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Construction and Development of Net Information Resource of the 21st century in China

Chen Qian (陈茜)

Chengdu Information Center, Chinese Academy of Sciences

Abstract: The status quo and existing problems of the net information resources were analyzed following an introduction to the demand for China's internet information. Some prompting measures for the development and utilization of net information resources have been proposed.

Keywords: Internet information resource net information resource

Since the 1990s, Internet has rapidly developed on an unprecedented scale around the world. In 1993, China proposed the strategic target of prompting national economy information, and started with Golden Card, Golden Customs Duty, Golden Bridge, and Golden Tax and has got achievements.

The local information construction also has got a great progress. The improvement of information transmission ability is based on the improvement of the national information construction. Chinese information super highway systems had 8 relay stations. These stations bring energetic forces to over 500 cities around China and created an incomparable favorable environment for nationally economic progress, which made the new times of networks.

The situation of the national net construction shows that the foundation of the network frame had been formed, but there still exist some problems of the net resources construction. If the construction and utilization of information resources, especially Chinese information resources could not match it, the networks established with huge sums of money would not go into effect. With the development of the transnational information super highway, things seemed to be worse --- the networks could become the permeation tools of foreign cultures.

According to the statistic data now the ratio of English information in Internet information is almost 99%. On the contrary, Chinese net resources are extremely little. Therefore, it is urgent for us to speed up the construction of Chinese net resources.

Under the net environment, information resources present such characteristics as digit, multi-medium, multi-type, huge amount, and unlimited, temporal and spatial scales. It has become true that information resources are commonly shared by all over the world. The ability that a net site could utilize information resources from a lot of net sites would largely enrich the information sources of service organizations. Internet is the largest net in the world, which has connected to over 170 countries and districts, includes over 60,000 computer nets, owns 15 million computers and 100 million users. Meanwhile, Internet's scale is expending with doubling speed per year and its information resources and various kinds of databases are increasing by 50% per year. Furthermore, its contents have covered all realms of the whole society. Nevertheless, we must clearly see that current information resources are often dispersed and disordered, and there are very little Chinese information resources. For the complication of the information content, it is hard to ensure the accuracy and reliability of data. What is more, the information production and the information circulation lack standard and norm. These factors are now stumbling block of the development and utilization of network information resources.

1. Construction of China's own net information system

1.1 Status quo of China's net information demand

The report "Statistic Report of Chinese Internet Development" from CNNIC in January and July 1999 showed that up to July 1999, the computers connected to Internet had already reached 1.46 million, and net users increased to 4 millions. In addition, there had been 29, 045 registered URL and 9,906 www sites.

From 22,177 questionnaires, it shows:

- 83.5% of the total users were made up of the users from 21 to 40 years old. That means the youths and the middle-aged are main force.
- 84% of these users were made up by users of college / university and graduate or with higher diploma.

The main purposes of net users: (following dates come out of CNNIC in January 1999)

- The users of seeking information made up 95% of the total users.
- The users of receiving or sending Email made up 94% of the total users.
- The users of getting scientific and technical information made up 76% of the total users.
- The users of getting economic, politic information and news made up 66% of the total users.
- The users of getting recreation, sports information made up 65% of the total users.
- The users of getting commercial information made up 51% of the total users.
- The users of getting educational information made up 40% of the total users.
- The users of getting financial and security information made up 34% of the total users.
- The users of getting want information made up 30% of the total users.
- The users of getting various kinds of advertisement information made up 24% of the total users.
- 4% of the users think the most disappointed matter was that there were not plentiful Chinese net information resources.

According the above investigation, seeking information is the main purpose of the net users.

Since Chinese information is the basic one for all Chinese people, to enrich the Chinese Internet information resources has become an urgent task for us. According the result, what the users first seek for is scientific and technological information, the next is politic, economic, recreational, educational ones etc.

1.2 The database construction is an important part of net information resource development

The database is one of the foundations of net information resources. Now China's database resources are of the following shortcomings:

- Insufficient information capacity

The development and utilization of net information resources rely on the development strategy of database industry. International feature of modern economic society has an urgent demand for the expansion information capacity. At present, the records of machine-read database have reached 5,000 millions, but Chinese records are only 10 million in total. Simultaneously rather a part of database is a small system and repeated database records. The degree of net and market is low; even it is not worth while talking about economic efficiency. However, three big on-line retrieval systems, i.e. Compaq Serve, American Online, Prodigy American, utilizing the superiority of information resources and on-line services, has brought about a total income of 5.7 dollars and a total market value of 800 million dollars. With an increasing rate of 25%, they enormously exceed the information service pioneers, such as Dialog, Data Times etc.

The construction of database may provide the information super highway with various vehicles (files) and cargo (data) that can meet users' demands, supplying a foundation for reasonable and effective disposition of information resources. In general, the design of databases requires investigating information demands of market changes. As long as the status quo and trend of the market is made clear, there will be sustainable development of databases. However, over 1000 local Chinese databases are of low commercial value, incapable of meeting the needs of market changes.

- Imperfect database structure

The purposes of database construction are to meet the demands that people effectively get information as much as possible, and to faster increase the information level of society. Thus, a perfect database should at least have three big systems, namely data retrieval and browsing, education and training, data and knowledge renewal. At present, even if the operation of databases is in the process, there are many shortcomings because of poor environmental conditions and casual standards during the period of researching and constructing. Some of them can only supply data browsing; some have low renewal velocity of databases, and are hardly to renew for new knowledge; Some have incomplete indices, resulting in hard to use and low efficiency. Others

have unreasonable super links or too few links, which bring about much inconvenience.

- Low standard of data treatment

If China's database industry would develop, under globally economic competition, we must assure that the databases could supply accurate information for people. This requires that the constructors of databases have a serious attitude of database records. In order to keep pace with the development and utilization of international information resources as well as holding initiative of database construction, under conditions of limited financial resources, Chinese government should to make an overall plan for covering fields of database records, unify database system work frame and function rankings, unify basic structure of database records, unify the use rules of information resources.

We need to break up the patterns of many local and repeated constructions. It is important that database enterprises that have been planned by government should be supported so as to have a swift development of databases. Under the coordination of the construction base-type database enterprises, we should encourage the organizations, enterprises and universities to take part in the construction of specialty databases. Especially in the near future of time, specialty covering of databases should be powerfully adjusted, so that there are a comprehensive arrangement with little repetition.

- Development of net database resources facing the international market

The fundamental equipment constructions of global information have been preliminarily finished, supplying the base of information resource sharing.

Whether China's database resources can to go to the world and become really mutual information resources sharing depends on data proceeding quality provided by databases. First, the same type data should use the unifying form of data records, for example, digital data, fact type data, literature type data, original type data should use corresponding MARC to describe records. It is better to approach ISO standards as much as possible so as to realize the mutual sharing of international net resources. Second, the standards and rules of information-data-proceeding must be seriously carried out, to make them suitable the depth and width of indices and distribution of super link points. Third, we should formulate and carry out the database standards of multi-tables and multi-languages to match international demands of database products and the demands of Internet for information resources.

1.3 Transformation of libraries and information organizations into net information resources

Libraries and information service organizations own a great deal of information resources, for instance, book, meeting paper, science technology report etc. and made a great deal of independent materials, data, facts together, forming real information resources. They are important resources for developing net information resources.

For this moment, there are 258 thousand libraries, some of which have set up their home pages on Internet. Because of personnel and technology etc., the systematic net information resources have not been formed yet. Except for a few organizations such as the Chinese National Library, the Chinese Information Research Institute, and the Information-Center of Academy of China etc., many libraries and information organizations lack the development depth of home pages.

1.4 Development of non-scientific and technological information resources

Some information resources such as financial information, sale information, production information, management information, market information, policy information etc., are important resources of information society, due to higher use value, specially increment value. The current science and technology database has been systematically developed in China, but the construction of actual information resources is of weak foundation. Accordingly, we need to form classified resources systems and to develop them into net information resources, using a great deal of dispersed, even neglected data, figures and tables.

This needs a close cooperation of national economic departments with information organizations, so that they organize professional organizations and personnel, and make a systematic planning to set up several large-size authoritative net information resources of economy and finance.

1.5 Development of net information resources of Chinese government

Chinese government owns 50% of social information resources, namely 3000 databases^[4]. The huge net engineering of China's government further enriched Chinese information resources of networks. This could supply a great deal of political, economic information for the networks. If the government's information resources could be formed into systematic net databases, the large-size net databases formed according to specialized subjects will be powerfully in action.

1.6 Network of publications

The transformation of magazines, newspapers and books into homepages is also one of important net information resources.

- 56 national newspapers on the network, which take up 26.5% the total of this type (211).
- 213 local newspapers on the network, which take up 11.6% of the total of this type.
- 14 provincial newspapers on the network, which take up 45.2% of the total of this type (31)
- 28 evening newspapers, which take up 23.7% of the total of this type (118).

From the proportion of net newspapers, we can see that many newspapers have not yet go on to the network. Therefore, they need to be developed into the net information resources.

2 Development of information resources of Internet

Along with Internet development and the fast increase of net information resources, searching for data on the net becomes more difficult than before. What searching engines searches is always a series of addresses of home pages. Most of the net users know that they need to have a good understanding of home pages to click the places they want, but they could not know where they should click. There are indeed a great number of high quality information resources to be worth developing on Internet. Such as free world patent resources on Internet and Medline of American National Medicine Library. However, due to insufficient knowledge and financial resources. We could not perform systematic treatment of information, so that a lot of precious net information resources could be not developed and utilized for the constructions of Chinese economy and science technology renewal.

If net information resources could be classified and linked by government information departments, in terms of liberal arts and science parts, the scientists and technicians could directly and swiftly find out their needed net information. Therefore, it is urgent to establish Chinese center of net information navigation, to say "East Boat" or "Science -Technology Boat".

3 Development of the integrated store system of net information

When people go surfing on Internet, they try to seek treasures but don't know where is the pearl, because of emerging a lot of doors of labyrinths. This situation makes us feel perplexing.

How do we develop net information resources for serving the country, enterprises and persons? The integrated store system of information will give an answer to this question.

The birth of "the net integrated store system of information" breaks through methods of human traditional gathering and attaining information, and creates unlimited information services in time and space. "The net integrated store system of information", refers to integrating all net information resources, writing, data, figures or other information, into a direct on-line searching system. It provides Internet users with convenient services.

"The net integrated store system of information" ought to meet the concrete information demands of users. Meanwhile, it might supply on-line services and off-line services as well.

Because "the net integrated store system of information" is developed and constructed for certain enterprise, its contents are relatively stable and need to accumulate investment for a long time. This kind of "the net integrated store system of information" aims at enterprises' own information demands, which is of the most useful value. Such resources can meet the demand of One-Stop Shopping.

4 Outlook on the construction of China's net information resources in the 21st century

4.1 Database construction as a new force on the net resources

4.1.1 Overall planning makes a correct direction of database development

Key projects should be developed with the propose and selection under the guidance of the National Information Department. Some databases of foundation and commonweal should be taken into account the national plans, The prospect prediction of important databases should be also made to reduce blindness and repetition of database construction.

4.1.2 Standardization basic guarantee of database into net information resources

A research report from the leading group of the National Information Resources Investigation shows that for China domestic databases that are set up by the enterprises and units themselves, are of quite different standards, poor norm, varying forms, and various searching software.

Due to lack the standardization of database construction, most of databases could not connect to networks, thus leading to weak influence effect, low efficiency, small covering fields, and poor mutual sharing. We should formulate a national standard of database construction as soon as possible, so as to make China's net information resources convert into the precious resources of Internet.

4.1.3 Economic information as the important content of database development.

4.2 Chinese net information resources. China's government ought to organize the development of Chinese information networks. Through the network, we let the world know China, resisting culture shocks and information rubbish.

4.3 Enhancing the transformation of libraries and information organizations into the network. The information resources of libraries and information organizations should be important resources of Internet.

4.4 The government formulates policies to guide the construction of information resources. The strategy and public welfare should be emphasized while involving in the constructions and services of information resources. But the markets of other fields should be open to attract capitals and power.

4.5 Concentration on supporting the key products of net information. The quality of products will rise when we improve the indices of the full paper and searching technologies, which exerts a favorable influence on the information production and the on-line around the country.

4.6 Fully digging potential values of Internet. A special net navigation system should be developed through selecting the net information of various disciplines and subjects.

4.7 Encouraging the enterprises to establish their own integrated store system nets of information, which let Internet information serve the enterprises.

4.8 Perfecting the projects of the government's networks. It is assured that more information will be accessible to the public through formulating laws concerned.

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