

2014

# BioTechnology

*An Indian Journal*

FULL PAPER

BTAIJ, 10(21), 2014 [13188-13192]

## The development of intelligent community information management system based on arcengineer

Guoliang Zhao<sup>1\*</sup>, Guolin Zhao<sup>2</sup>, Aijun Wang<sup>3</sup>  
<sup>1</sup>Xi'an University of Science & Technology Xi'an  
<sup>2</sup>The Air Force Early Warning College Wuhan  
<sup>3</sup>ErdosZhongbei Coal Chemical Co.Ltd  
E-mail: 305110509@qq.com

### ABSTRACT

According to fine management mode "One Courtyard One Map, One Household One File, One Grid Three Managers" of the community in Beilin District, C# as the development language, GIS software ArcEngine as the development platform and C/S and B/S combination model developed in Xi'an Beilin District intelligent community information management system. The system represents each of roads, buildings, public facilities, trees and other objects of the original Beilin District in 2.5 dimensional model and realises the query of basic public services, livelihood security, pension services, security management, community service, department information in disaster emergency, service guarantee, emergency warning and feedback function, and focus on the social security personnel and community service personnel, build long-term service and dynamic management platform, to achieve "management people by household, progress management by service, combination of service and management" fine management and full service pattern.

### KEYWORDS

Intelligent community; ArcEngineer; Finemanagement; Communityservice.



### INTRODUCTION

Nowadays, both commercial economic prosperity and collection of crowd and logistics of central mega cities leads to increase of population floating and density management difficulties and demands for public services, the rapid expansion of social problems have become apparent. As center of Xi'an city, BeiLin, carries out the practice and exploration in new community fine management mode " One Courtyard One Map,One Household One File,One Grid Three Managers" around city and constructs intellectual community information platform. The platform achieves functions such as real 3D scene show, long-term service, dynamic management, rapid search, fast statistics and information security design. In accordance with overall and detailed investigation and analysis about each road, ancillary facilities, buildings, public facilities in the regional scope, the system establishes various information attribute tables and associated them to the corresponding simulation models, loads household information and personnel information on the nature of a residential building in the house staff, loads objects for every household, resident and floating population, records their working and living conditions and demands for services in detail, establish of independent large database which is associated with the corresponding simulation model; analyses the actual work flow of street office management departments, makes the system function module, system structure, design data storage and organization reasonably.

### TECHNOLOGY WAY

Operation mode of this system is the network geographic information system based on Internet/Intranet by using a combination of C/S and B/S mode, Considering the differences and the nature of the work of the users, system is established the network geographic information system based on C/S mode in the LAN and B/S mode in the WAN. For the C/S mode, the Server is responsible for the data, files, images, graphics, storage, maintenance and management, and process the query and access requirements. The specific technical route include data collection, 3D modeling, database and system construction and system test at last is shown in figure 1.

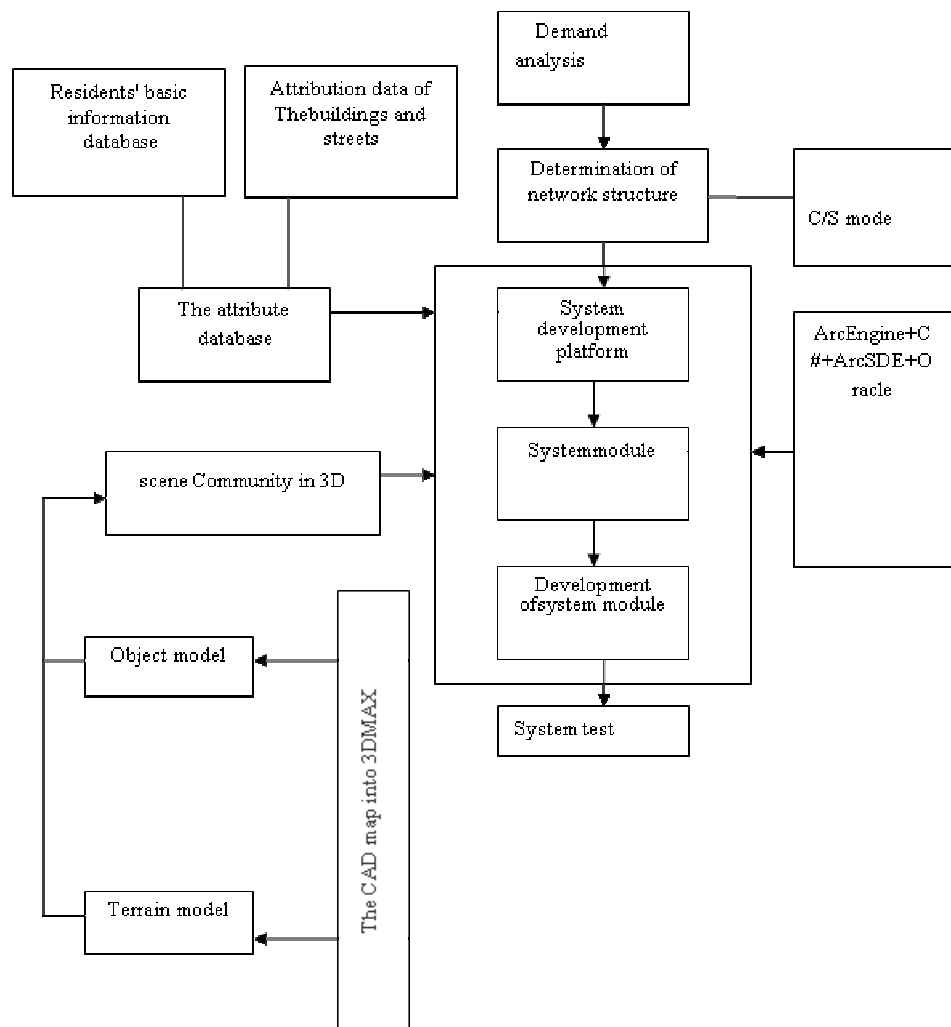


Figure 1: The technology roadmap

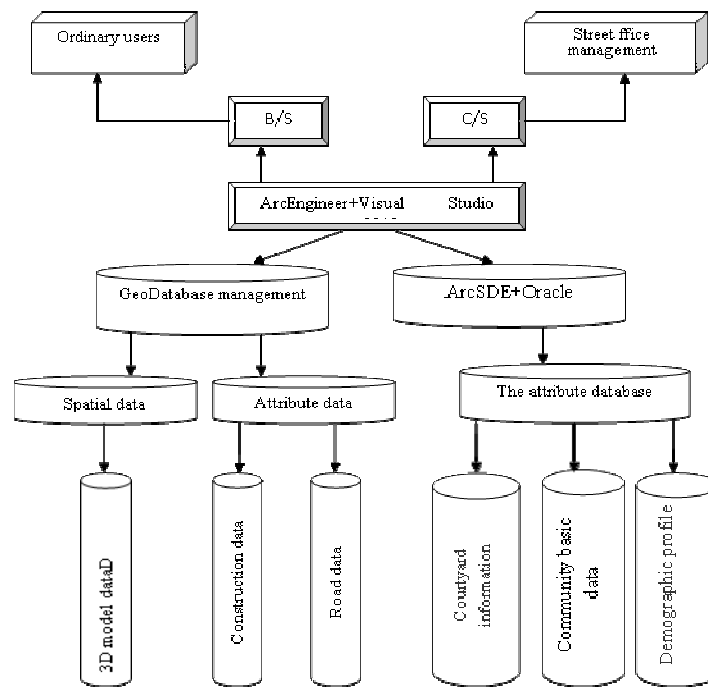


Figure2: System construction design

### OVERALL STRUCTURE

Two kinds of operation mode - C/S and B/S- are occupies in the system overall framework structure, the application layer is divided into C/S mode oriented to street office management staff and B/S mode is mainly for browse and query for ordinary users. The combination of Visual Studio 2010 platform and ArcEngine component development technology is used to construct the system in the development layer. All kinds of data acquired for the system is in good management uniformly through a large database platform. Connecting bridge is built by ArcSDE as spatial data engine between GIS platform and database system to the achievement of relational storage for spatial data<sup>[1]</sup>. System developed by ArcObjects component kid operating on fundamental ArcGIS/ArcEngine GIS platform achieves various data editing, storage, query and analysis function. Data management layer made up by GeoDatabase database and Oracle attribute database indicates the data organization and management model, and the necessary property data and spatial data are mainly in the management of GeoDatabase, the Oracle database is in charge of basic informations of community<sup>[2]</sup>. The overall structural design of the whole system is shown in figure. 1.

### REALIZATION OF SYSTEM FUNCTIONS

#### Generation and management of real 3D

All kinds of objects in jurisdiction, especially those objects attached to ground like roads, buildings public facilities is modeled independently relying on their scales. Drawing simulation of 3D graphics of BaiShuling on the basis of each unit constructed before not only makes it overall and intuitive in understanding and mastering the general conditions of jurisdiction but also has scaling, rotating, annotation, information management of road and building facilities, labeling on administrative departments at all levels of the area boundary and geographic information measurement function, as shown in figure 3.



Figure3 : 3D Scene and information annotation

### Social security object and volunteer service

The system provides social security and volunteer service functions, including social relief, labor security, family planning and volunteer service module and establishes civil target archives tracking service (including the subsistence allowances, medical insurance, low rent housing, medical assistance, the aged, the disabled, entitled groups), and establishes accounting of labor security information for the employees and the unemployed within the jurisdiction<sup>[3]</sup>. Tracking and managing the married women of childbearing age reflecting their marital status, family status, whether receiving only child fee and other related information. To form detailed work of family planning and file information of the full, the system emphasizes on management and investigation of floating population<sup>[4]</sup>. As shown in figure4



Figure 4 : Social security and volunteer service

### A quick search and statistics of all kinds of data

The system realizes category search and precise search about roads, buildings, public facilities, person and digital via setting the quick search bar module. The main function of statistics realizes fast statistics for all data units, similar attribute naming body within the database. According to the required data item requirements of the selected range by staff, the system will automatically select data in the light of the conditions within database and finally, show the digital results of two community above<sup>[5]</sup>. As shown in figure5.



Figure 5 : A quick search and statistics

### Individual OA online office functions

Online office is provided for community worker by OA system and organization of spatial structure is established under the multi-level environment of network through which Upload issued, supervision and inspection, collaborative management, contact coordination, messages-leaving and other functions can be achieved. Community realize the online communication, video-conference holding, work arrangement, events notification, plan-making, notice-sending, implementation of special database, holographic storage of document on daily work, improvement of the executive ability and work efficiency comprehensively through the OA office system<sup>[6]</sup>.

## ACKNOWLEDGEMENT

The topic of this paper and the writing process, I obtained the cable Yonglu Professor, Shi Ping five Professor, Professor Li Shugang, Professor Wu Yongping, Professor Xia Yucheng and other experts, guidance, here to express sincere. In the research process, got my teacher younger sister Zhao Bingzhao, Dai Kaiwen, Li Xingliang, Yang Zixing, Lei Xinyong macro, help, got the party the Decepticons, teacher Li Bangbang Tang Fuquan teacher, the teacher's help. In the collection of data and the software development process, I has been vigorously help Huangling No.1 coal mine managers and engineers about the extensive assistance from Chang'an University geological disasters in the virtual reality lab and Xi'an three di Digital Technology Co., Ltd.

## CONCIUSIONS

Intelligent community information management system is a fine management mode based on the idea "One Courtyard One Map, One Household One File, One Grid Three Managers", and is a community service management system software developed by the combination of virtual reality technology and 3D geographic information system technology. In accordance

with the general ideas "one system, two platforms (intranet and extranet), multifunctional management, full-service" and working assumption" management people via housing, promotion manage by service and combination of service and management" the system grasps the elements "city construction" and "social service", covering all aspects city of basic public services, livelihood security, pension services, public security management, community service, disaster emergency, possessing the functions of information search and query, rapid statistical analysis, disaster emergency disposal and management of help population, service guarantee<sup>[7]</sup>. The system has become support platform for "three reforms" including government office, public management, community service.

#### REFERENCES

- [1] JiantaoWang; Research and Practice of Geographic Information Service Based on Web, ZhengZhou: PhD thesis University of Information Engineering, (2005).
- [2] Zhangheng; Design and Development of Community Management and Service of Web GIS System Based on ArcIMS, The Digital City Development Strategy Forum China Set, Xi'an, Xi'an Map Publishing House, (2005).
- [3] JunpingQian, Longjun Peng; Research and Development of Network Geographic Information System. Remote sensing technology and Application, Volume 15<sup>th</sup>, The 3rd period, (2000).
- [4] Zhanwei Lu; Research on Network Optimization Based on Web GIS, Zheng Zhou: PhD thesis University of Information Engineering, (2005).
- [5] ChenYun, Binhun Huang; Design and Implementation of Web GIS Based on .NET and ArcIMS. Journal of Nanjing Normal University (Engineering and Technology Edition), 5(2), (2005).
- [6] Aiming Li; Research and Practice of Real Estate Property Management Information System Based on Web GIS, Zhengzhou: Master's thesis of University of Information Engineering, (2002).
- [7] Jizhang Fan; Network Geographic Information System (Web GIS) Realization and Application Study, Journal of Changchun Normal University (NATURAL SCIENCE EDITION). Volume 24th, 2<sup>nd</sup> period, (2005).