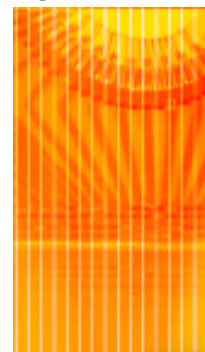
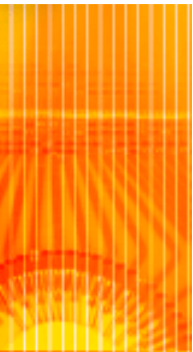


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Brief introduction



Dear readers,

It is already one year since Romania became a member of the European Union.

The substantial post-accession phase 2007-2013, which is ahead for the Romanian Area of Research, has been carefully prepared by the Romanian Government, through the elaboration and adoption of the **National Strategy for Research, Development and Innovation for 2007-2013**.

The Strategy establishes, as an ambitious, yet realistic and firm objective, the achievement of the critical mass and of the facilities that are necessary for performant research and for its international recognition, that is, for significantly increasing the quality of RDI activities. Consequently, these elements become key milestones for the evolution of the RDI system in our country.

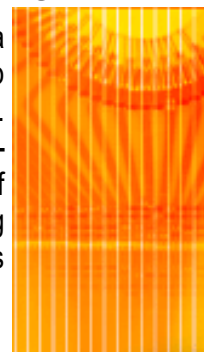
Under these circumstances, the **National Authority for Scientific Research (NASR)** established a functional and stable framework, with the role to ensure the background for decisions and to help optimise the public efforts for the modernisation and efficient exploitation of research infrastructures. Thus, NASR established in April 2007 the **Romanian Committee for Research Infrastructures – C.R.I.C.**, with 9 members - 5 representatives of the scientific community and 4 representatives of financing agencies (ministries involved in research financing), as a strategic forum providing recommendations and advice for the long term planning and the efficient allocation of resources necessary to develop research infrastructures.

The basic mission of C.R.I.C. is to define, and periodically review, the national priorities concerning the development of research infrastructures and to formulate recommendations for the phases to follow in their construction and operation, in the form of a national roadmap.

Prof. Dr. Gheorghe POPA, from the University “Alexandru Ioan Cuza” of Iași, a highly prestigious representative of the scientific community of Romania, was appointed to chair the Committee.

The Report that C.R.I.C. presented to NASR after almost one year of activity responds to the initial demand and configures the roadmap and milestones considered as necessary for consolidating the national research infrastructure, in accordance to the requirements imposed by its integration in the European Research Area.

The recommendations formulated in the C.R.I.C. Report promote the development of **19 new research centres**, in scientific and technical fields considered national priorities and also relevant for the current priorities and tendencies featured by the present evolution of european research.



The perspective of development for the investment objectives promoted by the C.R.I.C. Report takes into account the need for both the structural compatibility and the operational correlation of the national infrastructure with the pan-european infrastructures included in the **European research infrastructures roadmap**, established in 2006 by the European Strategic Forum for Research Infrastructures – ESFRI. Also, the Report estimates the necessary financial effort associated to each objective and presents the financing sources available through the Programme Capacities from the National Plan for Research, Development and Innovation for 2007 – 2013 – NP II and the Priority axis 2 of the Sectoral Operational Programme for the increase of economic competitiveness.

I wish to express all my appreciation and to address sincere thanks to the members of C.R.I.C. for their work during the first year of activity of the Committee.

I am quite convinced that the Report will respond to the expectations of the scientific community in our country and will determine an active involvement in sustaining and achieving the objectives that it promotes.

Prof. Dr. Eng. Anton ANTON

President of the National Authority for Scientific Research

Foreword



In April 2007 we received the honorable invitation from the National Authority for Scientific Research to lead the Romanian Committee for Research Infrastructures – C.R.I.C.

The orientation of research activities towards large infrastructures requires long-term planning, not only from the part of decision-makers but also from the part of researchers. In this respect, C.R.I.C. comes to support the actions of the National Authority for Scientific Research (NASR) aiming to accomplish a consolidated portfolio of projects for investments in research infrastructures (for example, by the IMPACT Programme) and to have a timely updating of the volume of information related to this matter.

We are now at the moment of presenting our report after almost a year of analyses, debates within C.R.I.C., regarding the current status of research infrastructure in Romania, its necessities and priorities of development in accordance with the National Strategy for Research&Development and Innovation for 2007-2013.

The C.R.I.C. Report aims to orient the infrastructure projects proposals from the point of view of the types of objectives that will have priority support. In this respect, C.R.I.C. has examined the vastness and cost of such proposals and recommended a framework for their financing by using a coherent set of criteria. The report is expected to become a catalyst for the efforts aiming to achieve the most significant and urgent strategic investments in research infrastructures.

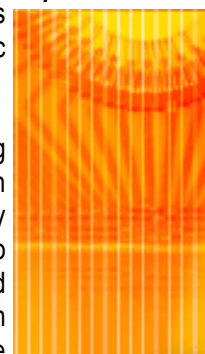
The C.R.I.C. Report targets the long-term research directions of Romania, proposing a list of priorities, along with recommendations regarding their achievements. This constitutes a national roadmap for research infrastructures, that will be annually updated, after analyzing the national opportunities of research and by monitoring the new opportunities that come up in science at international level. The national roadmap takes into consideration the synergy with the European roadmap for research infrastructures, such as it was established by the European Strategic Forum for Research Infrastructures (ESFRI), so that policy makers in the research domain would have the information required for their decisions. For instance, in particular cases, due to the very significant resources that are necessary, it is more efficient to participate in a project for a pan-European infrastructure and to develop only the infrastructure that is strictly necessary for correlation with it, than to engage independently in such a direction at national level.

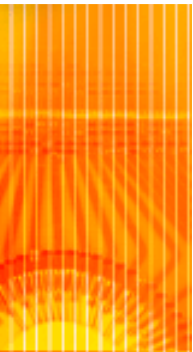
In these circumstance, the aim of this report is to provide, on one hand, to research policy makers, and on the other hand, to the Romanian academic community at large, as well as to the business community, an orientation regarding the potential directions for development of large research infrastructures, needed for facilitating the integration into the European Research Area. The members of C.R.I.C. also express their belief that the National Authority for Scientific Research will pay much attention to the process of evaluation of the project proposals, by involving most prestigious experts – evaluators at national and international level, in order to develop a climate of trust and confidence in the selection of the best projects, proposed by credible and highly performing institutions and specialists.

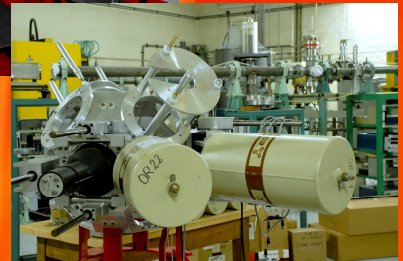
January 2008

Prof. Dr. Gheorghe POPA

President of the Romanian Committee for Research Infrastructures







The role of the Romanian Committee for Research Infrastructures

C.R.I.C.



The National Strategy for Research, Development and Innovation (RDI) for 2007 - 2013, adopted by the Government of Romania in march 2007, assigns a crucial role to research infrastructure to support the development of knowledge and of human resources for research.

Two of the six components of the National Plan for Research, Development and Innovation for 2007 – 2013 – the 2nd National RDI Plan – NP II are directly oriented towards this direction, and the other four have research infrastructure as the main pillar for supporting the activities.

The research infrastructures have special characteristics, among which we can enumerate the most important:

- the financial resources originate from several financers;
- the complexity and dimensions of these infrastructures requires long-term planning,
- they are commonly used by both the internal users, the staff of the administrating entities, and by external users,
- they may have (and must have), in the medium term, a major impact on the evolution of research and on the development and progress of the economic environment in the country.

At international level, by research infrastructure it is understood:

- equipment of very high value and complexity (for example \geq Euro 100.000), used only by specialized research staff;
- investment objectives for research;
- high capacity and complexity scientific databases (with both free and restricted access).

The establishment and use of the research infrastructure developed on the basis of public funds requires a special attention from the managers of public funds and from the administrators of infrastructures, for ensuring the financial and institutional framework proper to their reasonable and efficient use and development.

For Romania, the intensification and, especially, the optimization of the public effort in the establishment, modernization and use of the research infrastructure are main elements recommended both by the National Strategy for RDI, as well as by the results of the survey on research infrastructures, conducted by NASR between 2005 and 2006.

The Romanian Committee for Research Infrastructures (C.R.I.C.) was appointed by Decision of the President of NASR on 2 April 2007, being composed of 5 representatives of the scientific community and 4 representatives of financing agencies (ministries involved in research financing).

C.R.I.C. is responsible for ensuring a solid basis for the evaluation of the long-term needs for the development of research infrastructures.

This body was constituted both as a scientific advisory council of NASR for the implementation of the programme “Capacities” of the 2nd National RDI Plan, and a strategic forum, that will draw up reports and will make recommendations for the allocation of resources necessary to create, develop and use the research infrastructure, important to the Romanian scientific community.

C.R.I.C. proposes the allocation of resources for the infrastructure to be developed partially or totally from Romanian public funds both on the territory of Romania and abroad.

The main mission of C.R.I.C. is to establish the national priorities for research infrastructures and to draw up a report regarding the stages to be followed in their construction and operation (Roadmap). This report addresses as main issues: purpose, definitions, categories, priorities, special potential fields.

In establishing the priorities, the following categories of infrastructures have been considered:

a) national:

- research facilities of national interest, such as the National Network for Education and Research (RoEduNet), high-complexity laboratories and equipment;
- large scientific and documentary databases for research, developed in Romania or for which it is necessary to purchase access licences (ISI databases, libraries);

b) international:

- infrastructures constructed or operated under international co-operation on the basis of agreements or within organizations and projects where Romania participates, such as:
 1. ESA, CERN, ITER, IUCN Dubna;
 2. projects from the list of pan-european research infrastructures established by ESFRI;
- other infrastructures developed under national and / or international partnership.

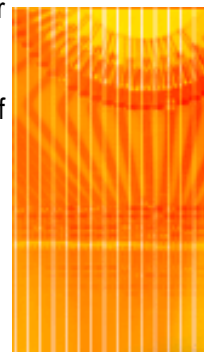
As regards the fields with special potential, the following are to be considered:

- the priorities regarding the research infrastructure projects identified by consulting the scientific and business communities, also including the analysis of the portfolio of the IMPACT projects (bottom – up approach),
- the national high-priority projects (top-down approach),
- the infrastructure projects that are national priorities considered at European and international level.

For the competition regarding large investment projects for the development of public research infrastructures, jointly launched in December 2007, under the programme Capacities of NP II — and also under the Sectoral Operational Programme – Increase of the Economic Competitiveness – Priority Axis 2 – Operation 2.2.1- Development of public research infrastructures, C.R.I.C. is part of the competition's Selection Committee that has the following tasks:

- Approval of the preliminary report of evaluation,
- Appointment of the Commission for Claims,
- Delimitation of the projects that got the same scoring,
- Implementation of selection-specific rules,
- Drawing up the final assessment report and the list with proposals selected for financing, and their submitting for approval to the president of NASR.

The evaluation of the projects proposals will be made by foreign evaluators in evaluation panels composed of three members each.



Structure of C.R.I.C.

By the decision of the President of NASR of 2 April 2007, the following were nominated to be members of this debate Forum:

President:

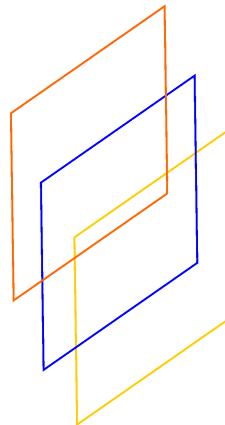
Prof. Dr. Gheorghe POPA – University “Alexandru Ioan Cuza” Iași

Members:

Acad. Bogdan SIMIONESCU – Institute of Macromolecular Chemistry “Petru Poni” Iași
Dipl. Eng. Gabriel NEAGU, PhD. – National R&D Institute for Informatics – ICI Bucharest
Octavian RUSU, PhD. – RoEduNet
Adrian DUȘA, PhD. – University of Bucharest
Dipl. Eng. Nicolae HRISTEA, PhD. – Director, Ministry of Agriculture and Rural Development
Col. Dipl. Eng. Marin TĂNASE, PhD. – Ministry of Defense
Dipl. Eng. Petru IANC, PhD. – Director General, Ministry of Economy and Finances
Dipl. Eng. Dan DOBRESCU – Head Commissary, Ministry of Interior and Administrative Reform
Prof. Dr. Dipl. Eng. Lucian SANDU – Technical University of Constructions, Bucharest

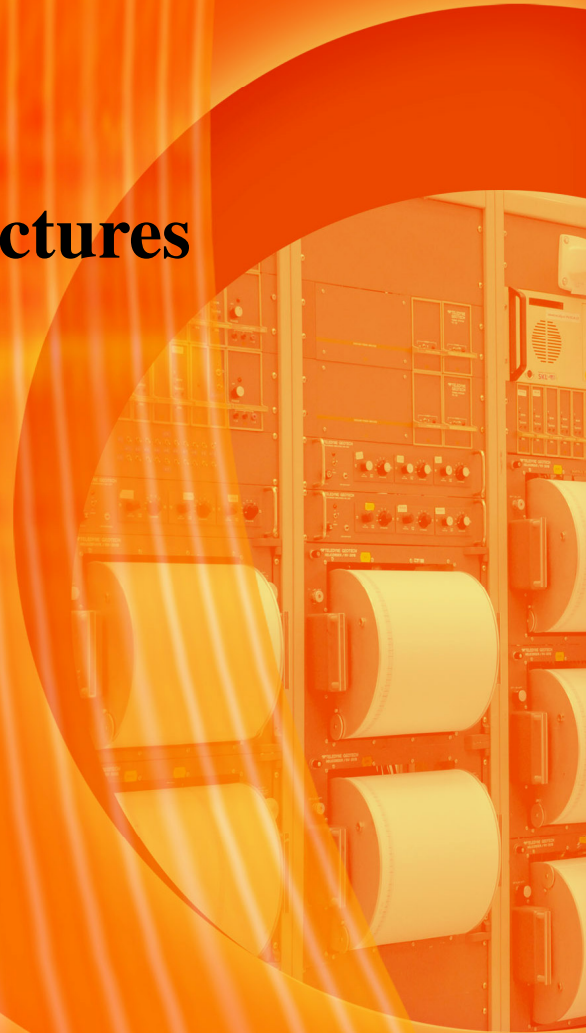
Secretariat of C.R.I.C. is supplied by the National Authority for Scientific Research, as it follows:

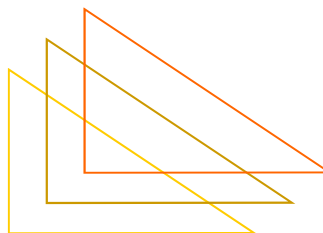
Ionel ANDREI – Director General, NASR
Dana GHEORGHE - Director General, NASR
Elena TOMA, PhD. – counselor for European affairs, structural funds
Viorel IOANĂȘ – counselor, NASR
Mihaela GUDA – counselor, NASR





Defining research infrastructures





Traditionally, a research infrastructure (including associated human resources) is represented by major equipment or sets of instruments as well as by knowledge resources such as collections, archives and databases.

In the context of this report, the large research infrastructures are defined as follows:

Installations, equipment or tools, of special vastness and complexity – given by the costs for procurement, operation, maintenance and/or for facilitating users' access, and which ensure for the scientific community the essential conditions for both fundamental and applied research.

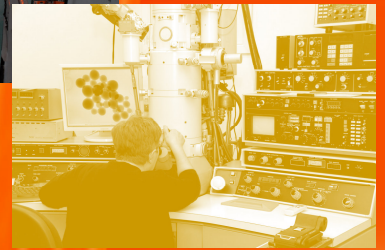
The research infrastructures may be organized in either a unique location, or distributed in multiple locations or in virtual locations – the service being provided electronically. The eInfrastructure-type objectives (electronic infrastructures: high/speed networks, Grid, software-associated products) are included in this last category. For these infrastructures, it is necessary to ensure a high degree of information structuring, through data management systems that should enable high capacity exchange and communication of information with potential users.

These infrastructures are necessary for ensuring competitiveness of the Romanian research at international top level, in various scientific and technological fields.

In this direction, the projects that will be included in the roadmap are characterized by very high costs (at least, Euro 600.000) and by a long period of development that requires expertise and a stable sustainable institutional framework.

Additionally, these projects present the following characteristics: they provide socioeconomic benefits at national level

- they are harmonized with the common interests of the scientific community at national level
- they have a strategic impact in top scientific fields
- they are interoperable and competitive at international level. These characteristics may be compulsory for fields in which the topics considered are transnational and require international cooperation (examples: energy field, environment, security, etc)
- they are used at full capacity on a multi-disciplinary basis, and the access is free for all the interested researchers
- they valorize the expertise existing in the field, in a co-operative manner. There are fields with interdisciplinary character that require the participation of specialists from various fields and even of the research institutions from various fields, that have to use complex and expensive infrastructures. In these cases, it is necessary to institutionalize the co-operations in order to use efficiently the infrastructure and to create the conditions for solving out the specific problems. Examples: field of fundamental sciences, environment, energy field, health, etc
- they have long term impact on the quality of people's life
- they stimulate the interest of young people and attract them in the research career. The development of a modern and efficient infrastructure will create a strong motivation for stabilizing the “brain drain” phenomenon and creating the premises for its reversal
- they have a determinant role in training new generations of researchers
- they stimulate the transfer of knowledge and technology.



Financing instruments



Since 2007, NASR considerably diversified the instruments for the funding of research with the purpose to fulfill the objectives of the National Strategy for RDI 2007-2013. As regards the investments in RD infrastructures, the financing resources are the following:

A. Programme Capacities within NP II. By Module I, this programme finances small investment projects up to Lei 2 million, consisting of purchases of equipment, as well as large investment projects, where the value of the non-reimbursable funding ranges between 2 million and 60 million lei, and besides purchases of equipment with also contain activities of construction/enlargement/modernization of buildings. Both types of projects are dedicated to the public research organizations. Competitions for small projects have been annually organized since 2007. The first competition for large projects was launched in December 2007, the entire calendar for the following competitions being recommended to be set out until the end of 2008.

B. Priority axis 2 of Sectoral Operational Programme for the increase of the economic competitiveness. This programme is financed from structural funds from the European Union through the European Regional Development Fund and with contribution of Romania (about 15% of the funds). The Priority Axis 2 "Competitiveness through RDI" contains 9 operations out of which 4 are designed for investment projects.

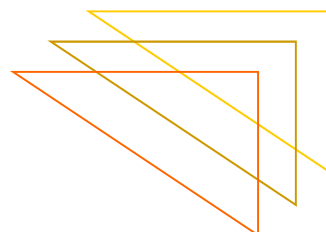
B.1. Operation 2.2.1 has as objective the development of the RD infrastructure in the public research organizations through procurement of equipment and devices that may be accompanied by activities of construction / enlargement / modernization of buildings. The operation targets only 5 of the priority fields of the National RDI Strategy: energy, environment, health, agriculture, food safety and security and innovative materials, processes and products. In December 2007 a joint competition was launched together with Capacities Module I for investments projects for large RD infrastructures (max. 50 million Euro), for which the value of the non-reimbursable financing is comprised between 2 million and 60 million Lei. The following competitions on this operation will be organized in 2009 and 2011.

16 B.2. The Operation 2.2.2 has as objective the development of poles of excellence, defined as cluster-type innovative structures, that should get together innovative enterprises, training centers, institutions of the local administration, banks etc. around powerful research institutions and universities in the fields with economic potential. The operation mainly supports the development of joint facilities of the pole, while the research activities of the pole and individual investments in research infrastructure may be supported by other operations within the priority axis. By joint facilities are understood:

- facilities for research and training centers;
- research infrastructures with free access for all the members of the pole: laboratories, testing facilities;
- broadband network infrastructures.

The maximum value of the non-reimbursable financing for a project is 15 million Lei. The first competition for this operation is scheduled in 2009.





B.3. The Operation 2.2.3 aims at the development of networks of RD centers, coordinated at national level, and connected to European and international networks in the field (e.g. GRID, GEANT). Activities for connecting research organizations to the GRID networks and for upgrading the national network for research and education - RoEduNet (beneficiary: RoEdu Net) will be financed. The first competitions will be organized in 2008.

B.4. The Operation 2.3.2 addresses enterprises and targets the development of their RD infrastructure by creating new jobs in research. The total value of a project cannot exceed 50 million Euro, and the value of the public financing is of maximum 50% of the eligible expenses for large enterprises, 60% for medium enterprises and 70% for the small ones respectively (in the region Bucharest-Ilfov by 10% less for every category). From 2008 onwards, annual competitions will be organized until the funds allocated for the operation are finished.

C. Programme “Supporting Institutional Performance” within NP II

This programme, component of NP II, will support the activities included in the action plans that implement the individual strategies of public RD units and institutions. Activities in the action plans will also promote the institutional development of public RD organizations, supporting for the development of their research infrastructure.

D. Capital investments from the NASR budget

The investment objectives and purchases of equipment for the units and institutions functioning under the NASR coordination and subordination will benefit also from state budget allocations through the NASR budget.

E. Financing the RD facilities of national interest

The expenses for the maintenance and use of the national interest RD facilities, established according to the criteria and list approved by the Governmental Decision, will be supported from the funds allocated from the NASR state budget. The List of these facilities, approved by the Governmental Decision no. 1428/2004, can be found in Annex 1.

