

E-LEARNING AND E-SCIENCE INFRASTRUCTURE OF MOLDOVA

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Abstract

Since 1999 in Moldova as in many other European countries has started creation of National Research and Educational Network (NREN). Brief history, main goals of national networking infrastructure construction, current state and planed directions of its future development are outlined. The results of some international projects realization are summarized. The current activities of NREN building in Moldova are described, witch include establishing academic connectivity with similar communities from neighbour countries, with Trans-European, Balkan, Black Sea, Mediterranean and other networked communities.

Keywords: research and academic networks, international collaboration

1 INTRODUCTION

The process of building of global networked information society opens large perspectives for integration of nation-wide research and education resources distributed over different countries as well as for creation of modern e-learning, e-science, electronic publications dissemination and collaborative work infrastructures. Moldova became involved in these processes and now actively establishes integrated physical networking structures, capable to provide Internet access points for academic organizations, higher and medium education schools and to join the family of European National Research and Education Networks (fig.1) [1].



Figure 1. RENAM and European NRENs

Creation of united networking infrastructure for science and education in Moldova passed several stages. A very important step on above-mentioned road was made in August 1999, when RENAM was created under support of NATO scientific program and following recommendations of European Commission. Strategic scope of RENAM can be emphasized by next aims:

- Creation and development of *basic network nodes and highways* of RENAM, providing a stable mutual access to national and foreign information resources;
- Elaboration of *new information technologies* in order to achieve a high level of investigations and close interaction with European and world's scientific and educational community;
- Integration of distributed campus networks of Research and Higher Education Institutes of Moldova and joins them into single networked organism.
- Build Common Information Infrastructures necessary to support ordinary computerized teaching, distance learning courses and postgraduate studies.

2. RENAM ORGANIZATIONAL STRUCTURE

RENAM have hierarchical structure (fig.2). It covers with its activities whole territory of Republic of Moldova.

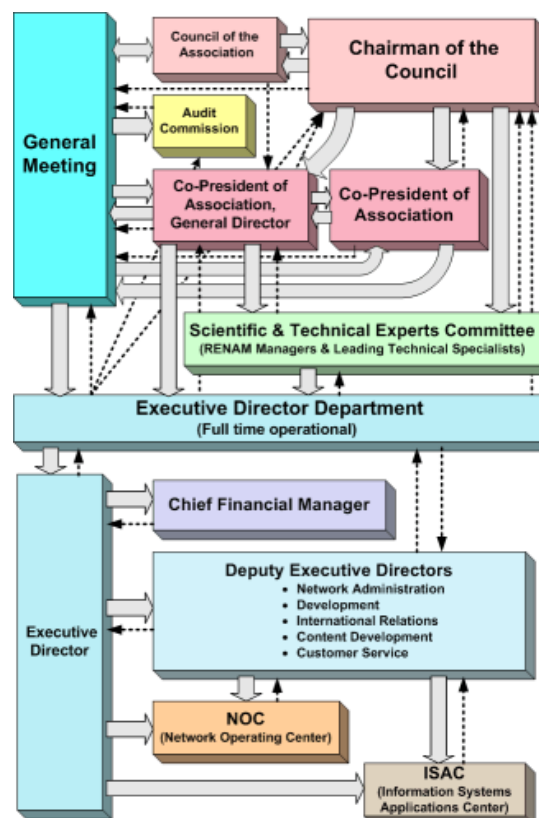


Fig. 2. RENAM Organization Structure

The Administration organ of RENAM is a Council of the Association, which includes well-known scientists of Moldova, scientific administrators, information systems and networking specialists. The Association joins many qualified specialists and scientists from different fields of

science and engineering as associated collaborators inside of two departments. First department is RENAM's Network Operating Center (NOC), whose functions deal with RENAM networking associated projects elaboration and realization, network infrastructure maintaining, technical assistance and users support. NOC is responsible for all networking projects management in scientific–educational sphere, network infrastructure development and technical support. Second department is responsible for application information systems implementation, development and support.

3. DIRECTIONS OF RENAM NETWORK INFRASTRUCTURE CREATION

RENAM network has multi-home Internet connectivity and an access to the Moldovan Internet Service Provider's information exchange point, which are realized through three RENAM external information exchange nodes. Two Internet connections are available now for RENAM network users: a satellite channel of 4,5 Mbps capacity and a radio link to Romania of 16 Mbps capacity [2,3]. For providing the necessary level of reliability special back up link with “Moldtelecom” Internet access node was realized. RENAM Chisinau metropolitan backbone at present has 8 nodal access points, being interconnected via E1 or xDSL technology leased channels (fig. 3).

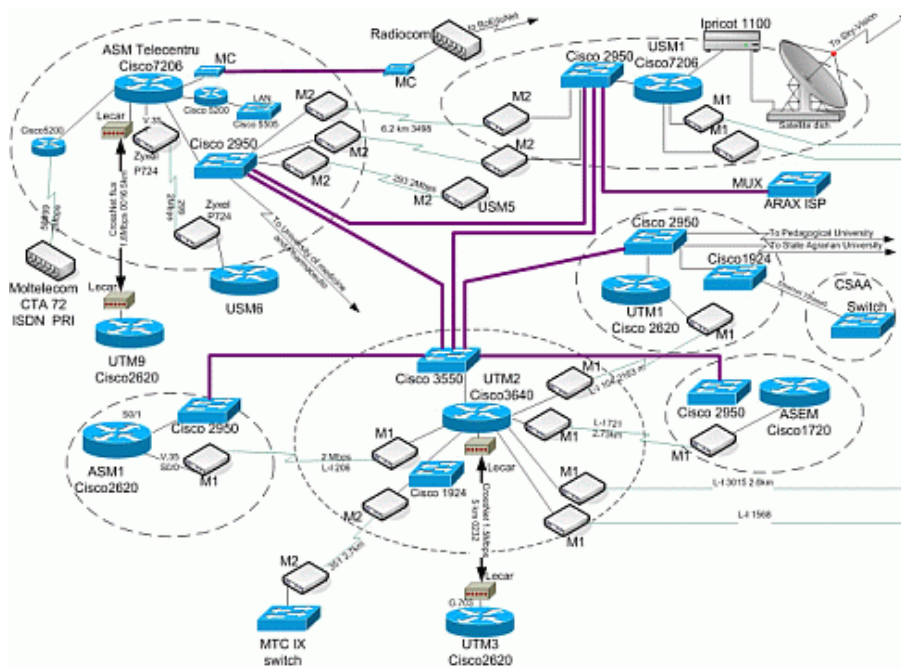


Fig. 3. Chisinau RENAM WAN Backbone

One network node was realized in Balti State University, which joins also four technical colleges from Balti City. Basic RENAM networking segment communication highways at the first stage of the project realization utilizes Moldtelecom's E1 fiber optic channels and copper telephone leased lines based on various HDSL technology connections.

Existing RENAM network infrastructure can be considered now as a kernel of a national-wide scientific–educational networking segment, which covering the territory of the Republic and is intended to connect most of corporate local networks that are implementing now in different Universities and scientific centers of Moldova.

The program of the further development of a network infrastructure RENAM presumes expansion of a gateway to access the Trans-European academic network GEANT (G2) through the scientific network of Romania – RoEduNet (fig. 4).

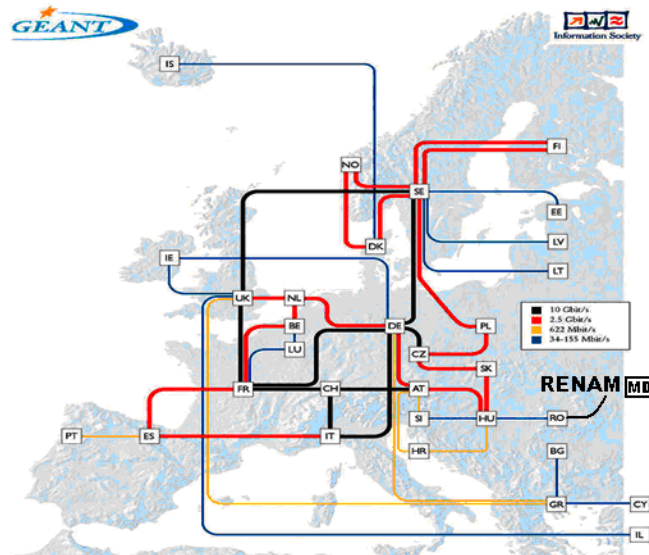


Figure 4. Trans-European integration of RENAM

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