

DESTINATION: 21ST CENTURY

Ali ESLAMI RAD*, Mohammad SARPOULAKI**

*Manager of Photogrammetry Department

National Cartographic Center of Iran

a-eslami@ncc.neda.net.ir

**Technical Deputy

National Cartographic Center of Iran

sarpulki@ncc.neda.net.ir

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ABSTRACT

At last, The year 2000 as herald of 21st century has come. The century that truly can be named as “Computer and Communication” century - The Internet age.

But the question is: Have we all, as parts of organizations and companies dealing with map and geo-information, really entered to this new era? Have we reconsidered the new needs of users, technology situation and new political and economical conditions of the changing world? Have we recognized the popular use of geo-information as an important component of sustainable development? And, if the answers are negative, what is the right way for entrance to the new century?

In this paper, we are searching for correct answers to these questions; obviously, in our country - Islamic Republic of Iran- and from the organization which is responsible for guidance and coordination of mapping and geo-information activities in the country: National Cartographic Center of Iran (NCC).

This paper is started with a study in Geo-information situation in NCC and the country: Structure, relations and products. Next part is dealing with transitions and changes we are facing with: Technology and government political, economical and social plans. Part three is closer to the objective of this congress “Geo-information for all”. In this part we have a survey on user community and their needs. New services and products, which can satisfy their needs, may be considered in this part. The other part will discuss about “what should we do”: The objectives to be selected, the strategic plans in order to reach these goals and infrastructures needed for new planning.

1 INTRODUCTION: CURRENT SITUATION

Islamic Republic of Iran, a country with more than 1648000 Km² area and semi mountainous nature is located in the Middle East region. Our economy as one of the developing countries is totally dependent to oil production and export. The history of planning for development in Iran returns to 1950 years; when the first economic growth winds started to blow. This is exactly the time that the first national mapping organization in Iran was established: national cartographic center of Iran. This organization was always a place of conflict between planning and military sections according to government policies and geopolitics situation of the country. But it has been always carrying out the same missions:

- Creation a survey infrastructure and production of base map series,
- Production of maps and other spatial information needed for national constructive projects,
- Supervision on private sector activities.

Mapping activities in Iran have never been centralized, neither in administration nor in performance. The reason could be considered as either the following:

- Weakness of NCC to rapid and appropriate response to demands of user community,
- Wrong management perspective among authorities that has been resulted in creation of independent executive centers with parallel missions.

Among these governmental organizations are Army Geographic Organization related to defense ministry and Country Cadastral Project related to judiciary. Both of these organizations are relatively analogous to NCC with a view to missions, expert personnel and equipment. Also, National Iranian Oil Company owns one of the oldest surveying departments in Iran, which is active in oil field region of the country.

Beside all these, there is an active mapping and surveying private sector with a record of service almost equal to NCC and always been in a close relation with it.

Traditionally, surveyors in Iran have always been one step ahead of user community in acquisition and use of new technology. So that we can proudly state that today very few maps are producing in non-digital forms, whereas disability of the most users to make appropriate use of this information is our major problem. Ground survey data in most cases is collected in digital format and in the other case it soon will be converted, so the rest of mapping process will be carried out in computer environment. Meanwhile, most of existing analog stereo plotters in Iran are upgraded, so almost all of the photogrammetric data is collected digitally. In the mean time, we were recently witnessing development of the first Iranian digital stereo plotter, which is increasingly using by survey community.

In order to describe situation of the country in terms of education and training in the field of geo-information, let's have a quick look at two different sections in the 1990-decade. At the beginning of this decade, only a few bachelor degree surveying students were studying in one of the universities in Tehran and also the surveying college of NCC was busy for training a few technician degree students in surveying and cartography (Most of them were employed by NCC). Whereas, the end of this decade is different in some way. Nowadays, there are more than 10 universities and institutions in the country busy for training and educating professional personnel in this field. But the problem is lack of market oriented approach to education in Iran, so that, there is no enough job opportunity for these educated people today.

In the mean time, the first master degree students in geodesy and photogrammetry have been graduated in Iran during last decade. And also the first Ph.D. program in geo-information has been started and will be end in a couple of years. Due to appropriate relations with good standing universities in the world of geomatics, it can be stated that the qualities of most of these educational programs are compatible with international standards.

According to above explanations, there are potentially fair abilities in the country in terms of executive organizations and institutes, tools and professions, so that it can not justify the poor situation of spatial information available in Iran. Although national projects such as 1:25000 base map series and associated database, national GIS, national cadastral program and national atlas of Iran are executed and carrying out at the time being, but many of them are not in desirable condition. Among them establishment of geodetic networks, hydrographic charts and datums can be named. Whereas, with mentioned potential of the country, these infrastructures could have been created many years ago.

2 CHANGES WE ARE FACING WITH AND DRIVING FORCES BEHIND THEM

The year 2000 has always been mentioned as a hotspot in technology trend, so that many artists have been tried to show their imaginations about it during the last century. We all could remember pictures about robots as successors of human being and spacecraft with light speed in their impressions.

Although all these dreams has not yet completely come true, but there is no doubt that performance of our missions as well as almost all business and governmental activities, have been revolutionizing by powerful computers and advanced telecommunication networks. High-speed computers have facilitated many difficult and time-consuming affairs. Also enormous computer networks have enabled us to communicate and transfer huge amount of data over inconceivable distances. So, now we are able to make virtual journeys from a continent to another in a glance.

Besides all these, space technology and satellites play an important role in the future of geomatics. Satellite based positioning systems have made the globe as an enormous 3D digitizing table, where the receiver set works as its digitizer cursor. Utilizing communication facilities, we are able to directly digitize ground features in digital maps; the concept of online mapping is getting true. On the other hand the impact of earth observation satellite systems are increasing day by day, so it is expected that large and medium scale aerial photography will not be reasonable in the future.

We know that the way to 21st century goes trough these diverse changes and mapping organizations have to prepare themselves for them all. So we need a revision and it have to cover both aspects of production lines and relation with users in terms of missions, strategies and performance. Very soon geodetic monuments and networks will be abandoned by advent of new Active Control Systems. Also, connection channel between data producers and users of this data are being changed. We have to prepare ourselves for presence in communication networks and making new relationship with a variety of diverse clients.

Another driving force behind our organization could be considered as changes in national and international structures. In Iran, after Iran-Iraq war, three governmental plans have been launched one after another in order to reform old structures and maintain a basis for:

- Sustainable development of country in all political, economical and social aspects,
- Social equity,
- Popular participation in development.

Now, the question is: What is our role and place in this changing world? We believe that we have to play carefully an integrating role to make a linkage among relevant governmental departments at all level. Now, appropriate infrastructures can be established and we will be ready to enter to the new century.

3 GEO-INFORMATION FOR ALL: THE BEST POLICY

Let's start this section with this fundamental question: What is the difference between developed and developing countries in terms of using maps and geo-spatial information? Obviously the difference is very remarkable. In our country for example, knowledge of many people about maps and its usage is limited to those world or country maps they have seen on walls or those which are used by meteorologists to explain their weather forecast.

Unfortunately, user community in our country is limited to the circle of infrastructure builder, national planner (sometimes!) and military personnel. Whereas, in developed countries, maps could be found everywhere, available and accessible and people are actually trained how to use this information from childhood. We have summarized the basic problems in our country as follows:

- Data producers are suffering from limited number of actual users and also their insufficient knowledge about maps and geo-information and its diverse usage.
- Data users are suffering from lack of available and accessible information, so actual users are always searching for a way to run away and make themselves free from limitations, and potential users will stay potentially forever.

We strongly believe that the major problem comes from traditional position of maps as a military document (and we know that they used to put a red "TOP SECRET" stamp on everything!). This wrong idea has made lots of limitations for us. For example, over-flying for mapping without explicit permission from military section is prohibited. But we always forget about earth observation satellites above our heads.

In today world as internet era, we believe that free and quick access of all people to information, in general, and to geo-information, in particular, is the certain right of them and we are those who must facilitate free circulation of part of this information.

Certainly, tremendous market is lying behind this idea. Prevention of free flow of information will destroy the market for non-professional users and will result in consumption of more invaluable resources for professional use.

4 CONCLUSIONS: WHAT SHOULD WE DO?

First of all, let's have a look at where we are standing in our world. It is true that national mapping organizations were not and still are not more than a small boat in the Politics Ocean. Our missions, strategic directions and even our existence will be decided by them with minimal debate. Unfortunately, the situation in developing country is even worse (Sometimes I think it is better to find another job!). But we are surveyors and surveyors never despair! So the answer to above question can be summarized in a single phrase: "Try to be more important".

Thinking globally and acting locally, the idea of global spatial data infrastructure seems to be the best possible choice. This idea tries to make a linkage among important factors such as policies, organizations, data, technologies, standards, delivery mechanism and financial and human resources in order to facilitate access of all interested people to geo-information. Great idea, isn't it?

At the first glance, it seems to be out of our reach, but don't forget that it is the best situation for the country and us. So if there is any intention to survive in the coming world, sooner or later it must start to be implemented.

Establishment of such an infrastructure is a step by step process and it may consist of several components. Here we tried to summarize the key components of a national spatial infrastructure:

- **Organizational structure reform:** creation of consistency in relevant activities demands a better cooperation among us. So, centralization of policy making and administration arrangement will be desirable.
- **Establishing national standards:** Defining the technical characteristics of spatial information in national level will result in saving invaluable resources of the country, keeping in mind that ISO-TC211 technical committee is providing a basis for implementation of this idea.
- **Providing fundamental information:** All that have been discussed here was about information. So this component may be considered as the most important one. National topographic base maps and databases which are produced within national framework could serve this fundamental component.
- **Establishing national network:** this component is essential to make data accessible in accordance with agreed policies. In some countries national information networks have been created before and can be used for this purpose. But in Iran, Due to relatively large extent of the country, creation of such a facility is the most time and money consuming part of the project.
- **Creating a national framework for training and education:** This is the main component for market formation. Systematic and well established training courses and educational programs in different levels would enlarge the circle of actual users.

At the end, it should be clarified that all these comments about “what to do” are our idea and are not completely implemented yet. But it is our strong belief that in case of appropriate implementation, there is an exciting future for us as National Geo-information Organization, Serving the whole nation with requested services.

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