Speed Up the Construction of the Capital Spatial Data Infrastructure Greet the Digital Capital

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ABSTRACT Introduce the situation of Capital Spatial Data Infrastructure in China , and put forward the standpoint that authority Data , authority administer , and authority application are the key in the construction of CSDI .

1.Digital Earth And Spatial Data Infrastructure

The idea of Digital Earth was put forward by Gore –vice president of U.S.A. in 1998. Take the U.S.A. global strategy and economic consciousness as the starting point , he actively propagates and promotes the practice of such advanced science and technology plan as Global Observe on Earth , Internet-II plan , satellite digital communication , Global Positioning System etc. in the whole world. Attempting to embrace the relevant information about natural resources development and exploit , environment protection , human society economic activity in the whole world , so he can promptly offer scientific digital and maps for national defence market competing , enhancing employment , occupying a dominant position in military information , keeping economic continued grow etc. , and suchlike.

Digital Earth is not only a isolated scientific project or technical object , but also a guided strategic idea . We should take high attention to it .

For taking shape Digital Earth , the National Information Highway and National Spatial Data Infrastructure should be developed first. No National Information Highway and National Spatial Data Infrastructure , no Digital Earth in China .

2.Digital Earth and Spatial Data Infrastructure in China

Chairman Jiang has advanced repeatedly the idea about developing Digital Earth in China , and show extremely attention on the Digital Earth .Recently ,the Digital Earth developing strategy was deeply considered in China, many aspects had try their best to develop and promote the construction of Spatial Data Infrastructure in China.

- Set up National Geographical Information Standard Technical Committee , take part in various activities of ISO/TC211;
- Establish National Foundation Geographical Information Center which is with specially responsibility for the building , maintaining and updating of the National Foundation Geographical Information;
- Central government and most local government had list the task of regular updating and collecting to the Foundation Surveying & Mapping in the plan of National Economy and Society Development
- National Surveying and Mapping Bureau had finished the construction of 1:1000,000 and 1:250,000 spatial database across the country , and building up the high precise digital elevation model & digital orthographic map database covered 7 big rivers which is the major prevent flood area in China.
- The national 1:50,000 and provincial 1:10,000 geographical spatial databases are set out.

3.Connotation of Spatial Data Infrastructure

Spatial Data Infrastructure include the four aspects as follows :

- Spatial Data Frame . Geodesy data , topographic frame data , landuse & surface data , cadastration data , photograph and remote sensing data , and basic nature and society information
  Authority spatial data and geographical information coordinate organization , the mainstay departments engaged in spatial data gaining and processing , the special agency engaged in spatial data maintaining and updating and distribute .
- related with geographic location such as traffic , rivers, boundary etc.
  As a authority data , it is the kernel in SDI construction.
- Spatial Data Coordinate , Manage , Distribute System and its Organization .

Authority administer is the key of SDI construction .

- Spatial Data Exchange Standards . It includes rules and policy about information shared , and geographical information technical standards . Authority applications for government and various technicality systems are the foundation of SDI construction .
- Spatial Data Exchange Network System . The spatial data communication network and foundation geographic information systems which act as network nodes are the centre of SDI construction .

4.Strategy of Practice Digital Capital

Beijing is the Capital of our China . The most essence characteristic of Beijing is achieving "Three Centre" and give better "Four Services" . It means the centre of political , culture and international exchange. The "Four Services" means giving service to political party , to government , and to head of military , giving service to international exchange and national education , giving service to the development of science and culture , and giving service to the life of citizen.

Beijing is a famous city which has centuries-old history and culture over 3000 year , it is also a famous ancient Capital over 800 years in the world . With its development, China is faced with the contradictions such as environment contaminate , lack water resource , relative short of land and energy , traffic jam , numerous flow population , and disaster etc. . All the problems bring obstructs to the Capital which is taking a step to international metropolis.

For achieving the city function of Beijing, with the guild of Knowledge Economy, the "Capital Economic" which means developing advanced technological industrial , prompting the second industrial with the advanced technology developing the third industrial, is used to solve the contradictions in the development of the Capital . Face the challenge in the 21th century and the Digital Earth, we should accept the challenge, implement the strategy of Capital Information Highway and Capital Spatial Data Infrastructure, give impetus to development of Material Civilization and Spiritual Values in Capital . Because of the special status of Beijing in China , even in the whole world , and the require of development , Beijing should be the first one of the " Pilot Area" in the strategy in practice the Digital China .

The information resources of Beijing is incomparable across the whole country , the superiority of information resources of Beijing depend on the position of capital . The head organ of political party , government , military all are in Beijing . The communication centre of the main database are in Beijing , and there're numerous university , academy , and institute etc. . The qualified personnel is relative densely populated . The network capability occupy a dominate position in China . The capability connected to the world exceed any cities across the country . Many special bureaus belong to government have build up their special information systems .

All this show that Beijing had achieved stage accomplishment during the construction of Information Highway . A strong foundation for practicing the development strategy of Digital Capital had been built up .

By the supporting of government , Surveying and Mapping Institute of Beijing has almost finished the construction of " Beijing Foundation Geographic Information System ". The topography database (scale range covered 1:250,000, 1:25,000, 1:10,000, 1:2000, 1:500) , geodesy database (include plane and elevation), plan-road database , plan-parcel database , and partly underground-pipeline database are build one after other. All these databases has formed legal spatial databases in Beijing. It marks that the phase accomplishment had completed in the construction of Spatial Data Infrastructure.

Recently supporting by the Beijing Technology Administer Committee, Surveying & Mapping Institute of Beijing has launched out the "Research and construction of Beijing 4D---DRG, DLG, DEM, OM---digital product and its production system", undertaken the task "Overall Plan Design about the Beijing Continued Development Environment and the Resource Geographic Information System---- the construction of Beijing Public Foundation Spatial Data Information System" which organized by the Beijing Project Administer Committee, and cooperated with the GEOWAY of Wuhan Surveying & Mapping Science and Technology university in "The construction of Beijing 1:10000 Digital Orthographic ap production, and series digital photograph database on various scales" .

Beijing Information Bureaux given more attention to the construction of Capital Spatial Data Infrastructure, National Surveying & Mapping Bureau actively support the construction of Capital Spatial Data Infrastructure and give technical and financial aids on it . This is another foundation for

practicing the development strategy of Digital Capital.

5.Speed Up the Construction of Capital Spatial Data Infrastructure

Through the progress of Capital Spatial Data Infrastructure is great , there're a long distance to the complete of Capital Spatial Data Infrastructure. For speeding up the construction of Capital Spatial Data Infrastructure , the propose as follows are put forward to be discussion:

- As the department being responsible to the production , management , service of Beijing Foundation Geographic Information, the Surveying and Mapping Institute of Beijing should speed up the transform from Traditional Surveying and Mapping Technique and Industry to the Digital Technique and Geographic Information Industry , take shape the Digital Production-line include the whole process from field work to database management , perfect the Digital Surveying & Mapping Quality-Control System, set up the Mechanism of digital production and data management on a large scale . practically and effectively carrying the heavy task of the gaining , processing , providing of spatial data in time .
- Practice the Update Mechanism of Capital Foundation Geographic Information

  Bring the Capital Foundation Surveying & Mapping into Municipality Annual Plan of National Economy and Society Development , determine the cycle of Foundation Surveying & Mapping updating , implement the Global Positioning System project , implement the dynamic updating of topographic , Digital Orthographic Map, and location database (1:25,000, 1:10,000, 1:2000, 1:500) , completed these foundation database which are the geodesy database, topographic frame database, digital elevation model database, digital photograph and digital orthographic map database etc..
- Construction Foundation Geographic Information Network System
- Lay down the Rules and Standards of Foundation Geographic Information

  For enhancing the construction of Spatial Data Infrastructure , the legal position of the Foundation Surveying & Mapping should be further determine . It is the Foundation Surveying & Mapping property such as commonweal, foundation and government , determine the legal Surveying & Mapping like unified geodesy , foundation topographic surveying , plan-road surveying, district boundary decide , land possessions boundary surveying , the construction of foundation database , determine the legal position of accomplishment of the Surveying & Mapping should be defined. Determine legally the dynamic updating rules , and financial plan in surveying and mapping .

  In the aspect of information standard a series of technical standards such as the unified information classification and code , exchange format , quality control , and metadata etc. should be defined.
- Set up authoritative coordinate organization of geographic information administration

  The organization should have administrative and technical function, it is composed with powerful government official and authoritative expert of geographic information, so that it can decided financial plan , define the responsibility of each department about geographic information maintain and its right using the information , set down the safeguard policy about the information , and the compensate policy on information shared etc.

So no Digital Capital , and no Digital China , it should be our common cognition. Let's speed up the construction of Capital Spatial Data Infrastructure, accept the challenge of Digital Earth !