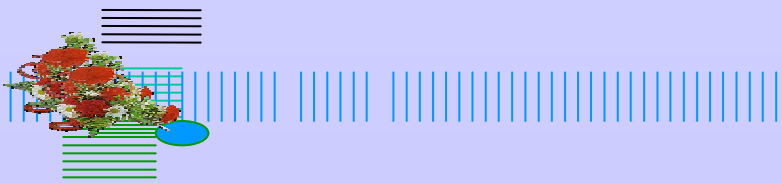
THE 20TH International CODATA Conference

Medical Science Data Sharing

Chinese Academy of Medical Science

Depei Liu



Program name：Medical Data Sharing Network

Program number：2005DKA32400

Recommended by

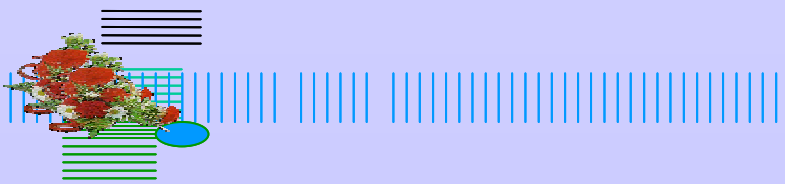
Ministry of Science and Technology

Ministry of Health

Health Department of PLA's General Logistic Department

State Administration of Traditional Chinese Medicine

State Food and Drug Administration



Program name：Medical Data Sharing Network

Program number：2005DKA32400

Applied by：

Chinese Academy of Medical Science

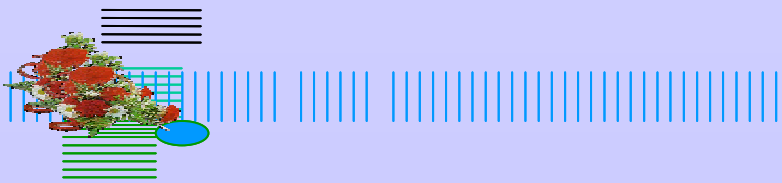
Chinese Center for Disease Control and Prevention

China Academy of Chinese Medical Science

General Hospital of PLA

Information Center of State Food and Drug Administration

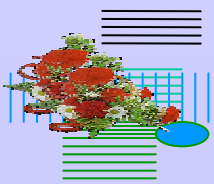
Academy of Military Medical Science of PLA



Program Introduction

General Goal

1. Create a Medical data sharing network that is physically well distributed, clearly arranged, logically highly unified and fully shared.
2. Create four scientific data centers—basic medicine, clinical medicine, public health and traditional Chinese medicine, including about 300 databases.



Program Introduction

General Goal

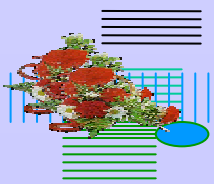
3. Establish the standard and specification system, resource planning system and platform-support system for medical science data sharing.

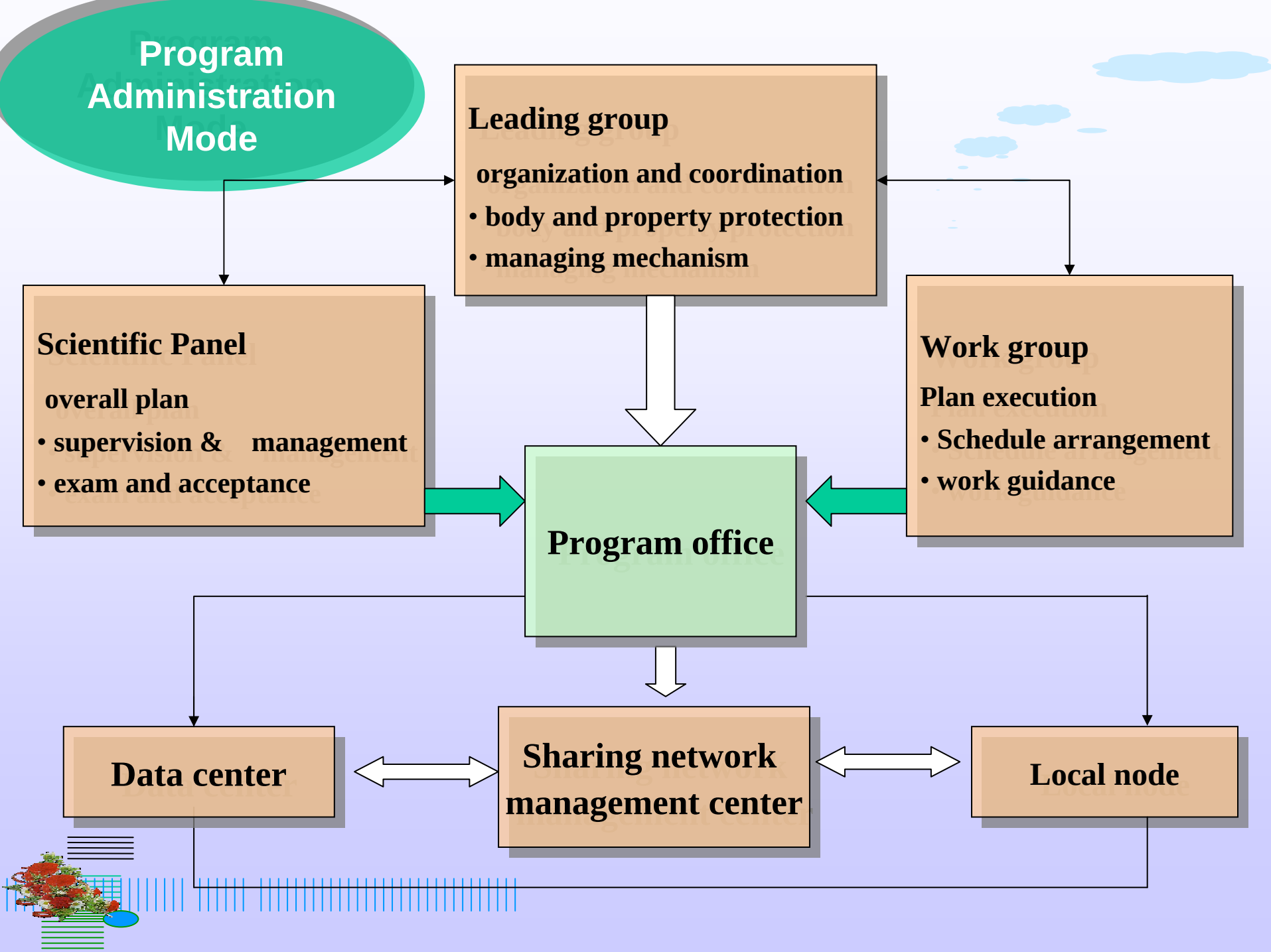
4. Through the construction of sharing network and data centers, provide information to the government for health policy decision, and to scientific field for health care , medical research and education , and health improvement for the whole population.

Program Feature

This program is a cross-subject and cross-industry large-scale project that is co-undertaken by several departments. Its features are:

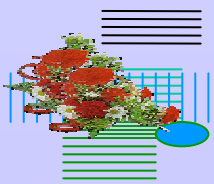
- Basic medicine & Clinical medicine combination;
- Prevention ,Control & Treatment combination
- Medicine & Pharmacy combination;
- Chinese medicine & Western medicine combination



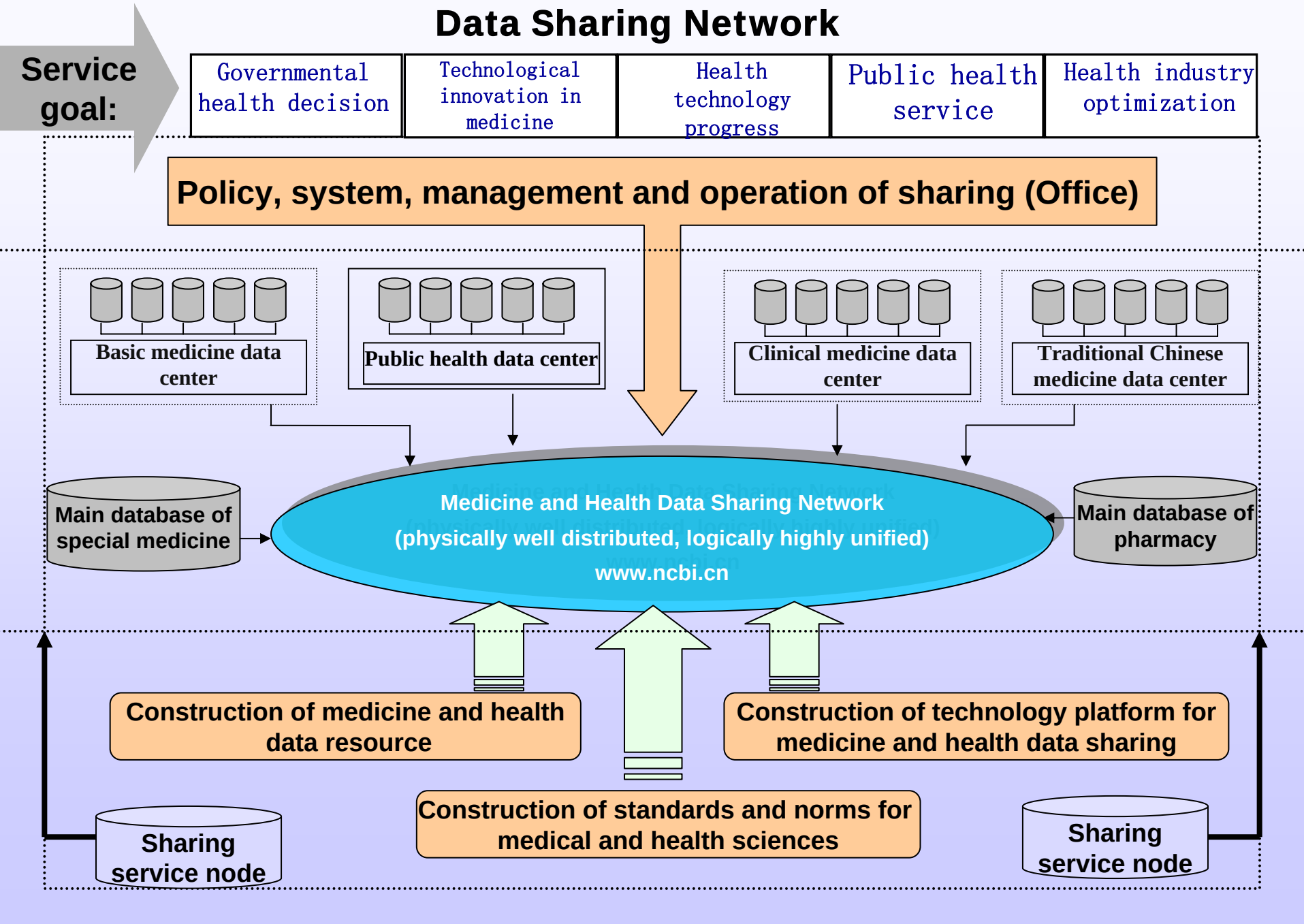

Program Administration Mode
Leading group
organization and coordination
• body and property protection
• managing mechanism
Scientific Panel
overall plan
• supervision & management
• exam and acceptance
Work group
Plan execution
• Schedule arrangement
• work guidance
Program office
Data center
Sharing network management center
Local node

Sharing Policy and Service System

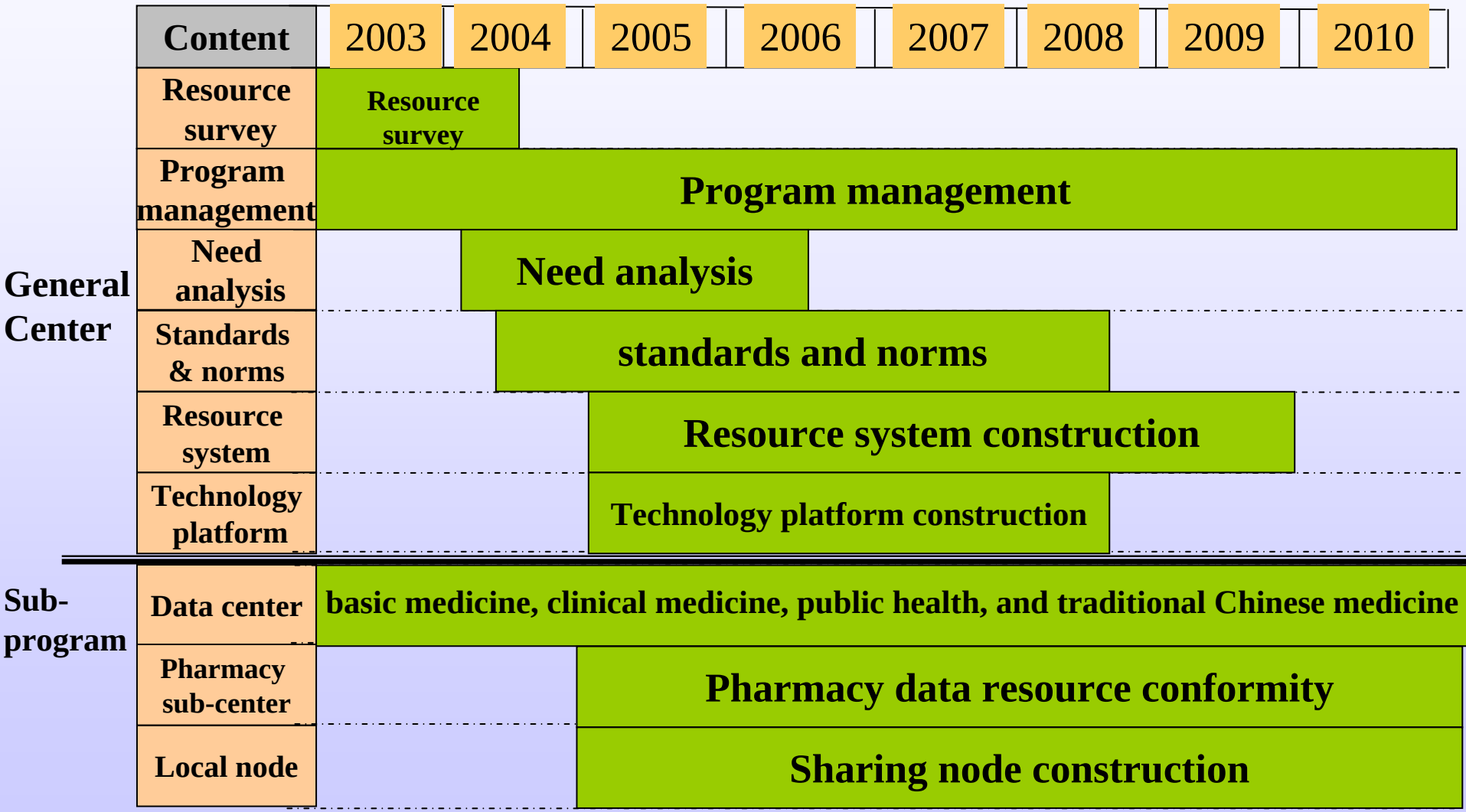
- Constitute Management Method for Chinese Medicine and Health Data Sharing.
- Constitute Serial Standards for Medicine and Health Data Sharing.
- Enact provisional management methods for biomedical database selection and data convergence.
- Work out a reward/punishment system for biomedical data sharing service.



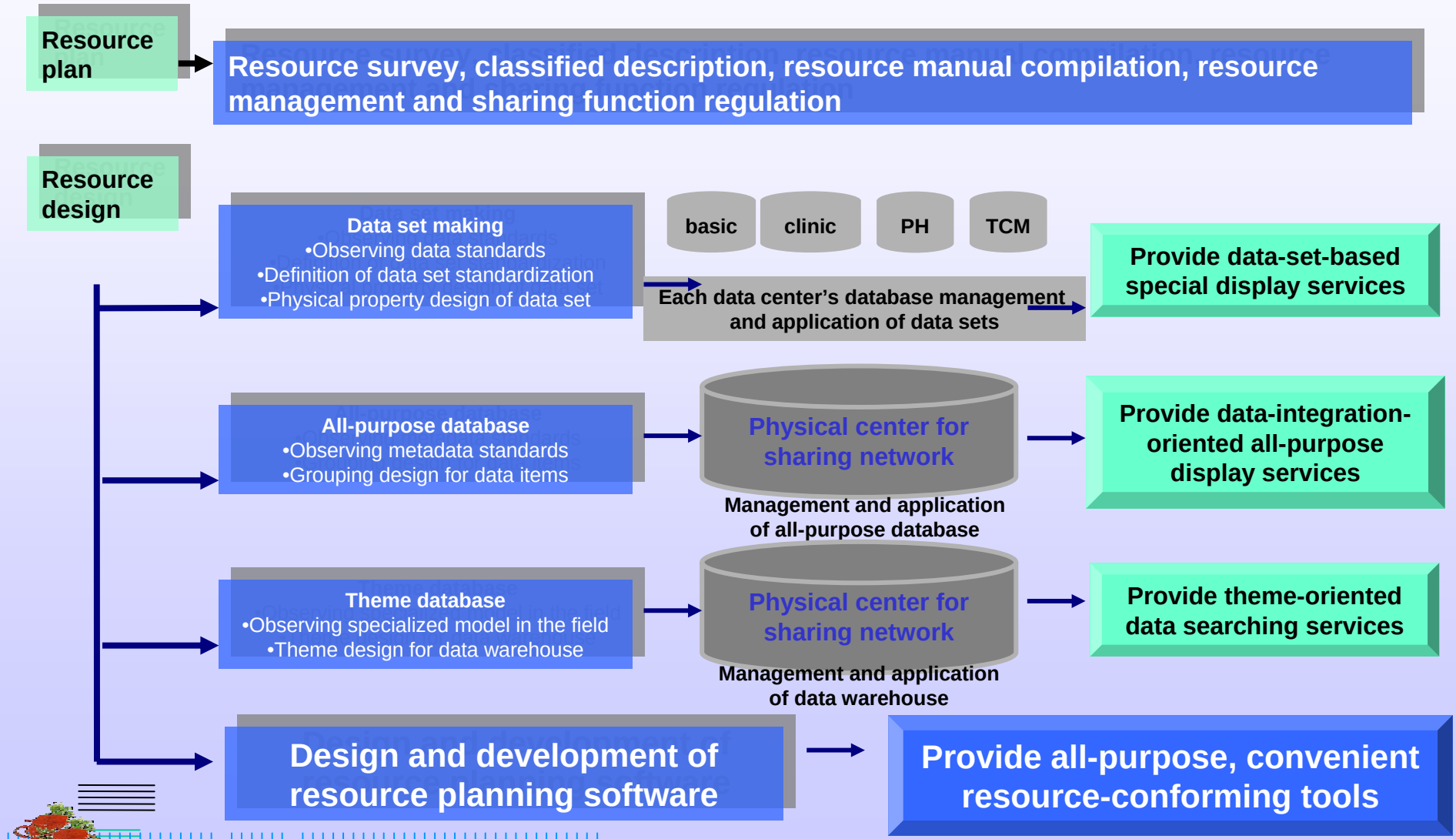
General Framework of Medical Science Data Sharing Network



“Eleventh Five-year” Plan for Medical Science Data Sharing Network

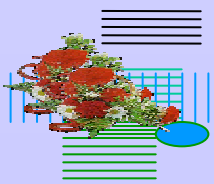


Resource construction

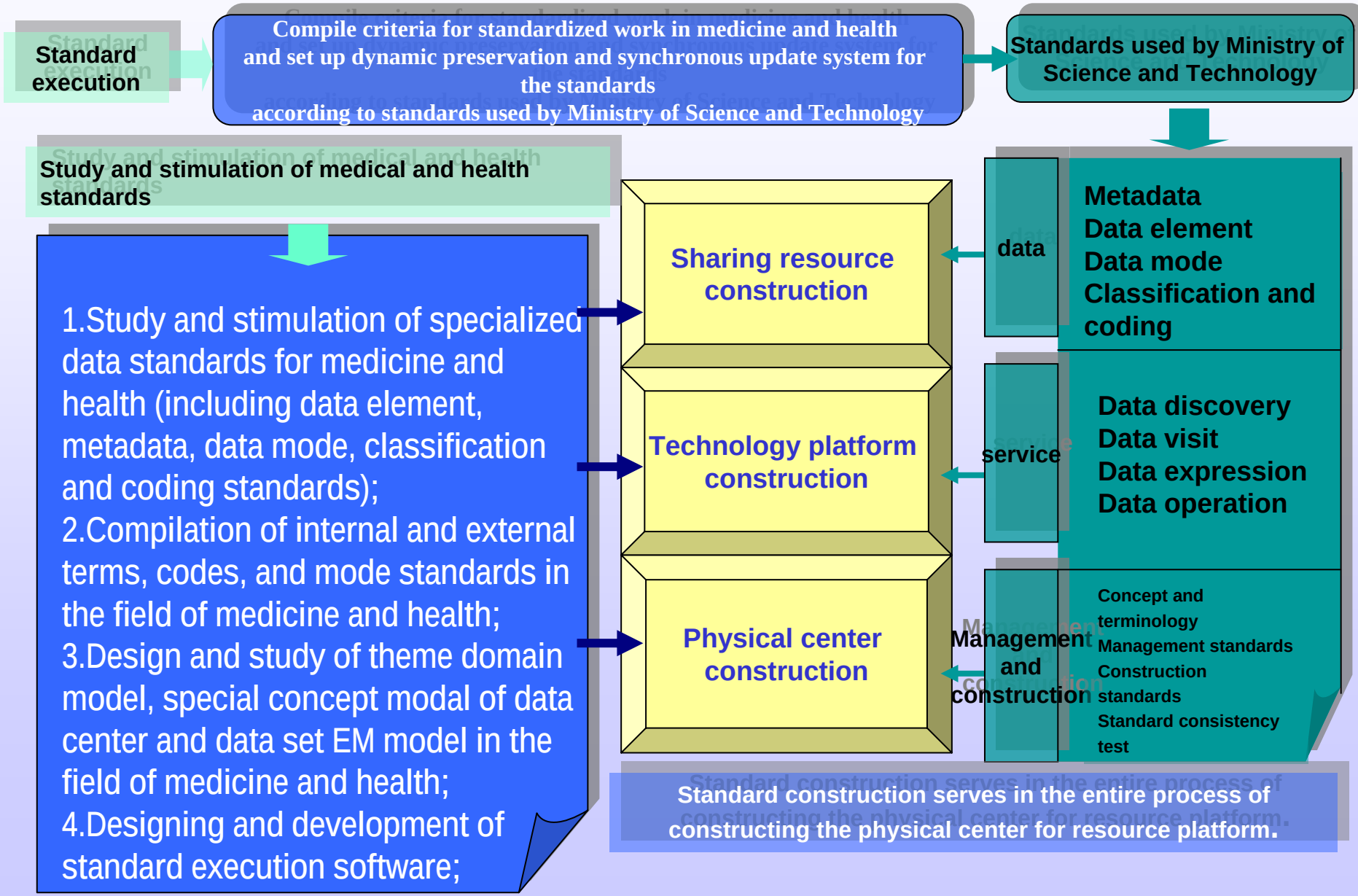


Data Resource Conformity

- Organize current data resources on the basis of data resource survey;
- Collect data from work data and make them into sharing data set;
- Converge sharing data sets in data centers;
- Integrate data from data centers to form theme database;
- Converge metadata in the medicine and health data sharing network.



Standard construction



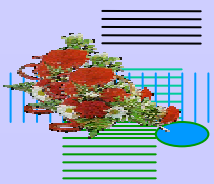
One sharing network: Medical Science Data Sharing Network

Four Data Centers

Foreword

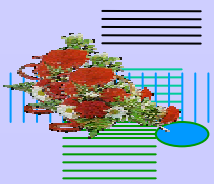
- China has granted a lot of research expenditure on biomedicine, including 863 and 973 Programs and national natural science foundation, through which a large amount of scientific data were accumulated.

- Under the support of data sharing program of Ministry of Science and Technology, the grand program of Medical Science Data Managing and Sharing Service System was started in 2003.



Medical Science Data Managing and Sharing Service System

- 2002: research and investigation
- 2003: project was set up; feasibility study (7.2 million, 2003DEA2C015)
- 2004: listed as key program of National Science and Technology Basic Conditions Platform Construction (18.72 million, 2004DKA20240)
- 2005: listed in the 11th five-year plan for scientific and technological development (61.92 million. 2005DKA32400)



Team construction

Specialized team for biomedical science data sharing includes:

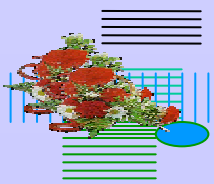
（1）standardization staff

（2）computerized automation staff

（3）informationization management staff

（3）data sharing application staff

（4）data sharing research staff (master and doctor)

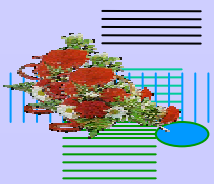


Sub-programs of Medical and Health Data Sharing Network

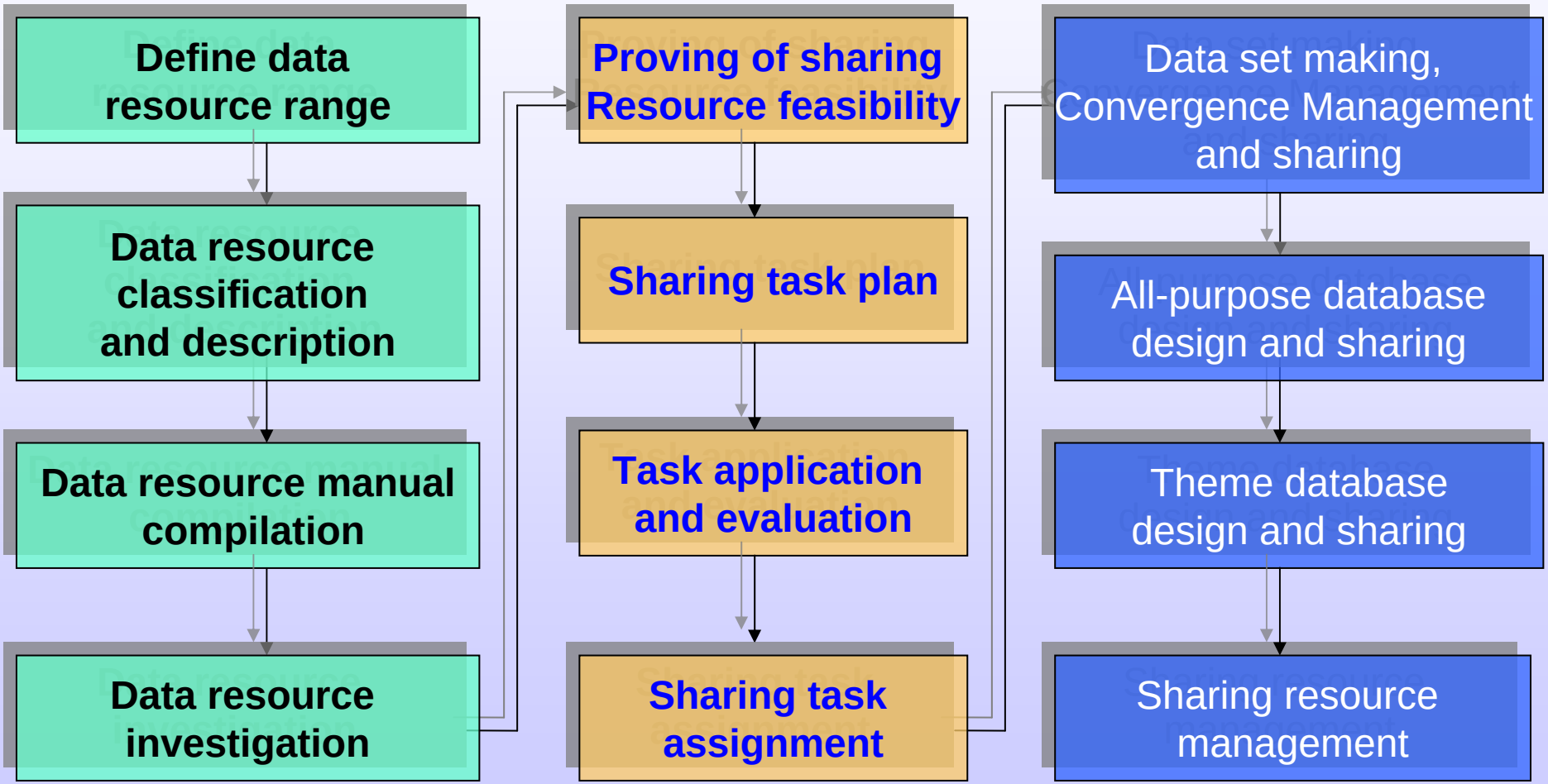
No.	Sub-program name	Task	Unit or team in charge	Person in charge
1	General team	Standardization and integration	Chinese Academy of Medical Sciences	Liu Depei
1-1		Program organization and management	Program office	Wang Jianguo
1-2		Standard and norm system construction	Standard team	Liu Lihua
1-3		Resource planning and system construction	Resource planning team	Jin Shuigao
1-4		Construction of technological protection for platform	Platform technology team	Li Baoluo
2	Basic medicine data center (BMDC)	Construction and sharing service of BMDC	Institute of Basic Medical Sciences of Chinese Academy of Medical Sciences	Wang Heng
3	Clinical medicine data center (CMDC)	Construction and sharing service of CMDC	Peking Union Medical College Hospital, PLA General Hospital, Academy of Military Medical Sciences	Chen Jie Ma Liang
4	Public health data center (PHDC)	Construction and sharing service of PHDC	China Center for Disease Control	Wang Yu
5	Traditional Chinese medicine data center (TCMDC)	Construction and sharing service of TCMDC	China Academy of Chinese Medical Sciences	Liu Baoyan Cui Meng
6	Pharmacy data resource conformity and sharing service	Pharmacy data resource conformity and sharing service	Information Center of State Food and Drug Administration, Institute of Materia Medical of CAS	Hong Xiaoshun Du Guanhua
7	Local nodes of sharing network and data sharing service	Network node construction and service in province, city, county and three regions for minor ethnic groups	Workteam, Xiang Ya Hospital, Beijing Hospital for Elderly, Attached Hospitals of Hebei North University, Institute of Nationalities	Lin Ling Yuan Hong et al

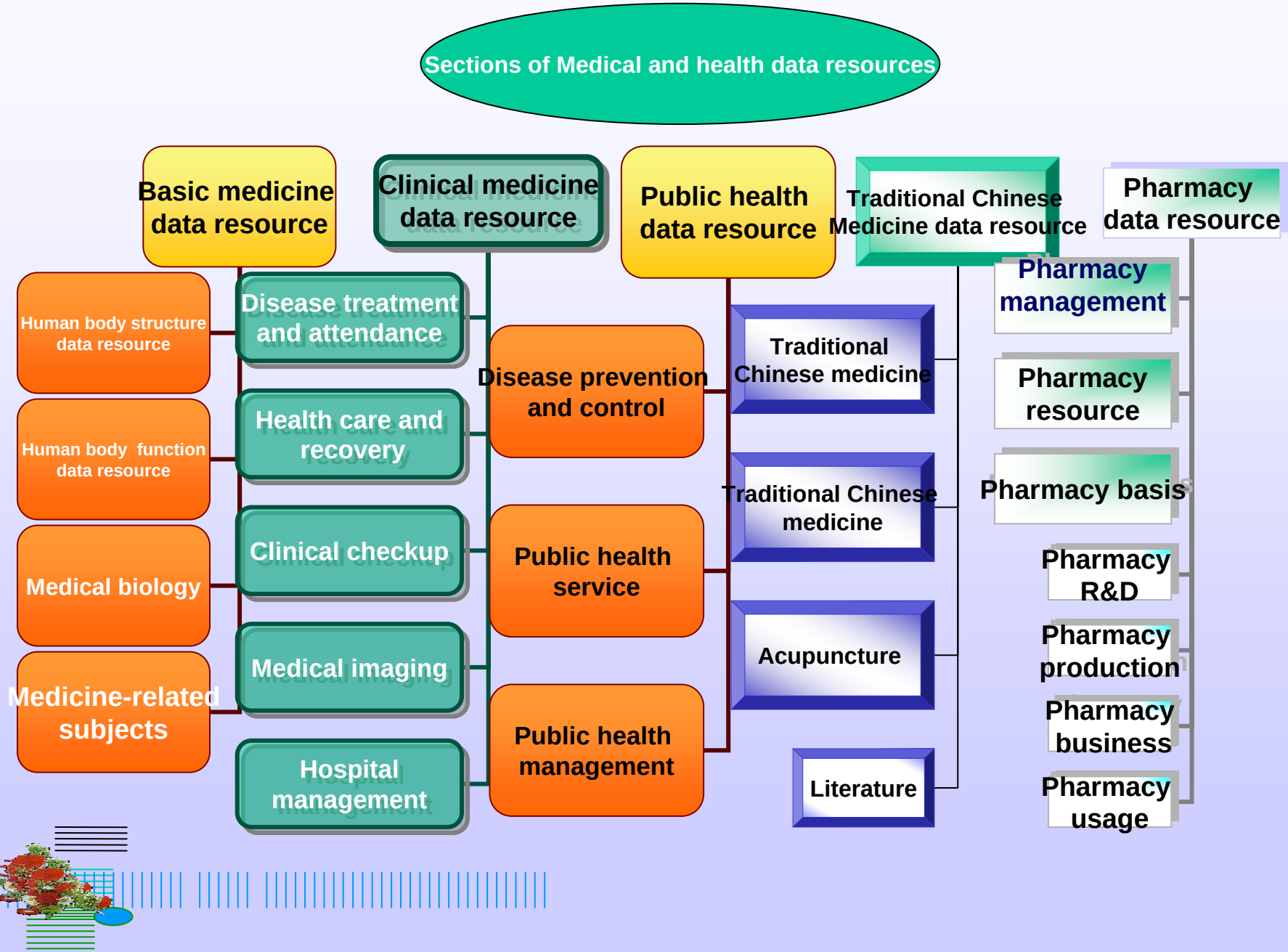
Construction of General Center

- Data resource conformity
- Standards and norms
- Technology platform

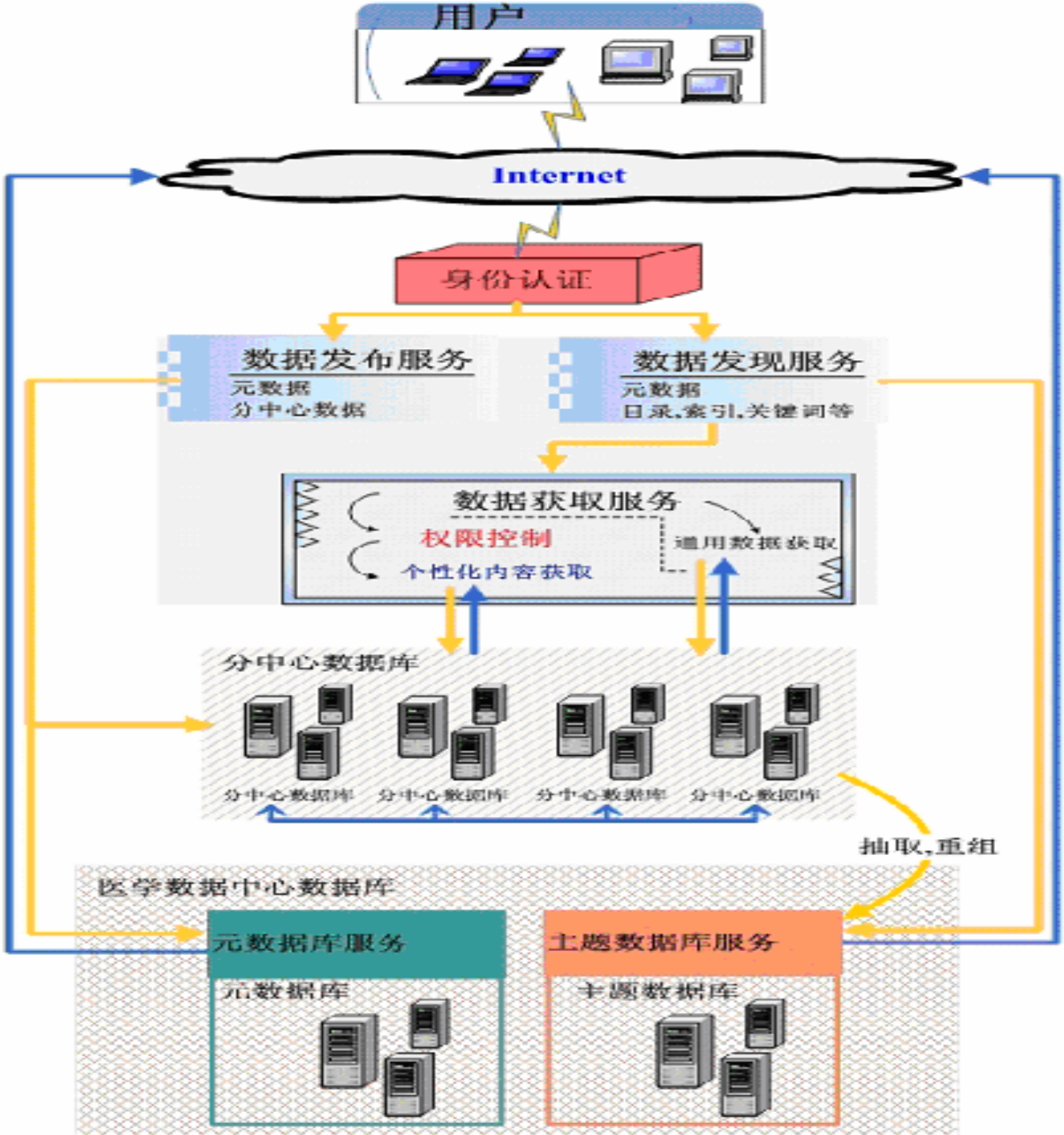


Process for data resource construction of sharing network

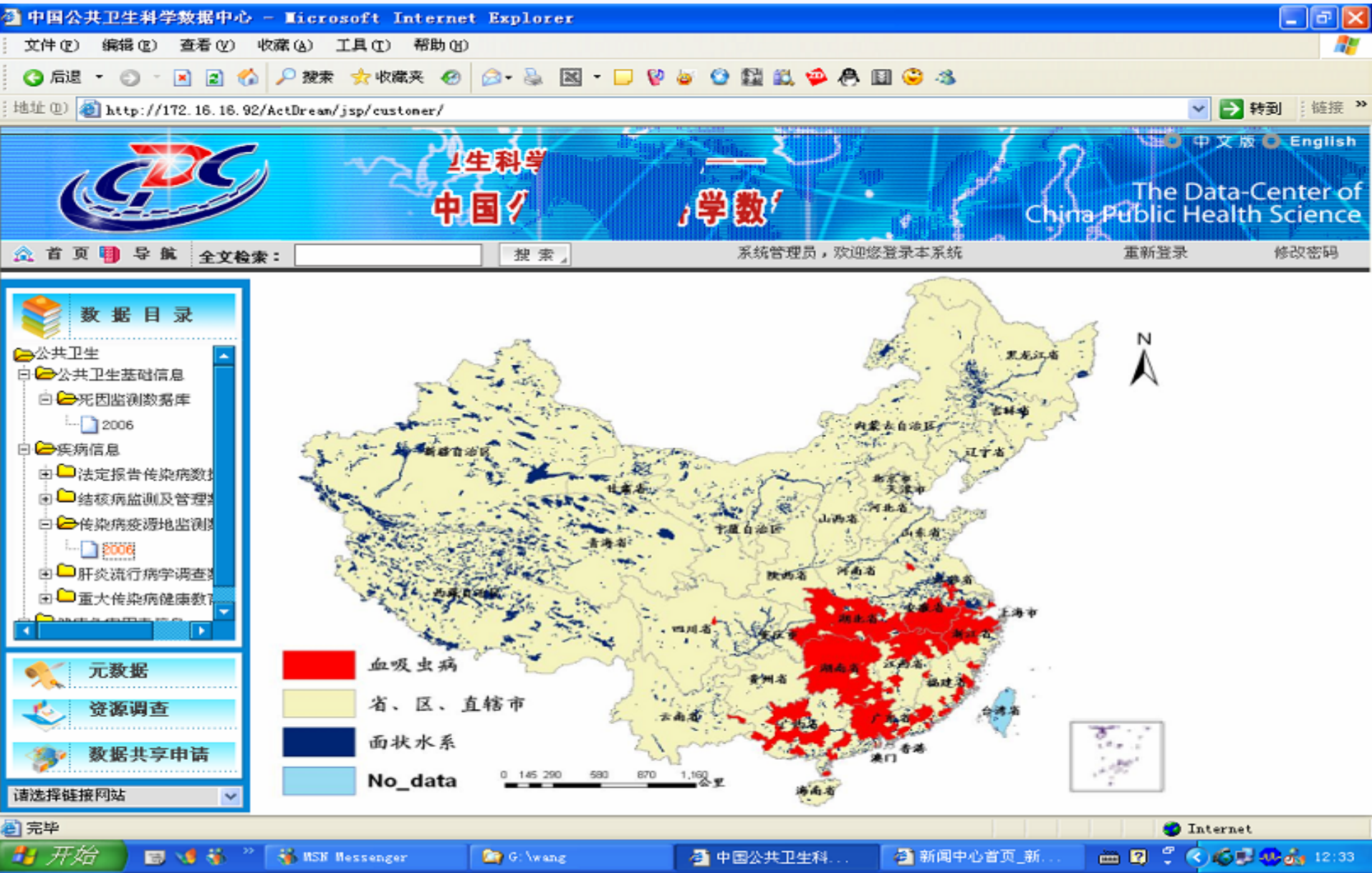



Sections of Medical and health data resources
Basic medicine data resource
Clinical medicine data resource
Public health data resource
Traditional Chinese Medicine data resource
Pharmacy data resource
Human body structure data resource
Human body function data resource
Medical biology
Medicine-related subjects
Disease treatment and attendance
Health care and recovery
Clinical checkup
Medical imaging
Hospital management
Disease prevention and control
Public health service
Public health management
Traditional Chinese medicine
Traditional Chinese medicine
Acupuncture
Literature
Pharmacy management
Pharmacy resource
Pharmacy basis
Pharmacy R&D
Pharmacy production
Pharmacy business
Pharmacy usage

Overall Framework for Technology Platform Construction

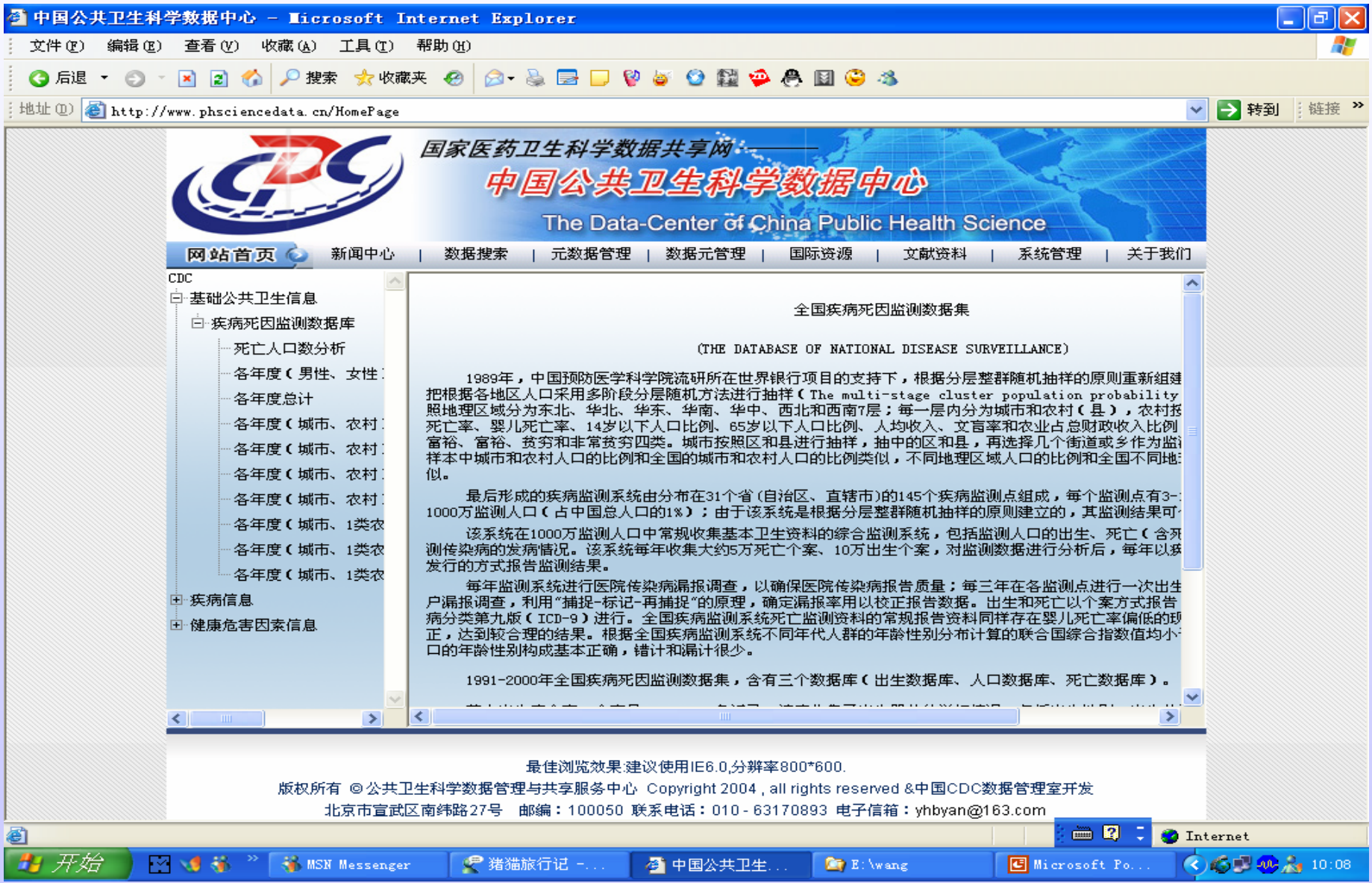


Example:
Map Display of natural source of schistosomiasis

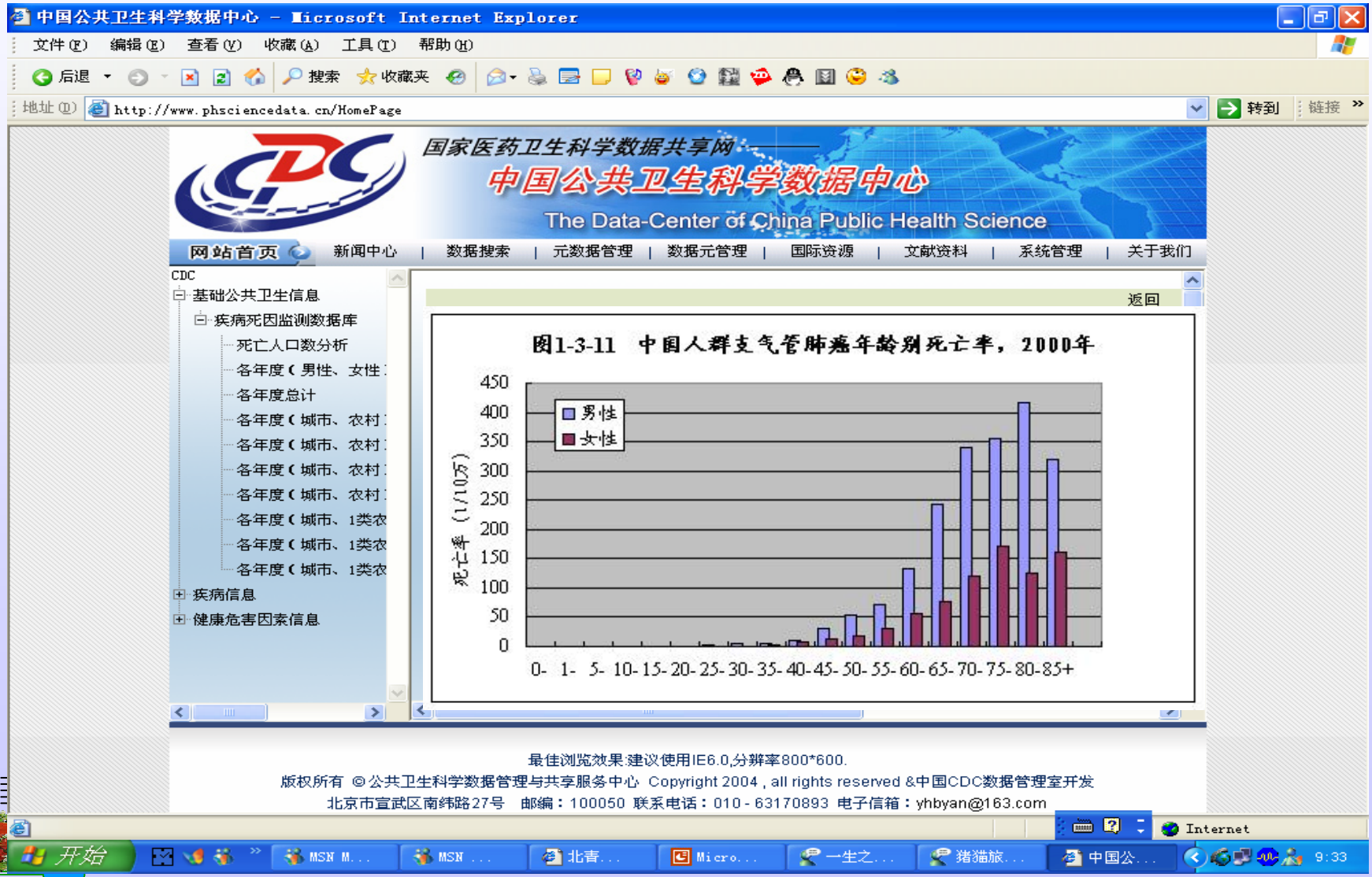


Example:
The Database for National Death Surveillance

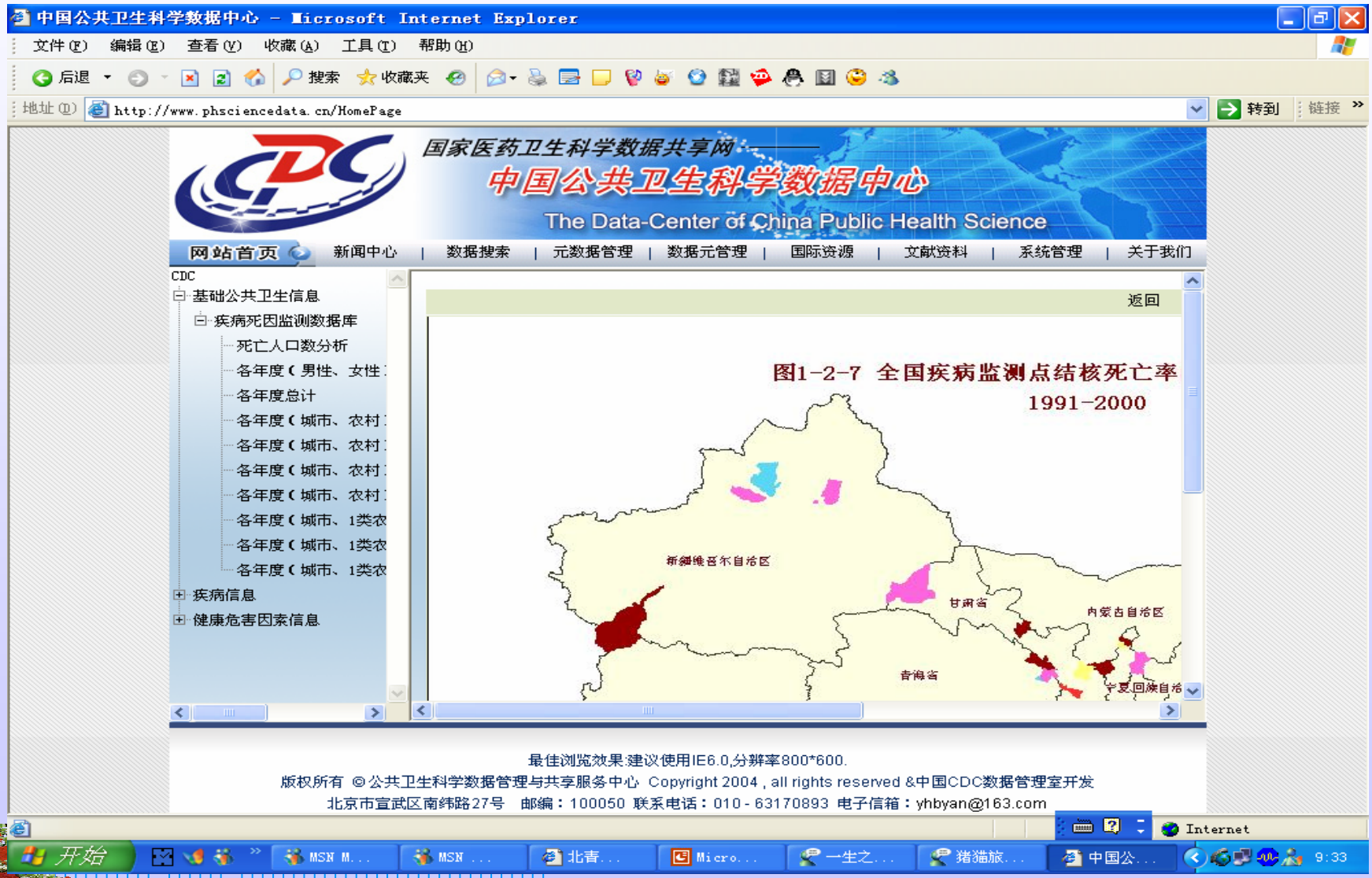
Example:
Background introduction to The Database for National Death Surveillance



Example:
Chinese death rate at different age groups because of bronchus lung cancer (Year 2000)

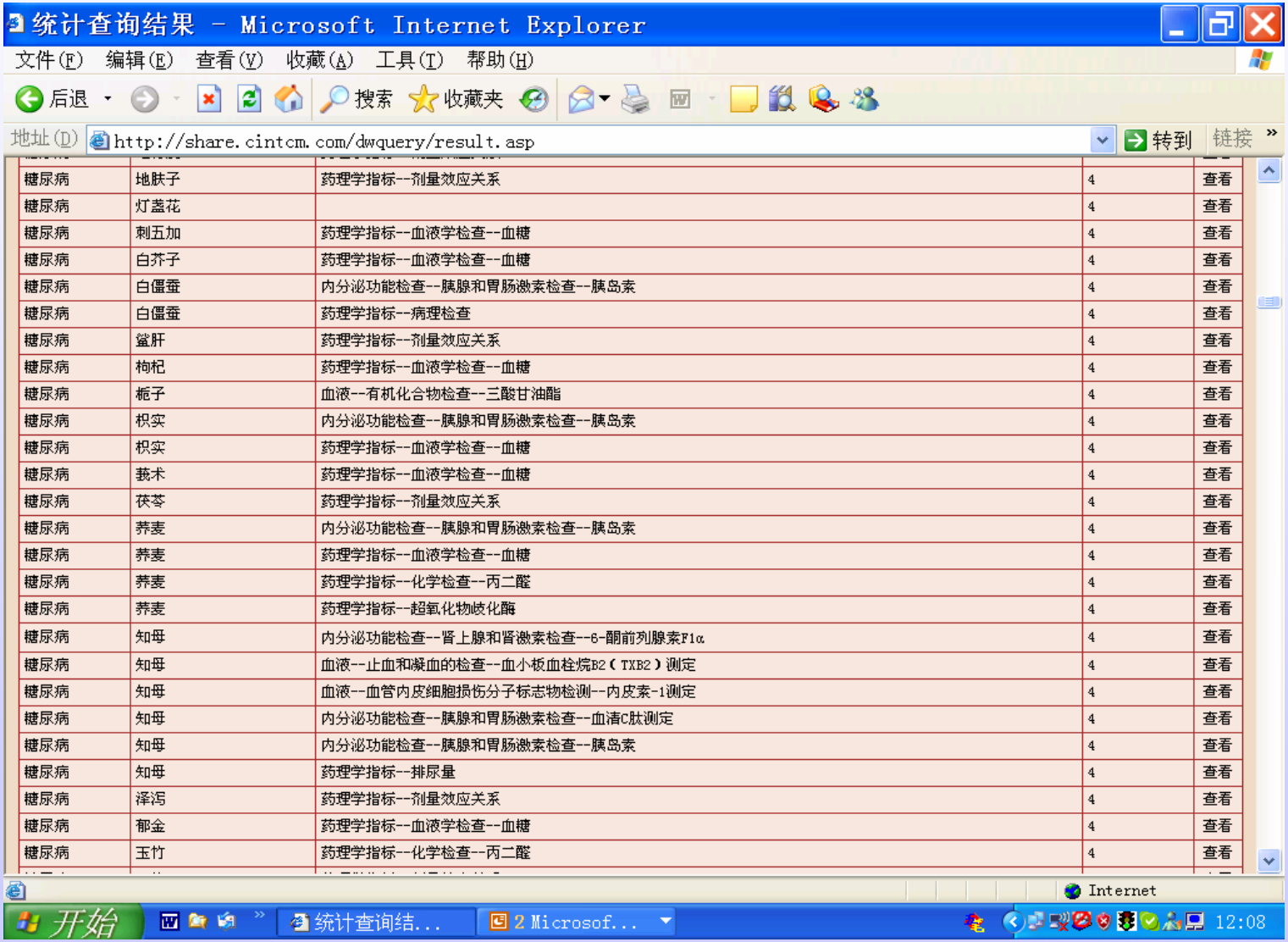


Example:
Map display of national death surveillance.



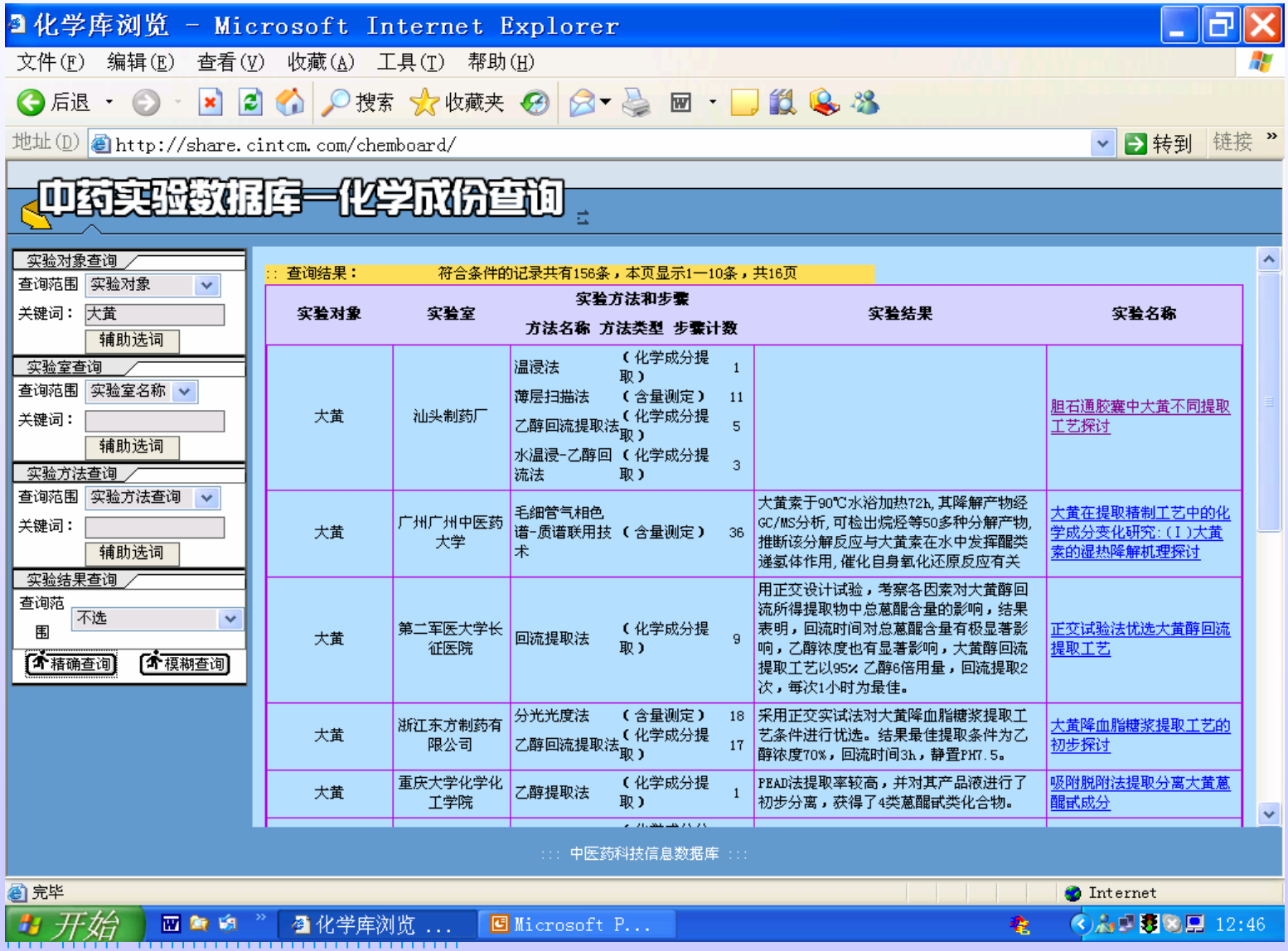
Basic Database for Traditional Chinese Medicine

Database for Pharmacological Experiments of Traditional Chinese Medicine

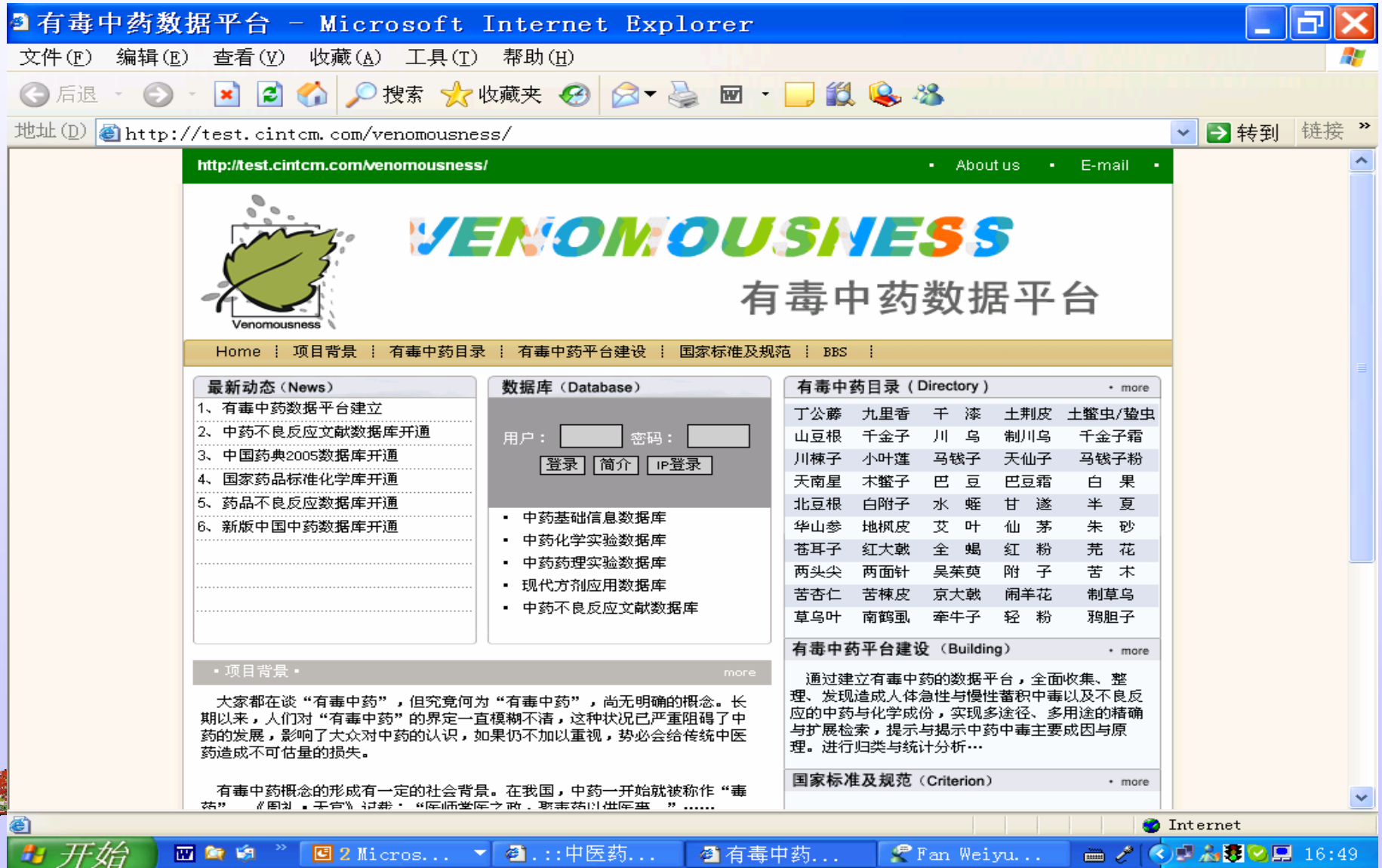


糖尿病	地肤子	药理学指标--剂量效应关系	4	查看
糖尿病	灯盏花		4	查看
糖尿病	刺五加	药理学指标--血液学检查--血糖	4	查看
糖尿病	白芥子	药理学指标--血液学检查--血糖	4	查看
糖尿病	白僵蚕	内分泌功能检查--胰腺和胃肠激素检查--胰岛素	4	查看
糖尿病	白僵蚕	药理学指标--病理检查	4	查看
糖尿病	鲨肝	药理学指标--剂量效应关系	4	查看
糖尿病	枸杞	药理学指标--血液学检查--血糖	4	查看
糖尿病	栀子	血液--有机化合物检查--三酸甘油酯	4	查看
糖尿病	枳实	内分泌功能检查--胰腺和胃肠激素检查--胰岛素	4	查看
糖尿病	枳实	药理学指标--血液学检查--血糖	4	查看
糖尿病	莪术	药理学指标--血液学检查--血糖	4	查看
糖尿病	茯苓	药理学指标--剂量效应关系	4	查看
糖尿病	荞麦	内分泌功能检查--胰腺和胃肠激素检查--胰岛素	4	查看
糖尿病	荞麦	药理学指标--血液学检查--血糖	4	查看
糖尿病	荞麦	药理学指标--化学检查--丙二醛	4	查看
糖尿病	荞麦	药理学指标--超氧化物歧化酶	4	查看
糖尿病	知母	内分泌功能检查--肾上腺和肾激素检查--6-酮前列腺素F1α	4	查看
糖尿病	知母	血液--止血和凝血的检查--血小板血栓烷B2（TXB2）测定	4	查看
糖尿病	知母	血液--血管内皮细胞损伤分子标志物检测--内皮素-1测定	4	查看
糖尿病	知母	内分泌功能检查--胰腺和胃肠激素检查--血清C肽测定	4	查看
糖尿病	知母	内分泌功能检查--胰腺和胃肠激素检查--胰岛素	4	查看
糖尿病	知母	药理学指标--排尿量	4	查看
糖尿病	泽泻	药理学指标--剂量效应关系	4	查看
糖尿病	郁金	药理学指标--血液学检查--血糖	4	查看
糖尿病	玉竹	药理学指标--化学检查--丙二醛	4	查看

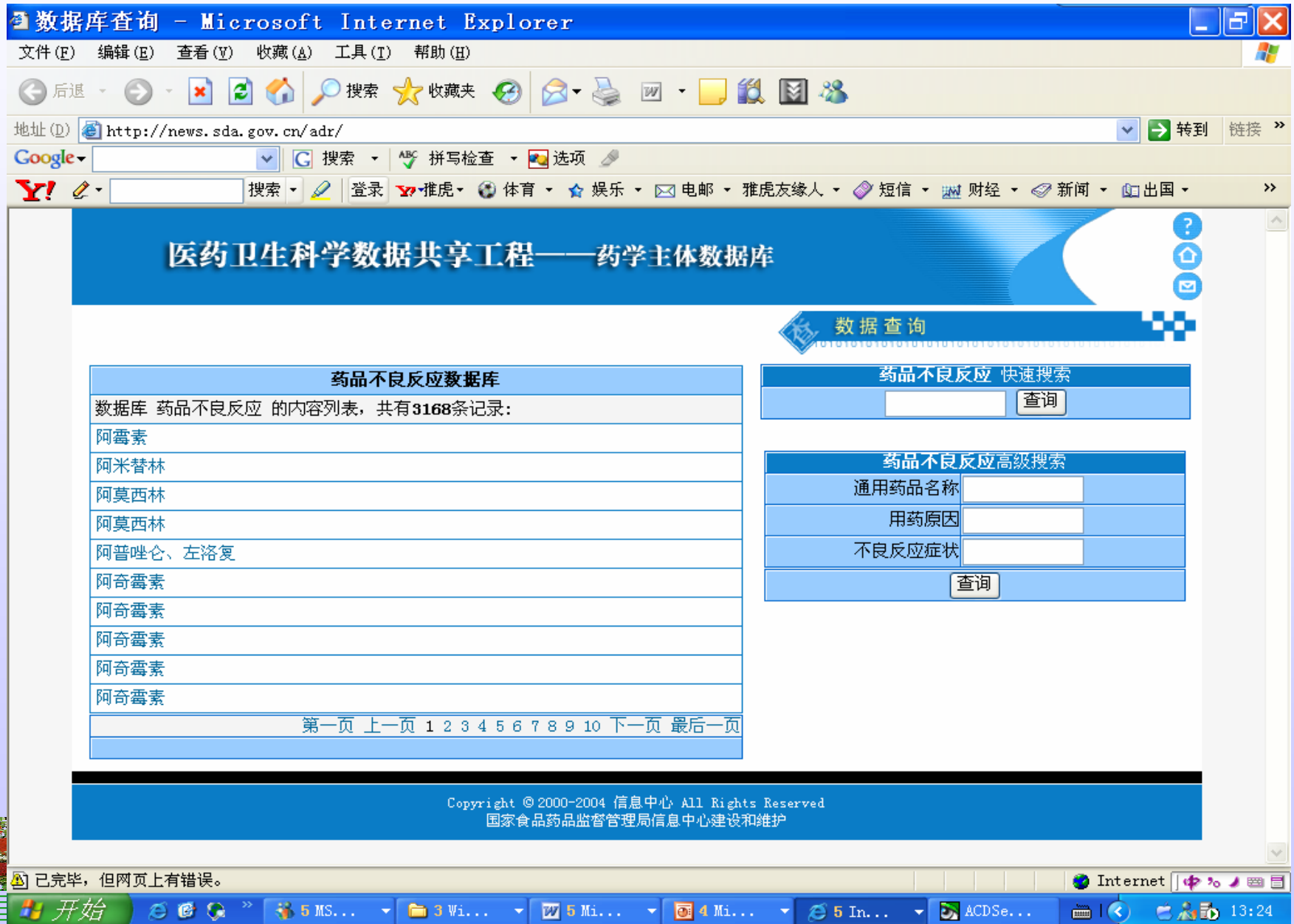
Database for Chemical Experiments of Traditional Chinese Medicine



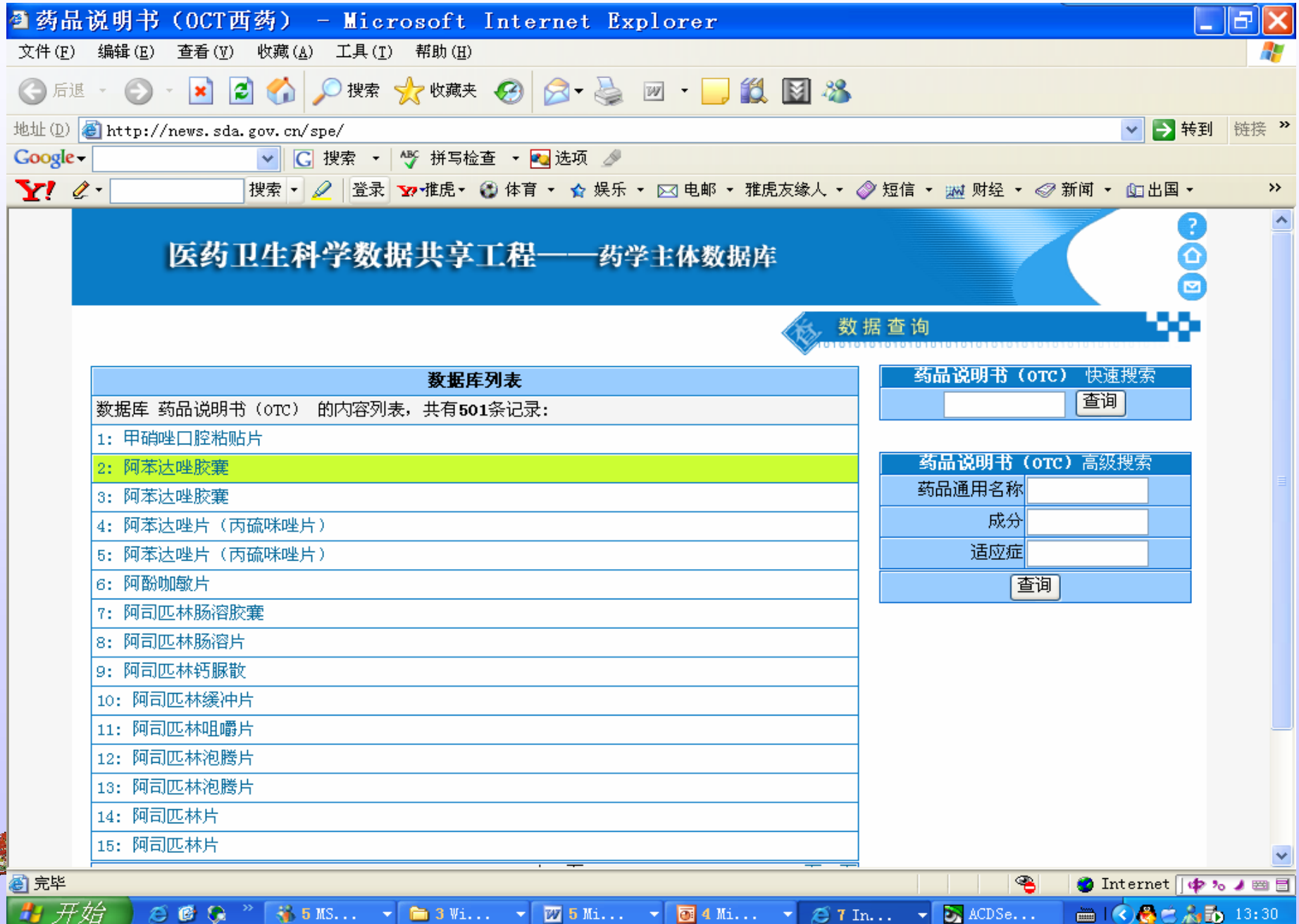
Database for Toxicology of Traditional Chinese Medicine



Database for Adverse Effects of Medicine

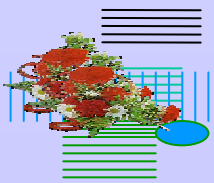


Database for Medicine Manual



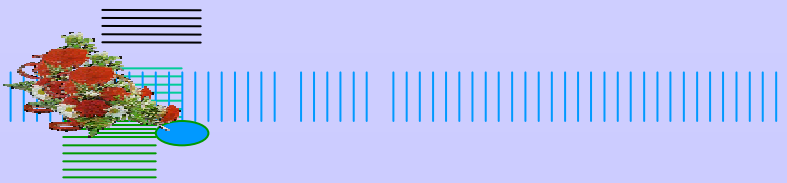
Conclusion

1. It has established the standard and specification system, sharing resource system and platform-support system of medical science data sharing in China.
2. The Sharing Network for Medical Science Data under construction consists of four scientific data centers and about 300 databases.
3. The Data Center of Traditional Chinese Medicine has apparent regional characteristics .
4. We have good cooperation with foreign countries in biomedicine and Public health research.



5. We are going to establish a network for China-America cooperation in biomedicine data sharing:

- Work out serial standards and norms for international data sharing of biomedicine.
- Conduct surveys and need analysis of international data resources of biomedicine and constitute plans.
- Create a network joint-research environment for international biomedicine; carry out global coordination in scientific research.
- Provide data sharing services to world wide for their health policy decision, health care , scientific research and education and health improvement for whole population.

Suggestion

Under the general framework of CODATA, set up branches for medical and health science data sharing system . They are to be responsible for organization of international academic activities of biomedical data sharing.