The management of 1:250,000 national topograghic database of China

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[abstract]: After the 1: 250,000 national topograghic database of China has been established, how to manage it, how to realize the value of the data, and how to protect the intellectual proprietary of the database have become important things , which let the data producer and the data user must face and deal with.
This article outlines the method of management of 1: 250,000 national topograghic database of China, and the problems about the data security and being provided for various users.
[keyword]: topograghic database, the permission agreement of data using, data service.

1. The Basic information about the database

National 1:250,000 topograghic database was established in Oct. 1998 . Since then, the data have been used in many aspects, such as national economy development, government policy decision, research and education. How to manage these data, the security and the copy right are all important problems which should be noticed.

National 1:250,000 topographic database is one of the fundamental geographic information database. There are also digital elevation model database and toponym database in this scale. The topographic database is vector database the data contain the main information of hydrography, populated place, administrative boundary, transportation, hypsography and land cover. The whole data cover 816 maps, and the data are divided into 14 layers. The following form (figure 1.) is for illustrating the detail information of the layers.

2. The information about the database management

The users who want to apply the data in their work should understand the data content and they also need know the process of obtaining the data. First, they should sign the permission agreement of data using with the State Bureau of Survey and Mapping in the agreement the data covered area should be defined, and the aim of data using aim should be claimed. Second, they should tell the data manager, the data covered area, the data format and the media which data will be saved in, all these they can be helped by the data manager. Third, they should abide by the agreement after they fetch the data they need.

FEATURE NAME	COVERAGE NAME	FEATURE TYPE	MAIN CONTENTS
Adminitrative boundary	BOUNT	Polygon	adminitrative boundary, coastal line, islands
		Region	Provinces, regionsand counties
		Line	Boundaries and coastal line
	BOUPT	Point	National boundary tablet
Populated place	RESPY	Polygon	Populated place with real shape
	RESPT	Point	Populated place
Railway	RAILK	Line	Railway and railway bridge
		Route	Railway line
		Point	Railway station
Road	ROALK	Line	Various level road and roadbridge and etc.
		Route	Highway, first class road and national road
		Point	Yard, hill defile and etc.
hydrography	HYDNT	polygon	River, lake, reservoir, canal and etc.
		Region	Main lakes
		Line	River, lake, reservoir and etc.
		Route	The river above class 6
	HYDLK	Point	Spring, well and etc.
		Line	Dam of reservoir、floodgate and etc.
hypsography	TERLK	Point	Elevation points, bathgraphic points
		Line	Contours, bathymatric line and etc.
Land cover	TERNT	Polygon	Desert, swamp, snow cover and etc.
		Line	The outline of desert, swamp, snow cover and etc.
	OTHNT	Polygon	Nature protection area
		Line	The outline of nature protection area and the Great Wall
Assistant features	ATNLK	Point	Name of mountain, island and etc.
		Line	Name of mountain, islands and etc.
Geographic grid	GGDLN	Line	Meridian and parallel
Metadata	QUAPY	polygon	Basic information of the materials of map compiling
		region	Basic information of maps as the data resources

figure 1.

The State Bureau of Survey and Mapping issued The Order of the State Bureau of Survey and Mapping in Dec. 1999, the order stated the program to provide data to the different users. Any users who need use the data should sign the permission agreement of data using, which are divided into three classes , class A, class B and class C. Class A is suitable for the central authority, the national government , the provinces government which use data in policy decision and the society public welfare enterprises. Class B is suitable for unenterprises, individual who use data to do science research, manage plan within unit, or provide the research results to central authority national government, provincial government for great policy decision and the society public welfare enterprises. Class C is suitable for enterprises or unenterprises unit which use the data to do business, to seek profits or to be applied to construction project. The data can be complimentary to class A. The users who are suitable for the class B should pay for the data using,

but the price can be discounted in some extent. As for class C, the user need pay for the data using without any price discount . All users should pay using fee that means the part of cost fee of national fundamental geomatics data should be charged. The user can modify the data partly or even change the data format, but if they are not permitted, the changed data can not be published or provided to other unit or society. All kinds of agreements should pay for the media fee, manual work fee and other fee which arc happened during the process of data service providing.

The database are managed by National Geomatics Center of China. NGCC is also responsible for safeguarding, updating and service providing of the database. NGCC also need provide database hard copy to the units where the database copy are placed to avoid the disaster that can not be forecasted. The hard copy can be CD , data tape and hard disc. The hard copy also need be placed in special room with permanent temprature and humidity. The hard copy also need be placed in cabinets which are magneticproof. It's necessary to employ special person to watch database hard copy. The hard copy also need two or above two different areas of country to be placed. The hard copies of 1:250000 topographic database are being deposited in two cities of the coutry being outside of Beijing. The hard copy of the database also should be provided annually, because the data media are also developed very quickly, to use which kind of hard copy should also be decided by the media technology of that time.

The database is installed on the workstation server, and the network system manager grasp the user name and password, he give the read right to the data processors. The data processers provide data to user according to the user required. There is a management information system of the database, it's obtained the function of introduction, inquiring, output, extract and etc. The data processors can use the extracting function to extract the data from the database, but they have no right to revise the data of the database, and they even can't read the data through this system. The aim to do this is to protect data which can not be destroyed by the operaters' mistaken action, because the data processors are often not the persons who built up the database, they are not familiar with the data structure.

3. The detail information of the data service

After the data are extracted, the processors need to deal with the data according to the users requirment, such as the data area, the data format and so on. The data are placed in database as the standard map size of 1:250000 topographic map, the size is 1°*1.5°. 1° means latitude 1°, 1.5° means longitude 1.5°, it's convinient for data production and data edge match, but the users often need the data area in administrate boundery or the special requirment, most of them are not in single map, so the data processor must append the data and then clip the data according to the data area of the users requirment. As for the data format, there is no standard spatial geographic exchangable data format, the users decide the data format according to the GIS platform they are applying or which can be translated to the data format that the computer platform they used can be accepted. The data requirment also contain the map project define, because the data in database are geographic coordinate, and many users need special map project for different aims, so the project is also a factor which should be treated, especially for the users who have seldom knowledge about map project, and they use data to analyze or survey distance. Usually, the data

are provided in hard copy, and are not permitted to be transmitted through internet, but if the users are the members of NGCC, the situation can be changable, the intranet should be the most economic way. Finally, the data user sign on the data service register form to bring the data away.

4.The existing problems

Even though there is the permission agreement of data using to limit the data user not to provide the data to the third one, but it also exists possible opportunity for some criminal activity, the users copy data to sell for profit . How to use special way to avoid such things happening become a difficulty thing to overcome. Maybe it's also a kind of technical problem. If someone invent a method to encrypt data to avoid the data being copied without any restraint. It will be an efficient way to protect the proprietary of the database.

The updating of the topographic database is also a big problem of the data living, it's not only about the content of the data, but also related to the management method of the database. The data of the database should be living and the management way should be catched up with the user's continuously adding demand. All this depends on the technology development , the invest and the character of the manager of the database.

Reference

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