

The Construction and Application of Database on China Urban Economy-society



Speaker :Liu Zhiyan



Research Centre of Urban Development and Environment,
Chinese Academy of Social Science





Main content

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- Technology
- Construction of Database
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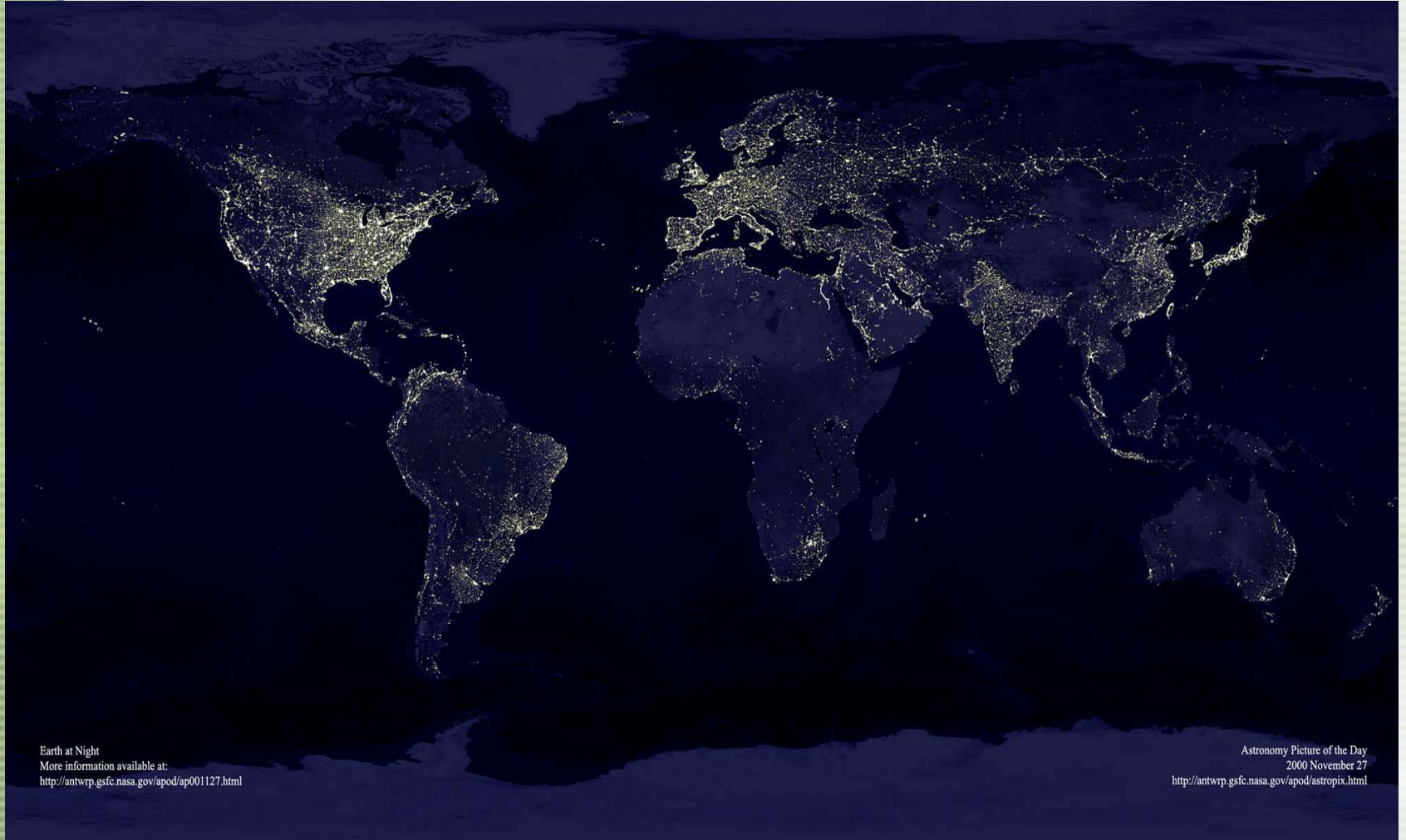


Background

The appearing of modern information technology make it possible to collect ,sort and analysis the information come from urban complex system, especially, using the information platform of GIS Database to integrate the urban economy, society and spatial Information, to combine the statistics data and spatial data and Simulating the urban system ,will improve the research on urbanology decision.

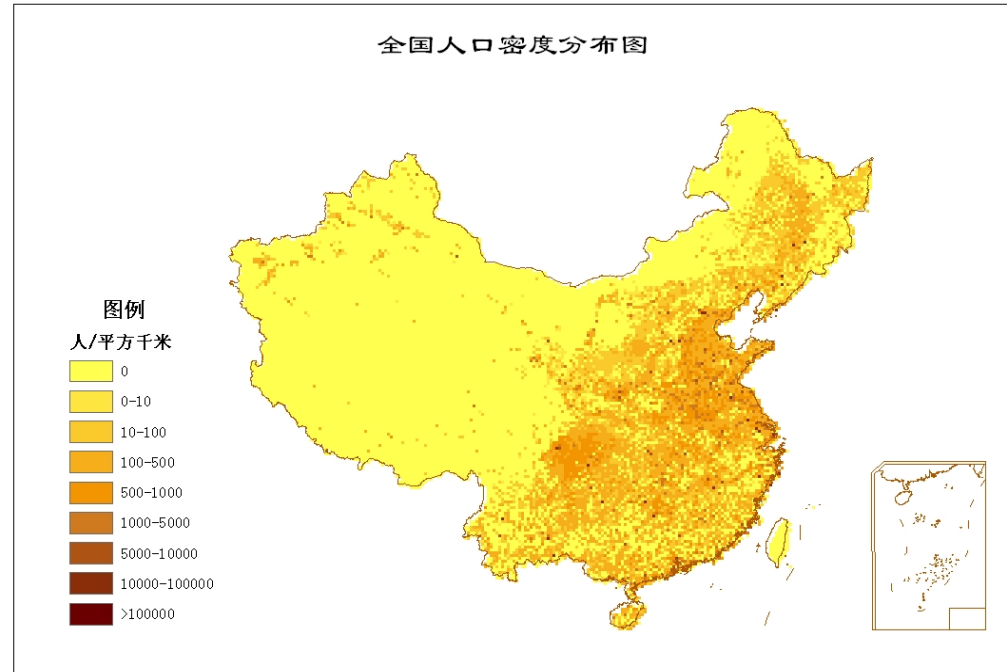
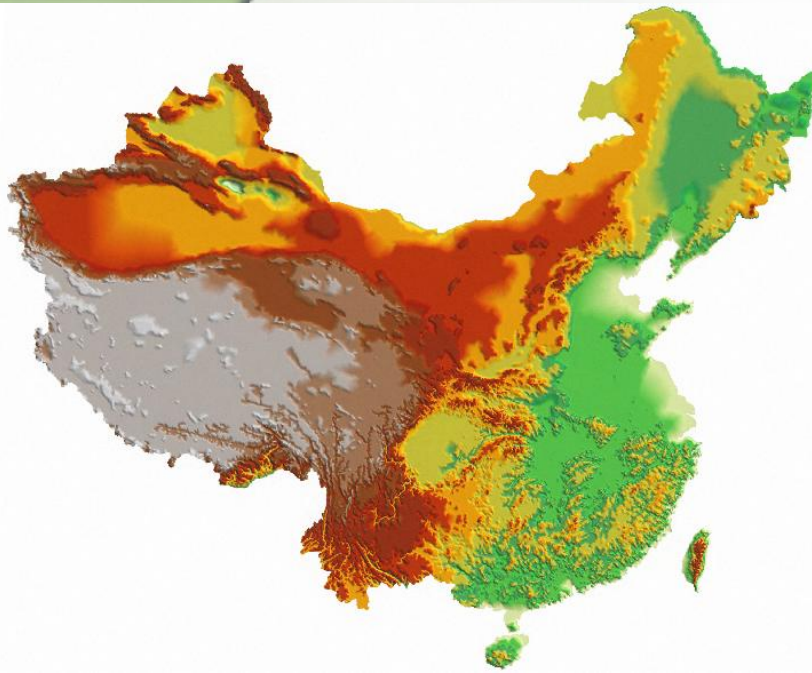


1、 Purpose and Significance of the Research



Earth at Night
More information available at:
<http://antwrp.gsfc.nasa.gov/apod/ap001127.html>

Astronomy Picture of the Day
2000 November 27
<http://antwrp.gsfc.nasa.gov/apod/astropix.html>



It will be in the period of accelerating urbanization in the next few years in China, and it is expected that the urbanization rate will come to fifty percent in 2010. The Development of urban will restrict the development of the whole country.



To collect ,sort and analyze the information come from urban complex system, especially, using the information platform of GIS Database to integrate the urban economy, society and spatial Information,to combine the statistics data and spatial data and simulating the urban system , will improve the research on urbanology and support the scientific and effective urban management and policy decision.

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The property of the Database I:

It covers most of the urban economic data, which reflect the development level of urban economy.

- Reflect the urban economic development through data from 63 industries in 16 categories, which extend the index system vertical.
- Reflect overall of economic development(from scale and structure of economy,developing speed,benefit, static and dynamic, etc.), which stuff the content transversally.



- Reflect the urban economic development mechanism

The economic development is an integrated system. Though it is a special-purpose database, but it will not cut out the connection between the economic development and other social factors.

- Reflect the combination of urban information

It will embody the urban as a open system which is integrated by the cycle of labor flow, material flow, fund flow which generate through division and collaboration of labor only after combining the urban data and space data.



The property of the database II:

–choosing the foundational and original data ,
reflecting the overall urban economy by concise
index system

- Deleting the repeated data from former statistic data and constructing urban economic database by use concise index system
- Deleting the secondary index generated by foundational index ,which construct the urban economic database.
The secondary index will be generate by service layer



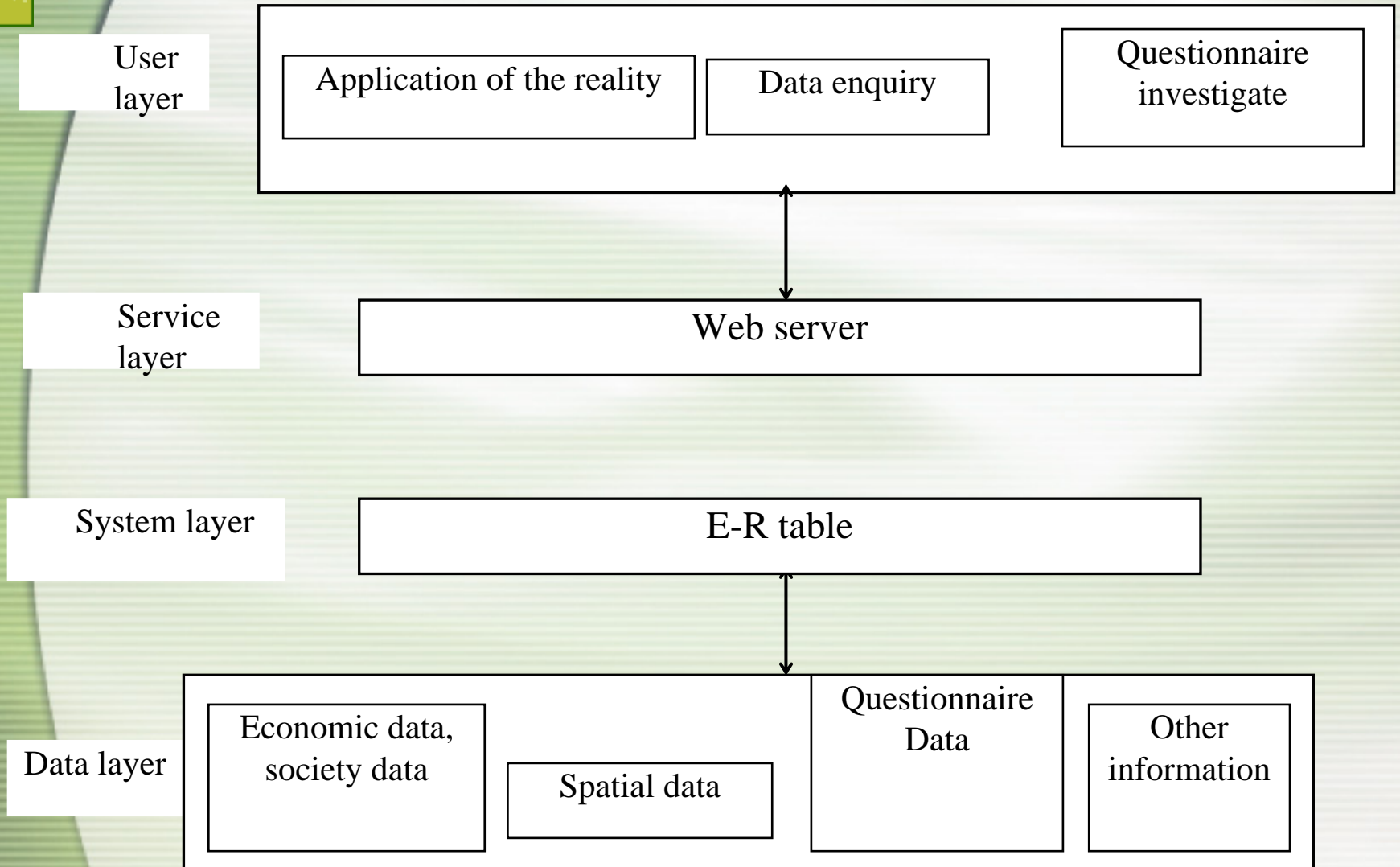
The property of the database III: with extensive practicability

- Used in urban research, city planning and management, consultation.
- Used in multi-area such as the evaluation and comparative of urban economic development, the surveillance of urban economic operation, the simulation of urban economic operation, etc.
- Especially important to guiding the collection of statistic data in the future and help to match the collection and application of the data



2. Technology

- Combining the urban socio-economy data and spatial data by constructing the China urban socio-economy and spatial database based on GIS platform.
- Combining the urban socio-economy data and spatial data, data from questionnaire, non-data information by constructing the E-R table.



Structure chart

3.construction of database



(1)Construction of the database

The database consists of two part: attribute sub-database and spatial sub-database.

A. The independent index system such as urban economic aggregate, structure and society development, will be put into attribute sub-database



- B.The spatial data such as **topographic map,etc.,**will be put into the spatial sub-database.

The software such as SQL SERVER 2000 , Supermap deskpro, VB, etc will be used to construct the database.





(2)Design

The design take account into the factors such as our research experiences ,the factors involving in the research and policy decision in the future,and the need of system upgrade etc.

A.Design of conceptual structure

It is embodiment of urban comprehensive index system use in different regions ,it is stored and executed in the database by combining the attribute sub-database and spatial sub-database.



B.Design of logic structure

- Listing data item, record, identifier, type, unit , value, domain, etc.,constructing the user view and configuring the administrators view



C. Design of Physical structure

Building coder's view, including

- a. The arrangement of the data in memory including the design of index block and buffer
- b. The arrangement of auxiliary memory including the organizing and dividing of index block and data block
- c. The method of visiting data



4 Development and Application

- The main purpose of the research is to compare the urban socio- economy developing strength, developing potential,urban modernization level of different city by applying the GIS platform



Case 1 the comparative of urban socio- economy strength

(I) Comparative of economic development

1. Analysis of economic aggregate

economic aggregate reflects scale strength of the regional economic development as well as the economic competition Capability.

Key index is regional GDP, GDP per capita, economic growth rate and etc.



- 2. Analysis of economic structure
- (1) Industrial development strength index
- A. Analysis of industrial aggregate and structure
- B. Strength of industry
- C. Priority industries development strength
- D. high and new technology industries development strength
- E. tertiary industries development strength



(2) The development strength of different ownership structure enterprises

- A. Analysis of index about state-owned enterprises development capabilities**
- B. Analysis of index about private enterprises development capabilities**
- C. Analysis of index about overseas-funded enterprises development capabilities**



(3) Analysis of rural and urban economic development capabilities

- A. The relationship between urban core areas and economy in counties
- B. Comparative of economic capabilities of different counties
- C. Per capita income



(4) Index of degree of dependence of foreign trade, such as FDI, volume and structure of import and export, etc.



3. Location spatial structure

- (1) Comparative of location radiation effects
(the radiation effects of city clusters)
- (2) Location cost advantage
- (3) The property of population



4. Capital capabilities

(1) analysis of urban public finance strength

- state revenue / GDP
- state expenditure/GDP

(2) analysis of urban finance strength

- The balance of loan
- Average balance of deposits
- The operation of key commercial banks



5. Fixed assets investment potential

Analysis the index such as the aggregate investment on urban fixed assets, the structure of capital source

6. Strength of Logistics



7. Strength of human capital

- (1) analysis the construction of urban labor force and knowledge intensity
- (2) analysis the migration degree of urban labor force
- (3) analysis the capability of urban knowledge innovation
- (4) analysis the migration degree of urban international labor force



(II) Comparative of social development

Based on the analysis of index such as number of years of education, life expectancy, Gini's coefficient, Engel's coefficient etc.





Case 2: Operation analysis

(I) surveillance on overall operation

Constructing and analysis the monitoring index system on the urban operation.

Steps: 1. analysis the urban wealth index

2. analysis the urban economic coordination index

3. analysis the development potential

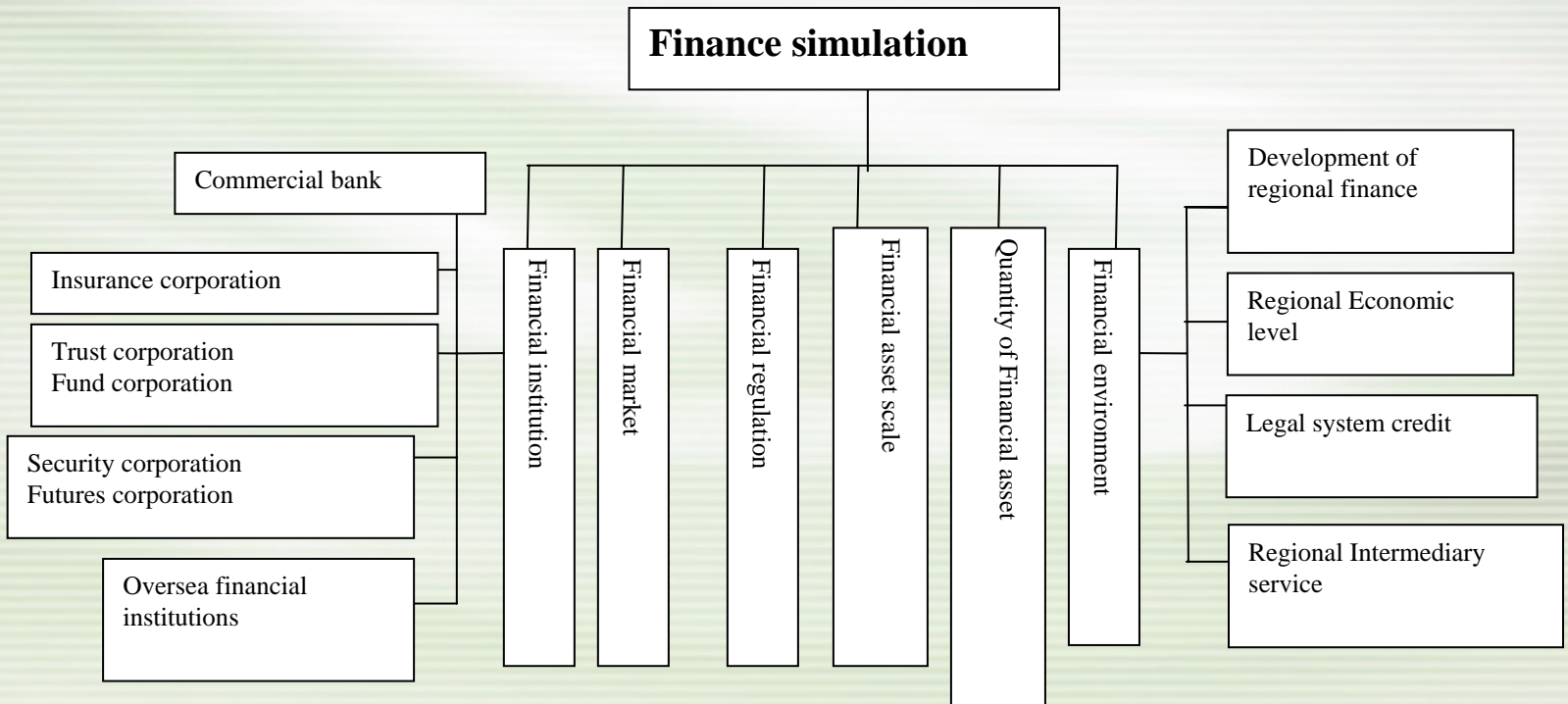
4. analysis the radialization capability





(II) Simulation on finance operation

***Reflect the operation of 'blood' in economy
by simulating the process of finance
operation***





(III) Simulation on operation of *real estate market*

A Simulation based on the two factors:

real estate price and location

B simulation on trend of real estate price

C analysis the operation of location

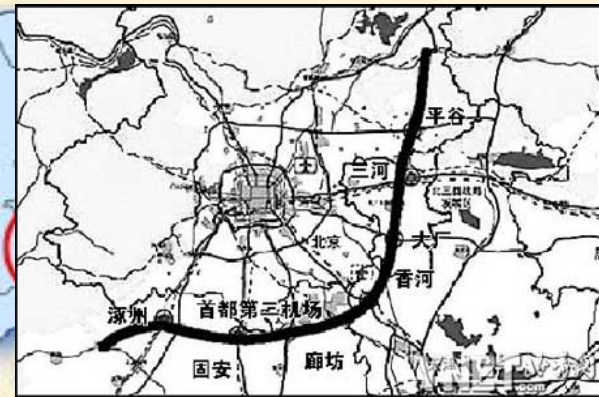




(IV) The relationship between urbanization and the changing of population density

To analysis the urbanization and population migration based on the analysis of index such as the population distribution density, the spatial structure of urban population density, the changing of time series of spatial structure of urban population density .





Thanks!

