

CROATIAN NATIONAL GRID INFRASTRUCTURE - CRO NGI CROATIAN NATIONAL GRID INITIATIVE – CRO-GRID

BASIC PRINCIPLES

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1. BASIC TERMS

The Croatian National Grid Infrastructure (hereinafter: **CRO NGI**) is an integral distributed computing environment consisting (in this stage) primarily of computing (processing) and data (disc and tape) resources, which are located in geographically distributed sites within the Republic of Croatia. CRO NGI is a common resource of the research and academic community and represents the fundamental infrastructure for the scientific research, use of new technologies and the integration of Croatia and Croatian scientists into the European Research (ERA) and European Higher Education (EHEA) Area.

There are the **Board**, the **Council of Partners**, the **Council of Users** and the **Coordinator** that take part in the management of CRO NGI within their respective competences. These are described in more detail in Chapter 4 of this document.

The **Croatian National Grid Initiative** (hereinafter: **CRO-GRID**) represents an effort to establish a sustainable grid infrastructure in Croatia. CRO-GRID is a voluntary-based association of academic and research institutions, government institutions and commercial companies gathered around CRO NGI.

2. INTRODUCTORY REMARKS AND THE HISTORICAL OVERVIEW

The grid infrastructure is recognized today in Europe and worldwide, together with the high-speed networking, as one of the basic components of the e-Infrastructure of research and education and soon of the entire knowledge-based society. The starting point of such perception of the grid infrastructure is the paradigm of the grid itself, which offers a flexible organisation of geographically distributed resources (computing, data and information resources as well as, for instance, laboratory and experimental devices and equipment), with a consistent and simple access option and possibility to co-ordinately share them within collaborating virtual teams and organizations.

The issues of e-infrastructure are the fundamental issues of the Seventh Framework Programme of the European Commission. They are also present in the strategic documents of the Republic of Croatia “Croatia in the 21st Century – Information and Communication Technology” and “e-Croatia 2007 Programme”, as well as in the operational plans of the enforcement of that programme.

The significance of the grid was recognized in Croatia in the early 2000s when, on the initiative of the Rudjer Boskovic Institute (RBI), common attempt of a larger number of institutions of the academic and research community started drawing up the proposal for a national poly-project CRO-GRID. The project was supported and financed by the Ministry of Science, Education and Sports. The foundations for the use of grid technology in Croatia were created between the launch of the project in 2004 until the beginning of 2007 through three projects: CRO-GRID Infrastructure (led by the University Computing Centre, University of Zagreb - SRCE), CRO-GRID Middleware System (led by the Faculty of Electrical Engineering and Computing, University of Zagreb - FER) and CRO-GRID Applications (led by the RBI). Moreover, the first grid infrastructure was built in 2005, which connected five nodes in Zagreb, Osijek, Rijeka and Split. Through the active participation in European FP6 project EGEE-II (Enabling Grids for E-science) three Croatian EGEE-II sites have been successfully integrated into the European grid infrastructure.

3. CROATIAN NATIONAL GRID INFRASTRUCTURE (CRO NGI)

CRO NGI is an integrated distributed computing environment consisting primarily of computing (processing) and storage (disc) resources. The resources are located in the geographically distributed nodes within the Republic of Croatia. Primarily, those nodes are hosted by institutions which are parts of the science and higher education system of the Republic of Croatia.

CRO NGI, as an important national resource for the academic and research community and for other segments of the society as well, has been built and operates under the financial and organizational support of competent government bodies, especially the Ministry of Science, Education and Sports.

CRO NGI is and will be integrated with similar European infrastructures, ensuring the integration of Croatia and Croatian scientists into the European Research (ERA) and European Higher Education (EHEA) Area.

Therefore, the grid infrastructure established for the needs and during the participation in the European research grid projects from Framework Programmes of the EU, especially the EGEE Project, is considered as a part of CRO NGI.

There is a significant number of central resources and services, such as the job management and job distribution system, the monitoring system or the system of authentication and authorization of the access right, whose proper functionality is very important for the entire infrastructure.

The prerequisite and one of the basic components in building CRO NGI is the multi-gigabit and multi-functional national research and educational network CARNet.

4. MANAGEMENT, DEVELOPMENT AND USE OF CRO NGI

4.1. Partner of CRO NGI

CRO NGI is based on the cooperation between institutions from the academic and research community – partners in the development and use of CRO NGI. Each partner joins the community of developers and users of CRO NGI starting primarily with their respective requirements and interests, but acknowledging and contributing to common interests and goals as well.

An institution gains the status of a **partner institution of CRO NGI** (hereinafter: **partner**) by signing a contract with the coordinator of CRO NGI. The partner has certain rights and obligations, especially the commitment to place and maintain a CRO NGI site with all resources as well as the possibility of special rights for the use of CRO NGI.

The partner status can be given to an institution or a company outside the academic and research community if it contributes significantly to the development or to the resources of CRO NGI.

4.2. CRO NGI Users

CRO NGI is permanently available to be used for the needs of all scientific and research projects which are completely or partially financed by the State Budget of the Republic of Croatia as well as for the needs of the higher education.

The status of a **CRO NGI user** (hereinafter: **user**) is given to any institution from the academic and research community, acting as coordinator of a scientific or research project financed by the State Budget of the Republic of Croatia and using the resources of CRO NGI.

The user status can be given to a Joint Research Unit - consortium of institutions working on a scientific or research project which is funded by the State Budget of the Republic of Croatia.

Formal request for the user status is needed prior to its approval.

Partners from the academic and research community gain, automatically with the partner status, the user status as well.

The user rights and obligations, including special rights of partner institutions, also the possibility to use CRO NGI for the needs of other national systems and for the needs of Croatian economy are further regulated and prescribed by the Board.

4.3. CRO NGI Coordinator

The **CRO NGI Coordinator** (hereinafter: **Coordinator**) ensures planning, development, maintenance and everyday operations of the Croatian national grid infrastructure.

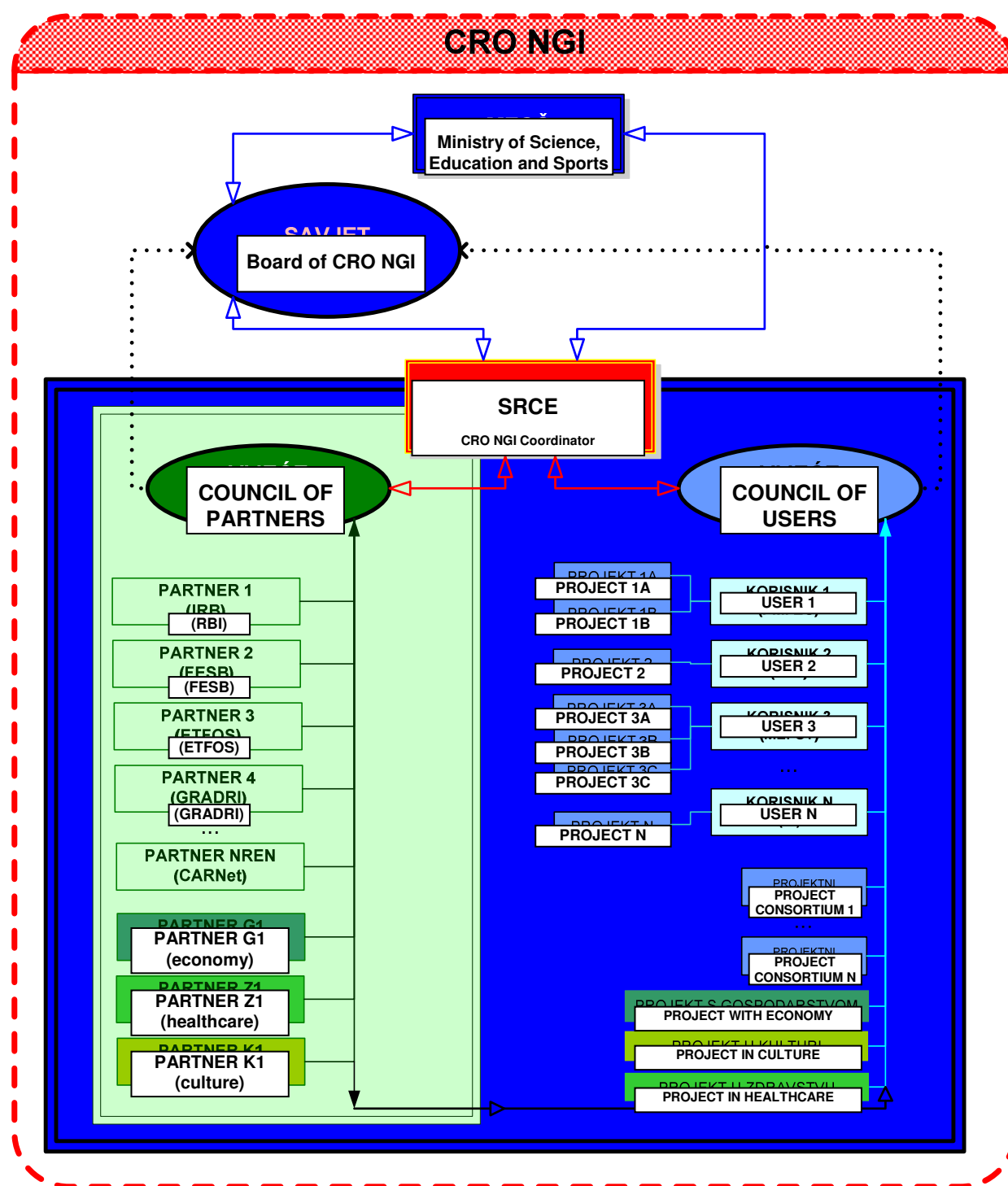
The Coordinator of CRO NGI is the University Computing Centre (*Sveučilišni računski centar*, hereinafter: **Srce**).

CRO NGI budget is ensured through Srce budget, as a public institution financed by the State Budget. Srce provides a legal entity of CRO NGI as well.

The Coordinator has the following rights and obligations:

- operative (technical) management of CRO NGI, including the maintenance of central systems and services;
- planning and performing procedures necessary for the development of CRO NGI;
- making of and proposing annual working plans of CRO NGI to the Board;
- planning and management of the resources assigned to CRO NGI by the State Budget;
- making annual reports on the work and use of CRO NGI;
- operational and financial reporting to the Ministry of Science, Education and Sports;
- formal representation of CRO NGI and CRO-GRID in international bodies and infrastructural grid projects in accordance with strategic guidelines of the Board;
- proposing the usage policy of CRO NGI;
- deciding on requests for gaining a partner status from the academic and research community;
- deciding on requests for gaining a user status from the academic and research community;
- organization of educational activities regarding the use of CRO NGI;
- organization of user support in using CRO NGI;
- organization of an annual meeting of partners and users of CRO NGI and members of CRO-GRID;
- administrative and technical support to the work of the Board, the Council of Partners and the Council of Users;

- dissemination and outreach activities regarding CRO NGI.



Participants and Management Model of CRO NGI

4.4. Bodies of CRO NGI

4.4.1 Council of Users of CRO NGI

The Council of Users of CRO NGI (hereinafter: **Council of Users**) is a body composed of one representative per each user institution. A member of the Council of Users is a representative of the Coordinator as well. The Council of Users discusses the needs of the users of CRO NGI, the reports on the use and the development plans for CRO NGI.

The Council of Users has the obligation to discuss the needs of users and it proposes necessary measures to the Coordinator, technical and organizational in nature, regarding the development and the use of CRO NGI from the user point of view.

The Council of Users selects the Chairman of the Council of Users among themselves for a period of one year. The meetings of the Council of Users are held at least twice a year.

4.4.2 Council of Partners of CRO NGI

The Council of Partners of CRO NGI (hereinafter: **Council of Partners**) is a body composed of one representative per each partner, a representative of the Coordinator, a representative of CARNet and a representative of the Ministry of Science, Education and Sports.

The Council of Partners has the obligation to discuss the technical plans and development plans of CRO NGI, the policy of use and cooperation of CRO NGI with similar infrastructures in Europe and worldwide. The Council of Partners makes proposals for the annual operational plan and proposes necessary measures to the Coordinator, technical and organizational in nature, regarding the development and use of CRO NGI.

The Council of Partners selects the Chairman of the Council of Partners among themselves for a period of one year. The meetings of the Council of Partners are held at least twice a year.

4.4.3 CRO NGI Board

The CRO NGI Board (hereinafter: **Board**) is the highest body of CRO NGI and CRO-GRID, which makes strategic decisions regarding CRO NGI.

The Board is appointed by the Minister of Science, Education and Sports for the period of 3 (three) years.

The Board has 9 members.

The members of the Board, appointed by the Minister:

- the Chairman of the Board, appointed by the Minister among the experts in the field of advanced computing science;
- a representative of the Ministry of Science, Education and Sports;
- a representative of the Central State Administrative Office for e-Croatia;
- a representative of the Association of Chancellors;
- a representative of public institutes;
- a representative of the Croatian Academy of Sciences and Arts.

The members of the Board by their function are:

- the Chairman of the Council of Partners;
- the Chairman of the Council of Users;
- the Head of the Coordinators.

The Board

- discusses and adopts strategic guidelines for the development of CRO NGI;
- discusses and adopts strategic guidelines for the usage policy of the CRO NGI;
- discusses and adopts strategic guidelines for the support to other national grid projects;
- discusses and adopts strategic guidelines for international cooperation in the grid area;
- together with the Coordinator, takes part in planning and fund raising from the State Budget which are necessary for CRO NGI;
- discusses and approves the annual operational plan, which is proposed by the Coordinator;
- discusses and approves the annual report on the work and use of CRO NGI, which is prepared by the Coordinator;
- decides on requests for gaining the partner status for subjects outside the academic and research community;
- decides on requests for gaining the user status for subjects outside the academic and research community;
- decides on special rights of partners of CRO NGI.

Meetings of the Board are held at least twice a year.

4.5. Funding of CRO NGI

The development and maintenance of CRO NGI is funded

- by the State Budget, including the resources for regular activities of CRO NGI, development and procurement of new equipment for the needs of CRO NGI and international cooperation;
- from the special funds for the development of science and scientific infrastructure in the Republic of Croatia;
- by additional investments by partners (in form of material/human resources);
- by donations of partners outside the system of academic and research community and other subjects;
- from international projects, funds and donations.

5. CROATIAN NATIONAL GRID INITIATIVE (CRO-GRID)

The **Croatian National Grid Initiative** (hereinafter: **CRO-GRID**) is a voluntary-based association of academic and research institutions, government institutions and commercial companies gathered around CRO NGI.

Founders and members of CRO-GRID are the institutions which took part in the poly-project CRO-GRID from 2004 to 2007:

- Faculty of Electrical Engineering of the University of Osijek;
- Faculty of Electrical Engineering and Computing of the University of Zagreb;
- Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture of the University of Split;
- Faculty of Transport and Traffic Sciences of the University of Zagreb;
- Faculty of Civil Engineering of the University of Rijeka;
- Rudjer Boskovic Institute;
- Ministry of Science, Education and Sports;
- Faculty of Science, Department of Mathematics, University of Zagreb;
- University Computing Centre, University of Zagreb - Srce;
- Faculty of Engineering of the University of Rijeka.

Partners of CRO NGI automatically become members of CRO-GRID.

Members of CRO-GRID can become:

- users of CRO NGI;
- state institutions and bodies of the public authority;
- institutions from the academic and research community;
- commercial entities – companies, corporations and similar.

The membership in the CRO-GRID is achieved by signing the Memorandum of Understanding.

The goals of CRO-GRID are

- the promotion of grid technology and its use in the scientific research and Croatian economy;
- integration and coordination of different national, area (scientific areas) and regional grid projects;
- support and stimulation of the development and use of the Croatian national grid infrastructure and its connection to similar European and global infrastructures.

Activities of CRO-GRID are coordinated and organized by the CRO NGI Board.