

The Research and Development of Land-use Planning Management Information System

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ABSTRACT Land is the base resource for the existence and development of human society. Land-use planning takes a leading role in the management of land resources, and Land-use planning management information system is the scientific warranty of dynamic execution and synchronous management of the planning. There are the advanced economy and severe conflict between man and land resources in Jiangyin County, Jiangsu, China. Taking it as research region, based on the amendment of Land-use planning of Jiangyin County, the authors study, design and develop a Land-use planning management information system. The system has the functions of query and retrieval, Land-use index controlling and land using controlling, Land-use information alteration, statistical analyses, aided analyses of Land-use, measuring, input and output, which are the important aspects of regional Land-use digitalization management.

KEYWORDS GIS, Land-use Planning, Jiangyin County

1. System Studying

In order to utilize land reasonably, based on Land-use present situation analyses, Land-use planning is to adjust Land-use types, zone Land-use, enact specific regulations and measures so as to realize the quantification, qualification, locating and sequencing of regional Land-use.

The products of Land-use planning are maps (Land-use present situation map, Land-use planning map, prime farmland protection zoning planning map, land arrangement and rehabilitation planning map), forms (Land-use present situation form, planning form, prime farmland protection zoning planning form, agrarian dynamic-balanced quantum form, Land-use zoning form, index controlling form, etc) and documents (planning text, direction and topical research text).

The affairs of Land-use planning management include daily management of Land-use information and information sharing, dynamic execution of planning, prime farmland protection, supplementary farmland, etc.

In order to manage the Land-use planning scientifically, it is necessary to build a Land-use planning management information system. Functions of the system are required as followings:

- **Query and Retrieval** All kinds of planning products and Land-use present situation information can be queried in the system; map-table two-way retrieval can be realized.
- **Land-use Index Controlling and Land Using Controlling**

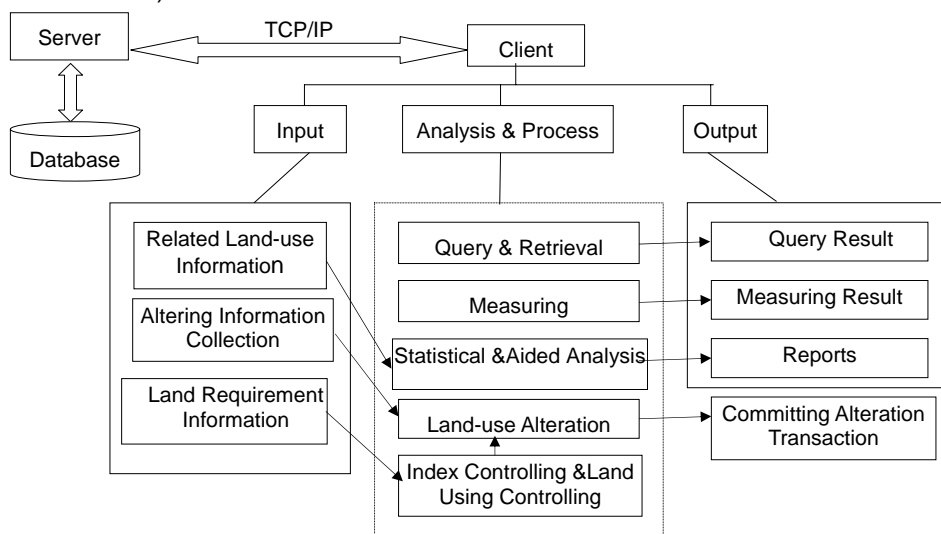


Fig.1. System Logical Structure

the system can manage Land-use planning according to Land-use restrictive index and control land using according to Land-use zoning. In addition, Construction-occupied farmland should be complemented with the corresponding quantity.

- **Land-use Information Alteration** To keep the present situation Land-use map up-to-date, the system can alter corresponding information of the ratified land timely, which reflects changing Land-use information.

- **Statistic and Aided Analyses of Land-use** the system can reckon up the information of present situation land using, occupied farmland, comple-mented farmland, etc. Furthermore, according to above results, some other aided analyses, such as pre-warning analysis of farmland protection, can also be realized.

- **Measuring** Area, length and directions information can be measured in the system.

- **Input and Output** the system can be input to related Land-use information and altered inform-ation and can output maps, reports and documents about Land-use planning and special planning information.

2. System Designing

2.1 System Conception Structure

As for the land information system, the management and application of land information have the developing trend of multi-department, multi-region, and synchronous synergy. A large amount of users share data of Land-use planning, so it is important to build a systematic structure with data sharing mechanism. Land-use planning management system adopts Client/Server systematic structure. Under the structure, the Server accomplishes the function of data procession and printing output, while the Client deals with the organization of application affairs and realization of user interface.

2.2. System Logical Structure (Fig.1)

2.3. Database Designing

In accordance with the aim of system, logical struc-ture of database in Land-use planning management information system is showed as Fig.2. Besides, modified records in database are sent to the historical database.

3. System Development

The authors developed the Land-use planning management information system with Client/Server systematic structure, employing Delphi3 Clie-n-t/Server as developing tools and MapInfo as

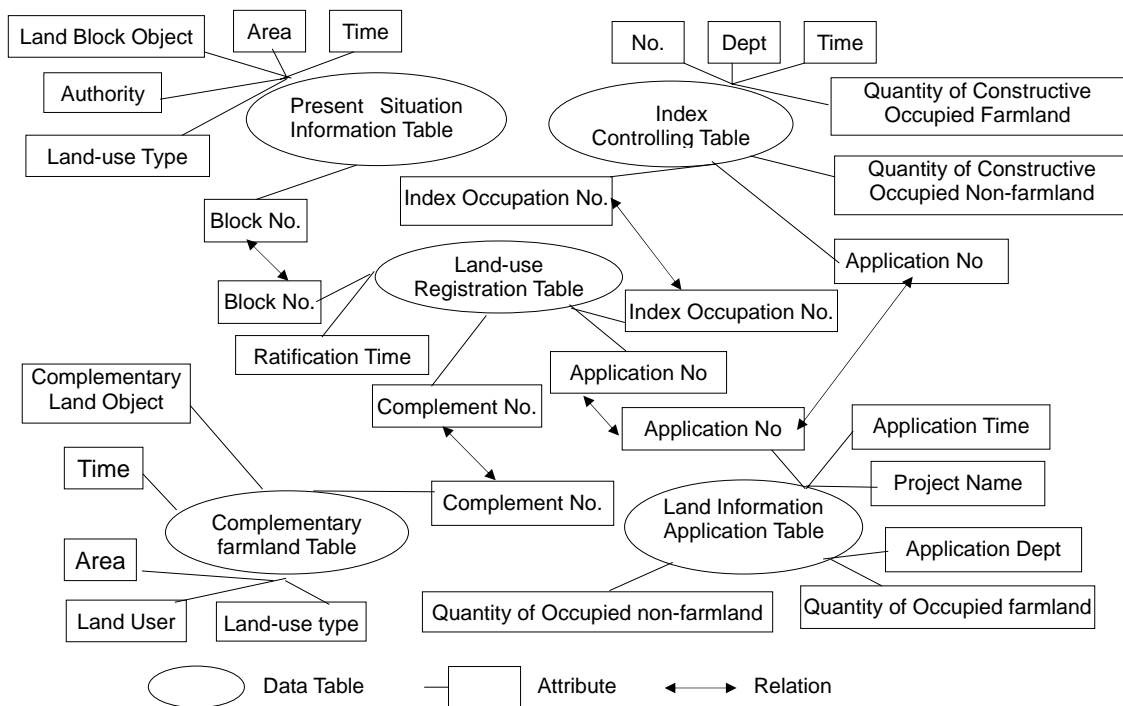


Fig.2 Logical Structure of Database in Land-use Planning and Management Information System

platform, utilizing technology of OLE (Objective Linking and Embedding) automation and adopting the object-oriented method. System software mainly includes OS (upwards of Win95/NT4.0), MapInfo4.0, Interbase Server, etc. System hardware mainly includes Server, PC, plotter, printer and network devices, etc.

The authors accomplished the planning amendment of Jiangyin County and 29 subordinate country and towns. Then taking Jiangyin as experimental field, we developed a Land-use planning management information system. The system has already put into use and runs well. We will perfect Land-use planning management information systems and facilitate regional Land-use digitalization management.

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