

ABOUT NECESSITY OF REALIZATION OF THE CONCEPT ELECTRONIC-SCIENCE

Rasim Alguliyev¹, Tahmasib Fataliyev²

Institute of Information Technology of ANAS, Baku, Azerbaijan

¹secretary@iit.ab.az, ²depart1@iit.ab.az

While a number of tasks have been successfully fulfilled after approval of 'State Program for development of communication and information technologies in the Republic of Azerbaijan for 2005-2008' (Electron Azerbaijan), some very important problems faced in building information society have gained actuality. [1]. Restructuring scientific organizations and institutions by applying modern information-communication technologies appears to be one of the most important issues. It must be noted that Statement of Principles of Geneva Summit (December 2003) included a special resolution of c7-22 about e-science (access to Internet, piring networks, support to e-publishing, on-line cooperation, digital library and etc.) along with e-education, e-culture, e-medicine and etc. The Order of the President of the Republic of Azerbaijan on Establishing State Committee for leading reforms in Azerbaijani Science accepted on April 10, 2008 in order to determinate the structure of scientific institutions of Azerbaijan Republic, modernization and financing scientific researches, developing cadre potential of scientific institutions and enhancing their social protection, over-all realization of national scientific development strategy and speeding up the integration of Azerbaijani science into international arena once again proves the importance of the above mentioned issues.

Nowadays, the growth of ICT offers good opportunities for solution of the problems of establishing, maintaining, managing and operative usage of territorially distributed information systems and resources. It must be mentioned that a number of works have been done in the USA, England, CIS and other countries to solve scientific problems related to e-science. Scholars of our country have great scientific potential and experience to lead such works, too. However, it's clear that, in our scientific institutions which are located in different geographical areas the above mentioned works are done independently with plenty of problems and they don't meet the requirements of modern IS (Information Society) as well. Therefore today realization and implementation of "Electronic science" ("E-science") program basing on the world experience within State Programme of "Electron Azerbaijan" is an urgent activity to be carried out by our scientists. "E-science" is a project of realization of joint efforts of scientific institutions and organizations which have an access to scientific-technological resources through high speed Internet and have necessary information-communication infrastructure. "E-science" is also a component of E-government. In the process of formation and development of transition to E-governance, e-science is intended to be realized along with e-health, e-education, e-culture, e-democracy and etc.

Ultimate goal of establishing "E-science" is to raise efficiency of the management in all stages and to improve the quality of works of scientific research carried out in scientific organizations of the republic by coordinating and directing them, thus to ensure integration of Azerbaijani science into international electronic arena. Therefore, investigation of the present situation in the area and preparation of the conception of "E-science" that would base on the world experience and meet demands of the IS and its implementation is an issue of vital importance.

Present Situation. Present situation of the application of ICT in the different areas of the scientific research activities in the developed countries of the world could be described as follows:

- complex automatization of scientific-research activities on the base of modern ICT (management system of projects, grants, publications ad etc.) (In the international scientific arena it's called CRIS-Current Research Information Systems) [2];

- creation of unique on-line scientific infrastructure for researches (research e-infrastructure is obtained through integration of CRIS's of different scientific institutions and creating common on-line research environment) [3];

- obtaining social-economic benefit out of technical innovation datum for scholars and scientific organizations. (this is interpreted as a development of e-science from social point of view).

- in a number of countries, the project of creation of on-line infrastructure for researches is implemented as a part of state development program. For instance, Great Britain, [3], Russia [4-7], Moldavia [8] have their national on-line infrastructures.

In Russia such on-line infrastructures have even been formed in the frame of different projects and programs. RAS USIS – Unique Scientific Information Space project of Russian Academy of Sciences (RAS) is a part of The RAS’s Presidium’s “Information” Project [5]. This system is a complex of program-technical aids providing combined information space of distributed and local digital information resources of RAS’s institutions and the usage and control of these resources.

The project aims to solve the set of the following issues:

- Information support of RAS’s scientific and expert-analytical activity;
- Informational provision for organizational - management activities of RAS’s Presidium and its scientific institutions;
 - information supply and support for the solution of the management problems of the scientific corporation
 - Mutual relations with foreign information systems.

Socionet system of Social Sciences Section of RAS is for uniting scientific resources, accumulating online statistics defining activities of research institutes and scientists [6]. Establishment of unique on-line infrastructure system through uniting scientific information systems - CRIS’s of 29 institutes of Social Sciences Section of RAS is planned.

The primary goal of network innovation infrastructure project is formation of a unique national network infrastructure in order develop information links between Russian participants dealing with innovation [7].

Unique on-line scientific infrastructure through application of ICTs is intended to be created not only for ANAS institutions but also for all scientific institutions. Success got in the area of IS building and application of information technologies in scientific organizations within last years enables realization of this concept in our country.

Let us get acquainted with works carried out by ANAS in this field:

- Azerbaijani segment of the Internet has been formed and all institutes and organizations have covered with the net;
- scientific on-line infrastructure of ANAS was formed as Corporative Network;
- Computers are widely used in scientific research works;
- Web-sites have been created;
- Metacomputer cluster of CERN is going to be set up in Institute of Physics;
- Central scientific library is being restored on the base of ICT and etc..

Goals and objectives of e-science. In order to realize modern national E-science conception, reestablishment of present scientific environment according to demands of ICT and IS (Information society) and application of ICT to that environment are to fundamental issues to be solved and planned actions must follow these steps:

- establishing on-line environment (computerization, net, information);
- establishing new scientific relation on the base of this environment

First of all, a monitoring on investigation of the present situation in application of information technologies in ANAS and other scientific institutions of the republic should be held and an action plan must be made according to this evaluation.

The following must be done in order to establish communication network infrastructure of “E-science”:

- provision of the material and technical base (communication, computer, network-computer, printing house equipments)
- creation of internal computer network (local, corporative, intranet) in all scientific organizations;
- provision of the access to the Internet in all scientific organizations.

The following measures must be taken in the direction of creation and utilization of scientific information resources:

- provision of joint utilization of available resources in scientific organizations through their integration;

-creation of administrative-economic information resources (structure of the organizations, connection, cadre information, administrative-economic, financial, normative-legal documents and etc.);

-creation of scientific resources (information about scientific collectives and scientists, scientific researches, scientific reports, publications, conferences, scientific projects, competitions, database in different areas of science and etc., scientific publishing houses, e-libraries and so on);

- purchasing and using program and algorithmic resources.

It is especially necessary to note that, formation of on-line scientific infrastructure changes traditional technology of the investigations:

-unique national electron scientific information space is being formed;

-a possibility arises to create on-line functioning scientific bodies (virtual scientific organizations);

- scientific centers, bodies, some scientists in different countries and different geographies obtain good opportunities to join efforts on a specific problem.;

-in scientific labs, some ecologically harmful and economically irrational investigations are implemented through computer modeling. In case of a positive outcome, this process can pass a distant testing under special conditions (for instance computer chemistry, computer physics and etc.);

- astronomical observations gather in unique information system and is used by investigators from the distance;

- maintenance and propaganda of national, historical and literary cultural heritage become easy to realize.

-national scientific information resources integrate into world-wide scientific information space;

- knowledge economy, regional innovation zones, technoparks, scientific parks and etc. lay down some duties in front of E-science;

- E-science globalizes market of the intellectual products, integrates with other markets and etc.

Expecting results. Let us note that results expected from carrying out the "E-science" project as usual are the following:

- providing information system for all administrative and organizational structures of scientific organizations and institutions;

- simplification of the decision making process in management, provision of effective supervision and improving quality of management;

- shortening time of scientific researches through using limpid, exact and operative information.;

- provision of mutual scientific relations between scientific organizations, bodies and scientists;

- advances in all areas of the science meeting modern world standards within the country and integration into world science;

- to extend knowledge and skills of the scientists progress the field information technology;

- to catch up with the arrears of digital data and etc.

Literature

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