.1 ADMISSIBILITY CRITERIA

IMPORTANT

Files which do not meet admissibility criteria will not be submitted to the assessment committee and may under no circumstances qualify for ANR funding.

⁶ <http://www.agence-nationale-recherche.fr/DocumentsAgence>

⁷ <http://www.agence-nationale-recherche.fr/Comites>

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- 1) **Files** in electronic format (submission documents A and B) must be submitted **before deadlines and in the format requested and must be complete.**
- 2) The project **coordinator** must not be a member of the assessment committee nor the programme steering committee.
- 3) The **length** of the project must range between 24 months and 48 months.
- 4) The call for projects is open to consortiums comprising at least two partners.

3.2 ELIGIBILITY CRITERIA

IMPORTANT

After evaluation by the assessment committee, files which do not meet eligibility criteria may under no circumstances qualify for ANR funding.

- 1) The project must **fall within the scope** of the call for projects, described in §2.
- 2) **Files** in hardcopy format (only submission document A) must be submitted **before deadlines, in the requested format and signed by all partners.**
- 3) **Research type:** This call for projects is open to research projects carried out by several partners of which one of them at least will be a research body. In terms of research-industry partnership projects, P3N call is open to:
 - Fundamental Research projects⁸,
 - Industrial Research projects⁸,
 - Experimental Development Projects⁸.

3.3 ASSESSMENT CRITERIA

IMPORTANT

Files which not meet admissibility and eligibility criteria will be assessed according to the following criteria (the expert's analysis grid and the assessment committee grid are available on the call for projects publication site whose address is mentioned on Page 1).

- 1) Relevance of the proposal with respect to directions of the call for projects
 - consistency with the thematic fields of the call for projects (refer to §2),
 - consistency with recommendations of the call for projects (refer to §3.4).

⁸ Refer to definitions for research categories in Appendix

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- 2) Scientific and technical quality
 - scientific excellence in terms of improving knowledge with respect to developing technologies,
 - innovative character in terms of technological innovation or innovation perspectives with respect to existing technology,
 - elimination of technological obstacles,
 - integration of disciplinary fields.
- 3) Methodology, quality of project construction and coordination
 - position in terms of developing technologies or technological innovation,
 - scientific and technical feasibility of the project, choice of methods,
 - project structuring, strictness in defining final results (deliverables), identification of milestones,
 - quality of the coordination plan (experience, financial and legal project management), involvement of the coordinator,
 - strategy for promoting project results.
- 4) Overall impact of the project
 - use or integration of project results by the scientific, industrial community or society and impact of the project in terms of knowledge gained,
 - industrial or technological application perspectives and commercial and economic potential, business plan, integration in the industrial activity. Credibility of the announced promotion,
 - interest for society, public health, etc.
 - whenever the issue arises, approach concerning the issues relating to impact on the environment.
- 5) Quality of the consortium
 - level of scientific excellence or expertise of teams,
 - consistency between partnership and scientific and technical objectives,
 - partnership complementarity,
 - access to new stake holders,
 - active role of partner company (companies).
- 6) Project consistency – means/ project feasibility
 - schedule realism,
 - adaptation of project steering to the means implemented,
 - adaptation and substantiation for the funding requested,
 - adaptation of coordination costs,
 - substantiation of staff means,
 - substantiation of non-permanent staff means (internship, thesis, post-doctorial work),
 - assessment of the investment amount and equipment purchases,
 - assessment of other financial items (missions, subcontracting, consumables, etc.).

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3.4 IMPORTANT RECOMMENDATIONS

3.4.1 RECOMMENDATIONS CONCERNING STAFF INVOLVEMENT

Projects will ensure a balance between permanent and temporary staff as stipulated in §4.1, "Conditions for funding temporary staff".

3.4.2 RECOMMENDATIONS CONCERNING ANR FUNDING REQUEST

Applicants are invited to present ambitious projects with amounts (in terms of funding requested from ANR) ranging between € 500k and € 1,500k with a restricted number of partners (between 2 and 4) including for fundamental research projects and this within the scope of this call for projects. Moreover, ANR would like to select a few larger projects (funding requested from ANR ranging between € 1,500k and € 2,500k). Projects with lower funding amounts and/or a number of partners above 4 are not necessarily excluded from selection.

3.4.3 RECOMMENDATIONS CONCERNING PROJECTS SUBMITTED

With regards to composition of consortiums, the desired characteristics (but not mandatory) of the projects proposed are:

Partnership projects between research bodies/companies must have participation from companies in proportion to the nature of the project. In general, the total (in persons.months) of the (permanent and temporary) staff assigned to the project is expected to represent, for all the project company partners, a fraction of the total labour force assigned to the project for all partners, of around:

- o 15%-50% for fundamental research projects,
- o 30%-60% for industrial research projects
- o 50%-70% for experimental developments⁹.

4 GENERAL FUNDING PROVISIONS

4.1 ANR FUNDING

4.1.1 FUNDING METHOD

Funding attributed by ANR to each partner will be given in the form of a grant according to the provisions of the "Regulations concerning attribution conditions of ANR funding" available on the ANR¹⁰ website.

⁹ These terms are defined in Appendix

¹⁰ www.agence-nationale-recherche.fr/documents/uploaded/2007/reglement-modalites-attribution-aide.pdf

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Only partners in France, French research body and research and tertiary institution international partner laboratories or French institutions located abroad may benefit from ANR funding. Participation of foreign partners is nevertheless possible insofar as each foreign partner covers its own funding in the project.

IMPORTANT

ANR will not allocate funding amounting to less than €15,000 to a project partner.

4.1.2 COMPANY FUNDING RATES

For companies¹¹, the maximum funding rates from ANR for this call for projects are as follows:

Name	Maximum funding rates for SMEs Signet non défini.	Maximum funding rates for companies other than SMEs
Fundamental research ¹²	45% of eligible expenses	30% of eligible expenses
Industrial research ¹²	45% of eligible expenses	30% of eligible expenses
Experimental development ¹²	45*% of eligible expenses	25% of eligible expenses

(*) For projects which do not involve effective cooperation between a company and a research body, this maximum rate is 35%.

Effective cooperation between a company and a research body exists when the research body bears at least 10% of costs in the funding base and is entitled to publish results for research projects provided that these results stem from its own research.

Note: The non-subsidised portion of project R&D expenses may benefit from a Research Tax Credit (Crédit Impôt Recherche - CIR). Forms and eligibility criteria can be found on:

www.enseignementsup-recherche.gouv.fr/cid20358/le-credit-d-impot-recherche-cir.html

¹¹ See definitions concerning structures in Appendix

¹² See definitions concerning research categories in Appendix

IMPORTANT

The incentive¹³ effect of ANR funding to a company other than an SME must be established. Therefore, companies other than SMEs selected for this call for projects will be asked to submit required assessment elements during the finalisation phase of administrative and financial files.

4.1.3 PROVISIONS FOR FUNDING TEMPORARY STAFF

Temporary staff (interns, fixed-term contract, interim etc.) may be assigned to the project for this programme. Unless in a specific case, for the entire project, the corresponding effort (in persons.months) resulting in ANR funding must not be higher than 50% of the total effort involved in the project.

4.1.4 RECRUITING DOCTORATE RESEARCHERS

Doctorate researchers may be funded by ANR for this programme. ANR funding of doctorate researchers under no circumstances presumes agreement of the doctoral institution. Doctorate researchers are considered as temporary staff for application of the “provision for funding of temporary staff” above.

4.2 CONSORTIUM AGREEMENTS

Under the aegis of the project coordinator, partners involved in research body/company¹⁴ partnership projects must enter into an agreement specifying:

- division of tasks, human and financial resources and deliverables;
- the sharing of intellectual property rights for results obtained under the project;
- the result circulation/publication method;
- promoting project results.

These agreements will also help to determine the existence of any indirect funding to be taken into account to calculate the maximum funding rate authorised by community management of funding for research, development and innovation (hereinafter called “management”).

The absence of indirect funding is assumed if at least one of the following conditions is fulfilled:

¹³ See definition of incentive effect in Appendix

¹⁴ See definition in Appendix

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- the beneficiary subject to management bears all costs of the project;
- in the case of results which cannot be protected by an intellectual property title, the beneficiary research body may widely circulate its results;
- in the case that results are protected by an intellectual property title, the beneficiary research body maintains ownership.
- the beneficiary subject to management who uses a result developed by a beneficiary research body pays this organisation compensation equivalent to market conditions.

The project coordinator will transmit a copy of said agreement to ANR or its support unit as well as a declaration signed by the partners certifying its compatibility with the management provisions as well as with the convention(s) defining project execution and funding conditions. Said submission shall be made within twelve months as from the effective date of deeds attributing funding.

The declaration must therefore either attest that the agreement fulfils one of the conditions listed above, or that all the intellectual property rights on the results as well as the access rights to results are allocated to the various partners and sufficiently reflect their respective interests, the importance of participation in works and their financial and other contributions to the project. Failing this, the agreement may be considered as representing an indirect form of funding, causing the rate of direct funding allocated by ANR to be lowered.

4.3 COMPETITIVE CLUSTERS

The steering committee will be informed of labelling of the project by a competitive cluster. It is reminded that all partners of a project do not necessarily have to be members of the cluster or located within its region for the project to benefit from the "cluster project" label.

ANR may grant additional funding to partner(s) of a project labelled by one of the competitive clusters located in the geographical perimeter of the cluster(s) concerned and selected by ANR in the scope of this call for projects.

The procedure to be followed is described below:

- The form declaring labelling of a project by a competitive cluster in Word format (*.doc) can be downloaded with the documents comprising the submission file from the ANR website.
- The coordinator partner must transmit the labelling declaration form, **with the first section duly filled out**, in electronic format to the governing body of each solicited competitive cluster.
- In the event of labelling, the governing body of the solicited competitive cluster must transmit the labelling declaration form to ANR **with section 2 duly filled out, in two versions**: one hardcopy version **signed** and sent by mail and one version in electronic Word (*.doc) format (postal and email addresses appearing on the form).

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- The signed hardcopy labelling declaration form must be sent to ANR within **two months maximum** after the closing date of the call for projects.

4.4 OTHER PROVISIONS

ANR funding of a project does not relieve project partners from fulfilling their obligations related to regulation, ethical rules and the professional code of conduct enforceable in their area of activity.

The coordinator agrees on behalf of all the partners to keep ANR and its support unit abreast of any changes which may modify the project content, partnership and performance schedule between submission of the project and publication of the list of selected projects.

5. SUBMISSION CONDITIONS

5.1 CONTENT OF THE SUBMISSION FILE

The submission file must include all elements required for scientific and technical assessment of the project. It must be complete by the call for projects deadline. The date and time thereof are mentioned on Page 2 of this call for projects.

IMPORTANT

No additional element may be accepted after closing of the call for projects whose date and time is mentioned on Page 2 of this call for projects.

Submission documents must be filed on a submission server. An account must be opened on the electronic submission server for the project (username and password) in order to access this service. To obtain this account as well as the server access conditions, it is recommended that participants enroll as soon as possible on the support unit site at the following address

<http://www.r3n.org>

"ANR-PNANO" menu

The complete submission file is comprised of two documents entirely filled out:

- **Submission document A – Administrative and budgetary description**
- **Submission document B – Scientific and technical description**

Elements of the submission file (submission document A in EXCEL format and submission document B in Word format) will be accessed from this call for projects publication webpage.

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Except for projects where use of French is mandatory, provision of a scientific and technical description of the project in English is recommended. This especially relates to human and social sciences projects where French may be used in the scope of an international assessment. This also concerns projects with a high evaluation potential (industrial research), for which an expert's analysis by an individual not residing in France would not be recommended due to particular economic stakes of the project.

Should the scientific and technical description be drafted in French, a translation in English may be requested within a deadline compatible with the assessment process deadlines.

5.2 TRANSMISSION OF THE SUBMISSION FILE

THE SUBMISSION FILE DOCUMENTS MUST BE TRANSMITTED BY THE COORDINATOR PARTNER:

1) IN ELECTRONIC FORMAT (submission documents A and B), mandatorily:

- before the closing date stipulated on Page 2 of this call for projects,
- on the submission website according to the recommendations at the top of this chapter.

Only the electronic version of submission documents present on the submission site at the closing of the call for projects will be taken into account for assessment.

CAUTION: Consideration of the proposal by the server only occurs upon validation by the applicant and must be carried out before the deadline. Beyond the deadline, the submission server is deactivated.

2) AND IN HARDCOPY FORMAT (submission document A only) mandatorily:

- SIGNED BY ALL PARTNERS
- sent before the deadline mentioned on Page 2 of this call for projects, the postal stamp as proof
- to the postal address mentioned on Page 2 of this call for projects.

NB: The signed hardcopy version is used to attest that project partners have agreed to submit the project.

As soon as the coordinator validates the proposal on the submission site, the submission server will return an electronic ACKNOWLEDGEMENT OF RECEIPT.

5.3 ADVICE FOR SUBMISSION

Applicants are strongly advised to:

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- Not wait until the deadline date to submit their project by electronic medium (Caution: compliance with the submission deadline is mandatory);
- Consult the internet site dedicated to the programme on a regular basis at the address mentioned on Page 2. This site has up-to-date information concerning the call for projects process (glossary, FAQ, etc.);
- Contact, where necessary, contacts by email, at the address(es) mentioned on Page 2 of this call for projects.

It is reminded that, for each partner, the submission document A must be co-signed:

- 1) by the scientific and technical director AND the laboratory manager for the "public organisation" or "research foundation partners" (including EPIC)
- 2) by the scientific and technical director AND the person authorised to make commitments on behalf of the body for other categories of partners.

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APPENDIX: DEFINITIONS

1. DEFINITIONS CONCERNING VARIOUS RESEARCH CATEGORIES

These definitions are a part of community management of Government funding for research, development and innovation¹⁵.

Fundamental research means “experimental or theoretical work mainly conducted with a goal to acquire new knowledge on the grounds of observable phenomena or facts without any application or practical use being directly foreseen”.

Industrial research is “planned research or critical investigations aimed at acquiring new knowledge and aptitudes with a goal of developing new products, processes or services or generate marked improvement of existing products, processes and services. It comprises the creation of complex system components required for industrial research, particularly for validation of generic technologies except for targeted prototypes [in the experimental development definition] [...] below”.

Experimental Development is “the acquisition, association, development and use of knowledge and scientific, technological, commercial and other existing techniques with a goal of producing projects, devices or drawings for design of new, modified or improved products, processes or services. It may also involve notably other activities aimed at theoretical definition and planning new products, processes and services as well as recording relevant information. These activities may involve the production of blanks, drawings, designs and other documents provided that they are not intended for commercial use.

The creation of prototypes and pilot projects which can be used commercially falls within experimental development if the prototype is the final commercial product and if it is not too costly to produce to be only used for demonstration and validation purposes. In the event of subsequent commercial use of demonstration projects or pilot projects, all sales revenue stemming from such use must be deducted from admissible costs.

Experimental production and product, process and service tests may also receive funding provided that they may not be used or transformed for use in industrial or commercial applications.

Experimental development does not include routine or periodic modifications to products, production lines, manufacturing processes, existing services

¹⁵ Refer to JOUE 30/12/2006 C323/9-10

<http://www.agence-nationale-recherche.fr/documents/uploaded/2007/encadrement.pdf>

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and other operations in progress even if these modifications may provide improvements”.

In actual fact, for this call for projects:

- fundamental research does not directly target application,
- industrial research targets results likely to be placed on the market within 4 to 5 years after the project ends,
- Experimental development targets results likely to be placed on the market within 1 to 2 years after the project ends.

2. DEFINITIONS CONCERNING PROJECT ORGANISATION

A single **coordinating partner** is appointed for each project and each of the other **partners** appoints a **scientific and technical director**.

Coordinating partner: research body or company employing the coordinator.

Coordinator: is responsible for scientific and technical coordination of the project, setting up and officialising cooperation between partners, production of project deliverables, scheduling progress meetings and communication of results. The coordinator is the main ANR and support unit contact. The organisation employing the coordinator is called the coordinating partner.

Partner: research body or company unit.

Scientific and technical director: is the main contact of the coordinator and is responsible for production of partner deliverables. For the organisation generally coordinating the project, the scientific and technical director of the project is normally the coordinator of the project in its entirety. However, particularly for large scale projects, they may be coordinated by a third party from the same company or laboratory.

Research body – company partnership project:

Research projects for which at least one partner is a company and at least one partner belongs to a research body (refer to definitions in §0 of this Appendix).

3. Definitions concerning structures

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Research body means “an entity, such as a research institute or a university whatever its legal status (public or private organisation) or its funding method, whose main goal is to conduct fundamental research or industrial research or experimental development activities and to communicate their results through, teaching, publication or technological transfer; profit is entirely reinvested into these activities; in communicating their results or in teaching; companies which may influence such an entity, for example in their capacity as a shareholder or member, do not benefit from any privileged access to its research capacities or to results which it produces ¹⁶”.

Technical centres, unless with a duly motivated exception, are considered as research bodies.

Company is any entity, irrespective of its legal form, practising an economic activity. Economic activity means any activity involving supplying goods and/or services on a given market¹⁶. The following are especially considered as such, entities practicing an artisanal activity, or other individual or family activities, groups of individuals or associations which practice an economic activity on a regular basis¹⁷.

Small and medium enterprise (SME) is a company falling under the definition of an SME by the European Commission¹⁷. In particular, an independent company having up to 249 employees with sales turnover of less than €50 M or a balance sheet total of less than €43 M is an SME.

Micro business is an SME which has less than 10 people and whose annual sales turnover or annual balance sheet total does not exceed €2 M.

4. OTHER DEFINITIONS

Incentive effect: Having an incentive effect means, in terms of community provisions, that funding must incite behavioural change of the beneficiary causing it to increase its R&D activities: its effect must be increase of the size, scope, budget or rate of R&D activities. Analysis of the incentive effect will involve a comparison of the situation with and without funding using the answers to a questionnaire which will be sent to the company. Various indicators may be used for this purpose: total project cost, R&D staff assigned to the project,

¹⁶ Refer to community management of Government funding for research, development and innovation, JOUE 30/12/2006 C323/9-11 (<http://www.agence-nationale-recherche.fr/documents/uploaded/2007/encadrement.pdf>)

¹⁷ Refer to European Commission recommendation dated 6 May 2003 concerning definition of small and medium enterprises, JOUE 20/5/2003 L 124/39.

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scope of the project, degree of risk, increase of the risk of works, increase of R&D expenditures in the company, etc.

Work time of researchers-teachers: the research time (considered at 100%) is the basis of the work time percentage of researchers-teachers. Therefore, a researcher-teacher who dedicates his/her entire research time to a project during one year will be considered as 12 persons.month. However, for calculation of the complete cost, his/her salary will be counted at 50%.

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