THE ESTABLISHMENT OF THE EGYPTIAN GEOGRAPHIC NETWORK EGN; REVIEW THE DEVELOPMENT PHASES, LESSON LEARNED AND THE IMPACT ON THE GIS INDUSTRY IN EGYPT

Hoda BARAKA[1], Hesham EL-DEEB[1], Mohamed ABDELKADER[1], Mostafa RADWAN[2] and Mostafa BARAKA[3]

1- Ministry of Communication & Information Technology, Egypt
2- International Institute ITC, Enschede, the Netherlands
3- Faculty of Engineering, Cairo University, Egypt

ABSTRACT

Several initiatives have for long been taking place by many countries around the world to develop the spatial data infrastructure (SDI) as a network for spatial data discovery, access and sharing. Promoting data sharing will provide the necessary support to institutions involved in various levels of decision making for the optimum use of natural resources, the management of utilities in urban areas, the management of land, etc. The SDI concerns with the networking of geospatial databases (mostly distributed and heterogeneous) and other data handling facilities, as well as the complexity of the technological and institutional requirements for the implementation of SDI in a particular technical, political, economic cultural and social environment. SDI also provides the platform to develop and enforce 'information polices' and legislation that control access, use, and pricing of spatial data. In order to support the sharing of data in the national context, SDI seeks to develop a set of standards that govern the various processes involved in data handling. Such standards allow many domain-oriented SDI's to be easily liked into a national frame, commonly referred to as the National Spatial Data Infrastructure, NSDI.

Opening up accessibility to government-owned data, is usually accompanied by the emergence of interesting opportunities for location-based services, this particularly encouraged by the vast advances in geo-informatics, ICT and Web technologies. As a consequence, the use of geo-information is expanding beyond the traditional users (mostly governmental bodies), to include new users communities (mostly from in the private sector and involved in

providing services in telecommunications, navigation, emergency and risk management, tourism, etc). Such an expanding geo-information market, however, compromises non-expert GIS users who seldom seek raw data but rather demand value-added information products and services of varying complexity. Increasingly, traditional geo-data infrastructures fail to fully meet the needs of these emerging markets. Further, increased competition, demand for lean enterprises, pervasive e-commerce and rapid gravitation towards Internet GIS, will compound to motivate the concept of a novel service-centered infrastructure that enables delivery of geo-information services and products. Many of these services are diverse, in large volumes, in near real-time mode and typically beyond the capability of any single organization. Geo-information providers are seeking for mechanisms that enable them to work together in a more collaborative way and to make use of each other's functionality to supply a wide range of services and possibly to reach larger groups of users. To support this new working environment, the role of the traditional SDI has to change, from being a simple data discovery and retrieval facility to become an integrated system suitable for the provision of customized information and services. The tendency today is to develop SDI as service-centered infrastructure from which specialised geo-information products and services can be obtained by exploiting the artefacts of an infrastructure of interconnected nodes that include, among others, data repositories, data brokers, service providers, service brokers and clients. In such a system, large geo-processing tasks are achieved by combining or chaining artefacts located along the distributed nodes. The system should make it possible for providers to publish and share not only data but business goals, processes, operations, resources, value-added products, etc. unbundling in this way the functionalities of current stand-alone geo-information systems, and making them available as independently developed, yet interoperable autonomous services. We called such a system a Geo-information Service Infrastructure. The on-going advances to promote Web geo-services fall in this context. This requires an integration platform that enables interoperability and inter-working of functional service nodes within heterogeneous environment. The opportunities offer by advances in geo-informatics,

Abstracts for AARSE 2006 Conference
Organized by: NARSS & AARSE

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30 October to 2 November 2006
Cairo, Egypt
Full Proceedings (CD-ROM)
ISBN Number: 1-920-01710-0

databases, the Internet and Web technologies play a key role in realizing such services.

Since the 80th, digital geo-informatics, remote sensing and GIS technologies have been introduced and used in many Egyptian organizations to support their daily applications. Most of these systems however were self-contained independent systems, operating in isolation and data were rarely shared among them. This is due to the lack of tools, technical as well as institutional, to support data sharing.

The rapidly changing business environment, market opportunities and quick technological improvement now a day in Egypt, are forcing many Government organizations to work in a more tightly coupled mode. Satisfying the needs for varieties of geo-spatial data sets and services, mostly diverse and in near-time mode, is beyond the capacity of 'single' organization. Promoting spatial data sharing amongst these organizations represents the bottom level for collaboration that urgently needed.

In the last years, several initiatives took place to develop a platform for data sharing, but efforts mostly blocked due to institutional and organizational differences.

In the year 2004, the new Government of Egypt took several measures of a strategic importance with the objective to improve the quality of life of the Egyptian Citizen. Among these measures, several decisions were taken that are relevant to the topic of this paper:

Completion of the national databases, including landscape databases, in order to support governance at all administrative levels. Such databases are also needed to support the e-government initiative to provide access to government, mostly location-based, services;

Speedup efforts to complete the national cadastre in order to improve the Real Estate Industry and to encourage international investors in this business;

Promote GIS Industry through the open access policy for data sharing and the removal of barriers that obstacle the commercial exploitation of the public sector information. In this context, increasing the share of the private sector in the evolving GIS Market in Egypt is a strategic objective of this Government.

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The Ministry of Communication and Information Technology MCIT was given the responsibility to lead in two important projects, along these strategic directions:

The Cadastre Project, for the completion of the cadastre land registration system for agricultural land and improvement of cadastre services;

The EGN Project, for the establishment of the Egyptian Geographic Network, EGN, which is the Egyptian version of the SDI concept;

The Ministry of State for Administrative Development MSAD was given the responsibility for the completion of the cadastre land registration system for urban areas, specially linked with the e-Government Initiative Project.

The Cadastre Project (under MCIT) is taking place in cooperation with all governmental agencies involved in providing cadastre services in Egypt. The project includes the completion of land registers database, digitization of cadastre documents and improvement of performance of processes in these agencies. It also includes the establishment of a domain-oriented spatial information infrastructure, eCAD Net that networks all land registers databases in these agencies in order to support data sharing and propagate the updates of cadastre data between these databases, also to provide access to cadastre information and services for individuals and private institutions involved in the Real Estate Market. The project is also searching for a business model to allow the participation of the private sector in cadastre activities. The objective is to provide an efficient, coherent and advanced set of services to boost the booming industry of real estate, which is important to Egypt's economic future.

The EGN project (under MCIT) includes the establishment of the National Spatial Data Infrastructure of Egypt, with all its technical and institutional components. The EGN will be established along the above mentioned concepts for the development of SDI as service – centred infrastructure to provide access to spatial data and geo-services in distributed GIS systems in various agencies, being governed by a set of 'information policies' to control the right-of use of these services. The objective is to break the barriers that obstacle the commercial exploitation of the public sector information and to

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promote the GIS Industry. MCIT realises the fact that no single organization can build the EGN. The EGN initiative can only become a reality through cooperation among all institutions involved in mapping and GIS activities, with no specific difference between public and private institutions, neither between producers and users of spatial data. Several workshops were conducted by MCIT to increase awareness and understanding of the vision, concepts and benefits of the EGN, to identify key stakeholders and get agreement on the body with the political accountability of the project. A Task Force was set from all interested bodies; a fifteen governmental institutions, private companies and academic institutes had shown interest to participate in the development of the first prototype to realize the EGN. A protocol was signed by all participants, stressing on the partnerships and commitment of all stakeholders to their role in all stages of the project. The Task Force has the responsibility to prepare a document on EGN Vision and Strategy, set business plan for phases (i.e. design, implementation and operation) for its development and manage the required processes for the integration and the networking of the datasets of the various data producers and users. The Task Force is also concern with the development of 'information policies' that control the proper use of geo-data and services as well as apply the necessary measures to insure the sustainability of the EGN services.

The EGN Project was set as an open-ended program, broken up in 'success blocks', requiring low efforts and financing commitment and no more than half a year to complete. These 'success blocks' should be the "building blocks" in the development of EGN. Some of these development blocks will run in parallel, depending on the nature of the activities involved. The implementation of these activities will run 'business-like' and lessons learned in each 'block' will be carefully analysed and relevant conclusions will be considered in the next phase of development. In such working style, the goals of EGN will gradually be achieved and the project will continuously attract new participants.

In the course of project development, most of participants reached to the conclusion that the EGN will have impact on the institutions involved in the production and use of spatial data and geo-services, which must be carefully examined and the necessary measures need to

be identified and taken in order to insure the active participation of these institutions. Among these measures are the improvement of the information management system in these institutions, outsourcing of most data acquisition activities as being replaced by the capabilities offered by the EGN to access spatial data in other institutions, apply modern management concepts for operations, workflows, performance and quality .of services.

Further, all participants in the EGN Project have realised the need for the partnership of the public and private sectors to develop and operate the EGN, in a comparable role to other infrastructures. There is a daily evidence every where that both public and private institutions are forced to work in a more tightly coupled mode to deliver products and services beyond their individual capacity and to improve their share in the GIS Market. The Public Private Partnership PPP is an inevitable future outcome and it will characterize the GIS Market as a fast growing market. The opportunities offer by EGN and the supporting concepts, technologies, integration platform that enables interoperability and inter-working of functional entities within heterogeneous environment, will make PPP feasible.

This paper will review in some details the concepts, institutional and technical requirements, the development phases and efforts made to establish the EGN, as the National Spatial Data Infrastructure of Egypt, lessons learned, the initiatives taken for the re-engineering of the participating organizations for performance improvement, the public private partnership and the impact of the EGN on the GIS Market in Egypt.

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