

Introduction of Spatial Data Infrastructure in Uzbekistan: Development of Spatial Data Infrastructure in the Republic of Uzbekistan by the Creation of Committee (on the Example of South African Committee)

Eldor SAIDOV, Uzbekistan

Key words:

SUMMARY

Level of the data exchange and its accessibility and applicability in some sense defines future development of the countries nowadays. This century is an information century, and it is true. Big demand appears to information from side of developing and developed countries. Establishing of Spatial Data Infrastructure becomes world wide common in live of nations. Creation of SDI means collection of data and its use on the base of technological, political, standard and human resources criteria's which create facilities to acquire, process, store, distribute and improve of utilization of spatial information. In general, SDI assumes optimal utilization of spatial data what makes benefit to the country and lead nation to development. The most important aspect in SDI implementation is the level of information and communication technologies, strong financial base and the high amount of information. Uncertainty in decision making can be barrier for the development of different fields. The world wide experience shows, introduction of SDI in developing countries take place with difficulties and in long term with help of foreign experts. Uzbekistan has GI-related agencies; it has strong development in IT field and amount of data increase.

SUMMARY IN RUSSIAN

Уровень обмена данными и его достижимости и применимости в некотором смысле определяет будущее развитие стран для в настоящее время. Это столетие - информационное столетие, и это верно. Большое требование появляется к информации от стороны развития и развитых стран. Установление Пространственной Инфраструктуры Данных становится по всему миру обычным в живом из наций. Создание Инфраструктуры Пространственных Данных (ИПД) означает собрание данных и его использования на основе технологических, политических, стандартных и человеческих критериев средств, которые создают средства обслуживания приобрести, обрабатывать, хранить, распределять и на улучшаются из использования пространственной информации. Вообще, ИПД принимает оптимальное использование пространственных данных, что делает выгоду к стране и ведущей нации к развитию. Самый важный аспект в выполнении ИПД - уровень информации и технологий коммуникации, сильной финансовой основы и высокого количества информации. Неуверенность в принятии решения может быть барьером для развития различных областей. По всему миру показы опыта, введение ИПД в развивающихся странах имеет место с трудностями и в долгом сроке с помощью иностранных экспертов. Узбекистан имеет связанные с GI агентства; это имеет сильное развитие в области информационной технологии и количестве увеличения данных.

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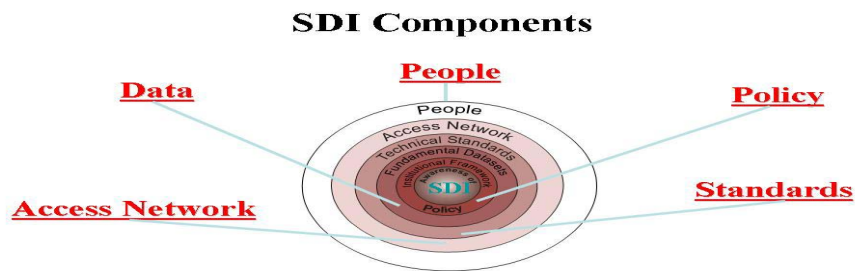
1. INTRODUCTION

Uzbekistan is developing country and its economic sector is really huge. Uzbekistan's economy is based on different directions: agriculture, light and heavy industry, national and international trade and these fields become wider and wider. Uzbekistan has almost all elements of Mendeleev table on its land. Uzbekistan has depth study in geology, the chemical industry is developing. The energetic industry becomes important. Education system and the scientific research development is taking place really fast and gets deeper.

Such wide range of economy can create difficulties in coordination, monitoring and in decision making. Lack of information in economic sector or in others may slow down the development speed of different activities. Creating of an efficient interoperability and data exchange system for different application purposes can effect on management, coordination and monitoring of different levels and fields. Practice of some countries shows that introducing of Spatial Data Infrastructure in national level becomes efficient on any activities of country live.

By the example of Uzbekistan I am going to consider introducing of SDI in this country. I'll consider utility sides of SDI use in Uzbekistan. Will it be beneficial to monitoring, management or coordination in local, regional levels will it be efficient on provision of interoperability between organizations, public sector and private sector. Further, I'll view if it is really necessary to apply SDI in Uzbekistan. Next what I'll talk about is - Does the country have ability to implement or except this infrastructure. Does the country have base to support the project in present and in future. Considering implementation issue I'll touch upon political, funding, standard and technological aspects on project realization and also on data acquiring, processing, storing and in general utilization. May be some cultural aspects influencing on realization of the project will be considered too. Some ideas and suggestions will be accompanied by discussions.

2. SDI COMPONENTS AND ITS ADAPTATION IN UZBEKISTAN



Reliable information and communication technologies ensure efficient functioning of SDI. Technological system should supply interoperability among databases and should be supported with standards for mutuality of systems in SDI.

Technological implementation of SDI includes hardware support, software support, optimal network arrangements, and datasets development.

A **dataset** arrangement includes defining of core datasets which meet needs of nation. In general, most SDI users choose six or seven core directions. The next step is creation of corresponding databases. Created databases should be implemented with necessary metadata to access core data. One more important thing is creating of clearinghouses. Clearinghouses are almost key element to facilitate the discovery of data, in evaluation, and in downloading of digital geospatial data. Clearinghouses usually implemented with metadata what works as a path to main data.

Network hardware system should be developed accordingly to network topologies, network scale, and transmission technologies.

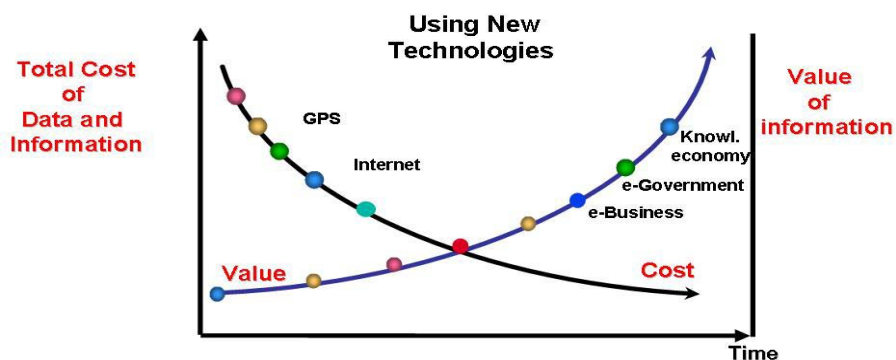
In **network software system** the significant feature is mutual understanding i.e. the same language to data exchange and using right software to keep connection. The most difficult and complex work is software support and it takes place as shows foreign experience, step by step. Establishment software system for different levels and provision of data exchange or interoperability among them can create difficulties with system setting or with protocols. This part of SDI implementation attracts most attention than the others. And most of the financial resources should be directed to technological implementation part. Most convenience on physical use of NSDI is almost defined by quality of technological implementation.

Viewing technological base existing in our country I can tell that the level of its implementation is not satisfactory. Most of the existing telephone connections are not of a satisfactory quality. Part of the lines is still old and works for 30 or 40 years already. Part of the connections doesn't meet the requirements. But, in a short time part of the telephone

connection was changed with high quality digital equipments (statistics for 2001 of Uzbek agency of telecommunication). The improvements in this field are going fast. The volume of the connections is increasing day by day. The next lack is with internet connections. It is clear that the volume of the internet connection forms operation or motion of the infrastructure. It is true, we haven't enough internet connections and it formed less than 15% for 2001. The central cities more developed than the districts. But the most inhabitation and some production lines concentrated in suburbs. Human inequality is high enough and it tells that not most can afford computers or internet connections.

The technology is the physical implementation of NSDI and it costs a lot of efforts and expenditures from the direction of the organizers. In general, there is a big lack of the technological implementation of NSDI in the country. Rapid development of technological base can help to establish NSDI in the country in near future.

Getting a Rapid Return On "All" Your Information



2.1 Policy

Importance of policy is defined by need of establishing unique rules and standards for the users, data applicators, and middle actors in SDI. The SDI concept tells that policy is one of a technical component between people and data. The role of policy appears in administration, coordination, in arranging institutional framework, defines legal aspects of regulation, should response for organizational **partnership and collaboration**, some how defines financial commitments, and takes into consideration cultural features of the nation. Policy plays significant role for proper SDI implementation as much as other aspects. I have mentioned above that the technical aspect is more important but it is not completely right. All aspects have almost the same importance. The experience of foreign countries shows that the most activities are policy related and the main problem to make SDI successful is policy. **Coordination and administration** responsibility of the policy includes creating of rules and regulations for all members of SDI. It should respond for data exchange and interoperability and should assume execution of the activities, at least, promote development of infrastructure.

In this point, it is necessary to provide bodies for coordination and monitoring of activities, which will assume different issues and provide solutions for them.

2.2 Culture and institutions

Culture and institutions control more or less problems which occur in the country, like issues should be solved in the country, and this controls use, access, and participation of the data in the infrastructure. So, the culture and institutional framework can have big impact on SDI development. Cultural issue of the policy imply considering of values and norms peculiar to the nation. Rules, right, and regulations undertaken lately based on some values and norms. This values and norms are some how controls relationship between members of the society. Then we talk about institutions, first of all we have to take into consideration optimal relationship between users (levels, organizations, private and public sectors and etc.). Institutional framework usually includes stable norms and normative behaviors and should be developed on the base of social needs.

2.3 Legal aspects

In general, all Legislation means provision of base for liability, accessibility, privacy, discrimination issues, and copyright and so on. Legislation in SDI is similar.

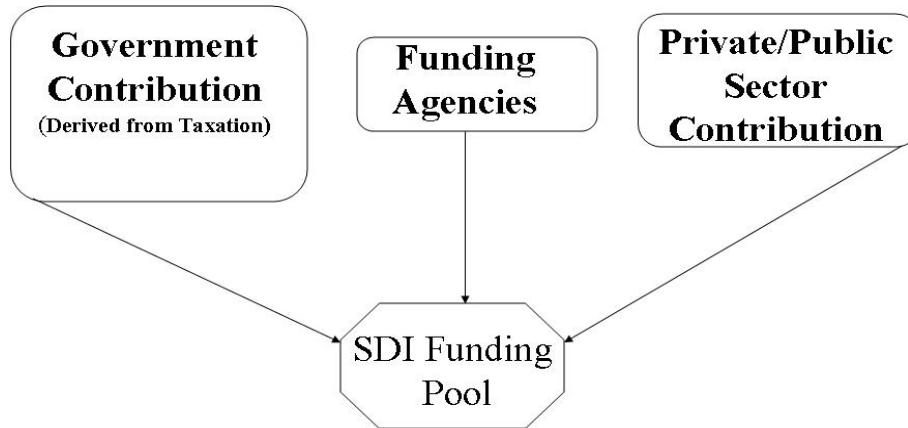
The main legal issues in legislation part are commercialization of public information in public sector for suppliers and protection of investments made by private sector. Next arrangements are with confidentiality of third party information for users and access to public information arranged for private sectors. The next is liability for incomplete or incorrect information for intermediaries and applying it for private sector. Liability ensures completeness of the applied services and in the case of loss the damage will be fulfilled. Accessibility implies use of data placed in the infrastructure in faster ways and by easy access by most of users in places. Legal aspects should provide equality for users, appliers and other parts while they access data and use it. Also it should provide equality in prices and rights. Legislation directed to develop and implement SDI should provide interoperability between public and private sectors. Enable private or public sectors to different sources by equality of right. Provide data sharing arrangements and should improve base for collecting, maintenance and distribution of data.

Copyright, licensing and pricing is important part too. The efficiency of these issues defines the speed development and ensures maintenance of privacy.

3. ORGANIZATIONAL AND LEGAL STRUCTURES OF THE COMMITTEE

Existing Funding Models

- A Structured view of current SDI/Infrastructure Financing



3.1 Establishment and functions of Committee for Spatial Information

Each legal organization or committee must have its departments with people who are familiar only with their background, that's why it is very important for building correct structure and policy.

In compare with South African Committee there are people who work in different fields and fulfill their personal functions:

Five persons in the full-time employment in the main Department; two persons in the full-time employment of each of Sections; two persons from each provincial government, in the full-time employ of such government; two persons in the full-time employ from local municipalities, one of whom will be from a municipality which is mainly a rural in character, and the other from a municipality which is mainly an urban in character; one person to represent the Council of Government Information Technology Officers; one person to represent a professional association of people involved in Geographic Information Science; one person involved in the teaching or researching of Geographic Information Science (Source: Monitoring South African Parliamentary Committees).

It is known that as many as fifteen people will work in the Committee, especially five people will work in the Department, as it was mentioned that fifteen people are too many for the

small Committee for Spatial Data, it would be recommended that two persons in main Department are enough as a whole, because some other people who are working in economic sphere could solve problems of others who is familiar with finance or accounting.

Here are some functions of important people who are familiar with the Committee: when the chairperson is unable to perform the functions of that office, the deputy chairperson must perform those functions; if a member dies or vacates his office before the expiry of his term of office, appoint any person to fill the vacancy for the unexpired portion of the period for which such member was appointed.

The Committee may order standards and measures on the sharing and integrating the spatial information, determine the fees, costs, prices or charges payable for spatial information and other records; grant exemption from the payment of any fees required to be paid in terms and establish and maintain an electronic metadata catalogue as a component of the Spatial Data Infrastructure (Source: Web South Africa www.scouting.org.za). One of the most used standards in Uzbekistan is ISO (International Standard Organization), because this standard is known worldwide and Uzbekistan has been accepted for this structure. ISO is a network of the national standard institutes of 146 countries, with a Central Secretariat in Geneva, Switzerland, that coordinates the system (Source: from the homepage iso.org).

But by acquisition of standards Committee couldn't order standards because of order standards that exist in special organizations like International Standard Organization which is used in different fields all over the world.

3.2 Powers of Committee

The Committee must facilitate, promote and safeguard an environment for the efficient collection, management, distribution and utilization of spatial information. May print, circulate, sell, finance and administer the publication of any material related to spatial information, must promote awareness of its activities, including dissemination of information on the importance of spatial information for effective governance, planning and decision making. The Committee is to be created by the Government of state. Any matter regarding the capture, management, maintenance, integration, distribution and use of spatial information and any other matters will be considered by the Committee whether it is necessary or expedient for achieving the objectives of the Republic of Uzbekistan Spatial Data Infrastructure (RUSDI).

One of the important activities of the Committee is to submit a report to the Government within three months after the end of each financial year. Stating the activities of the Committee and its agency, any recommendations from the Committee will be aimed to improving of the functioning of the RUSDI and may do something necessary for the proper performance of its functions or to achieve the objectives of the RUSDI.

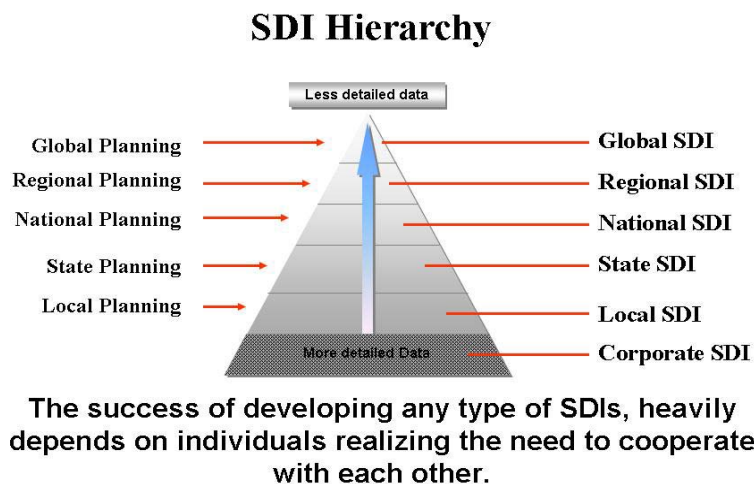
3.3 Meetings of Committee

The first meeting of the Committee is to be held at the time and place determined by the Government and subsequent meetings must be held at such times and places as may be determined by the Committee. For the good working of the Committee at least four meetings each year but may hold such further meetings as it determines from time to time. A majority of all the members of the Committee constitutes at any meeting of the Committee. In the event of an equality of votes, the chairperson has a casting vote in addition to his or her deliberative vote. A decision taken by the Committee or an act performed under the authority of the Committee is not invalid by reason only of a vacancy on the Committee or that a person who is not entitled to be in the Committee, set as a member at the time when the decision was made or the act was authorized, if the decision was taken or the act authorized by the requisite majority of the members of the Committee who were present at the time and entitled to sit as members.

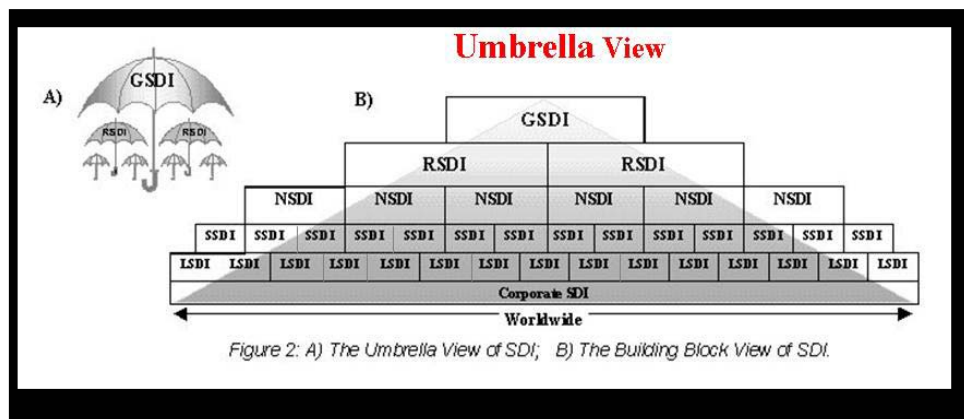
3.4 Establishment of Agencies

The Committee may establish agencies for the effective performance of its functions appoint as members of an agency persons who are not members of the Committee and designate one of the members of an agency as chairperson of the agency. Could the Committee create some agencies or it is in competence of Government? In many other fields of creation any agencies it is known that must be created only with permission of the Government.

The Committee may determine prescriptions to facilitate the sharing and integration of spatial information. Prescription determined by the Committee shall take effect unless it has been published in the Gazette at least one month before the effective date specified in the notice.



Different views on SDI Hierarchy



4. CONCLUSION

Why SDI so important in our life?

- **People** are looking for Faster, Cheaper, and Better technology, techniques or initiatives;
- **SDI** is a long term process;
- Keep yourself visible and make things easy to understand by everybody;
- **SDI** is all about sharing;
- Start it (even with less involvement), then others will join.

The main purpose from this is that the development of a Committee for spatial infrastructure for a range of GIS business is very difficult to achieve for many countries in the short to medium term. The main limitations are lack of resources and trained personnel, bureaucratic processes, lack of data, and lack of hardware and software especially in low developed countries.

First of all it is important to understand some questions: Why this Committee is so important in our Republic? Do we need this Committee or not? Of course, it is very difficult to answer these questions. It would be desirable to mention the key moments of some important ways:

- Creation of the Governmental commission on the spatial data, for controlling on the Committee;
- Creation of regional expert, consulting and coordinating advice at administrations of subjects of Committee;

- Formation of bases of the spatial data and GIS, in situational and GIS the centers of administrations of subjects of Republic Uzbekistan;
- Formation of regional production associations in an infrastructure of the spatial data and Boards of directors as the manager of investment process of body;
- Maintenance of a wide circulation of digital cartographical bases and decrease in their cost, active development of the market of creation and use of geo-information production by the enterprises and the organizations, the population of the Republic of Uzbekistan.

The spatial data are necessary for the scientific organizations, bodies of the government and local self-management, the enterprises and the population for the decision of questions of spatial development of territories and business.

The avoidance of duplication of data collection will result in cost saving to the country. Consultants would no longer be able to manipulate the system by selling government information to other government institutions when such information paid for by government in the first place. In addition, policy alignment within all spheres of government would improve accessibility and availability of information for planning and development. The improved information flow among state organs would facilitate integrated development planning. Improved accuracy of spatial information would ensure accurate decisions based on improved and up-to-date information. The development of standards would improve interoperability of spatial data and systems. The capture and publication of metadata would not only facilitate access to spatial information but also save millions of sums (“Sum” is a national Uzbek currency). It plays main aspect of economic development in the Republic; if we more correctly of the creation we could in future get any positive results. We could and must create such Committee for Spatial Data because economic situation and some fields in Uzbekistan still in bad condition.

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BIOGRAPHICAL NOTES

Wageningen University (Netherlands, distance study):

European Commission; Tempus project student, online study; International Master's Degree Program; Geo-Information Science, Spatial Data Infrastructure, Remote Sensing; Tashkent city, Uzbekistan.

(September 2004 – present)

Ministry of Economy of the Republic of Uzbekistan; The Republican Market Conjunction Research & Investment Projects and Programs Appraisal Center
 Financial Projects Specialist (Investment projects)

Job function: Analyzing of investment projects and making conclusions, assisting for the project manager; making some researches in this field; administrative support.

(November 01, 2003 – December 01, 2004)

United Nations, United Nations of Information Technology Service (UNITEs)

Volunteer

Job function: Teaching of Information Technology (MS Office, Internet, E-mail and etc) for Non - Government Organizations (NGO).

(August 01, 2003 - November 15, 2003)

European Bank for Reconstruction and Development, EBRD, Annual meeting of the EBRD, Tashkent (4-5 May, 2003)

Conference Assistant

Job Description: Greeting business guests, speakers press, delegates on arrival. Checking business guest's details on computer rise, database and registering attendees on computer rise database. Passing delegates, business guests, press inquires into the relevant EBRD representative.

(April 28 – May 06, 2003)

"NEK" Brokerage & Logistics Company

Manager Assistant

Job function: Create and design all advertising and marketing campaigns; knowledgeable in all media venues with expertise in print and electronic marketing. Perform annual budgeting, including capital requirements, and implement weekly forecasting and reporting.

(November 1999 – May 2001)

“STABIL” LLC

Office Assistant

Job function: Assist in compiling and editing written materials prepared by the team. Keep updated the project files and records, including personnel records; processing all incoming correspondence such as regular mail, courier envelopes, faxes, e-mails purchasing all goods for company, and etc.

(December 1997 – September 1999)

CONTACTS

Eldor Saidov

Wageningen University, Tashkent Institute of Irrigation and Melioration

Buyuk Ipak Yuli str., 374/11

Tashkent

UZBEKISTAN

Tel. + 998712641291

Fax + 998711443377

Email: eldor_saidov@yahoo.com