

Development of Guangxi Government Information Service System

广西政府信息服务系统的开发

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Abstract Present the designing ideas and development methods of the Guangxi Government Information Service System. Supported by back end server (Windows NT Server) and front end client (Windows), the system was built on Client/Server model.

Key words government, information service system, client/server

摘要 给出广西政府信息服务系统的设计思想和开发方法。该系统是在 Windows NT Server 后端服务器和 Windows 前端客户机的支持下, 采用客户机/服务器模式建成的。

关键词 政府 信息服务系统 客户机 服务器

1 Introduction

Development of Guangxi Government Information Service System (GGISS), is the first step of the construction of the office automation system for Guangxi government. Its main task is to establish an electronic information service center and a fundamental computer network framework for Guangxi government, and equip government heads with computers in their offices, provide them electronic office information services.

In the construction of a computer network application system, it is very important to determine computing model. After detail analysis and research, we abandon time-sharing model and file-server model, and select Client/Server model. At the beginning of 1995 when the project began, there was not successful example in government departments all over the contry in this aspect. After our half-one-year hard work, the selection was proved correct by features of the completed system.

This paper presents the designing ideas and the developing methods of GGISS on networking, system functionalities, implementation and user interfaces.

2 Networking

2.1 Goal of the network construction

In GGISS, it is necessary to establish an information network service center (INSC). All kinds of information, to be processed in government office system, will be organized to INSC for concentrative management and distributive access. Through the computer network, every government department can be connected to INSC, and INSC coordinates the processing and accessing operation of information. To reach this goal, we must first build up a local area network in the office yard of Guangxi provincial government. This network will at last extend to be a wide area internetwork and cover all government departments of Guangxi.

Because GGISS is mainly to serve for government heads, information in it must be as rich and effective as possible. The main information sources are the state council and various institutions of

Guangxi government. Therefore, the network must have the ability to connect to the state council and to various institutions of Guangxi government so as to realize mutual information access.

2.2 Determination of network computing model

Nowadays, people must measure among time-sharing computing model, fileserver computing model and Client/Server computing model unavoidably, when selecting network computing model.

In time-sharing computing model, mainframe machine processes all the computing tasks, while in file-server computing model all the tasks are processed by workstations, these two computing models are all in the extreme. On mainframe system, the information transmitting rate on communication lines is limited by the inherent limitation of hardware lines. In file-server system, the information to be transmitted is in great amount. When the number of workstations is big and the quantity of information is large, these two models may all low down the system efficiency seriously.

From the point of view of overall system construction, in the network system of GGISS, the number of workstations to be connected is large and the amount of information to be processed is huge, so we abandon both time-sharing and file-server models and select Client/Server computing model at last.

Client/Server computing model distributes the tasks among back end servers and front end clients, and let them complete the tasks cooperatively, so Client/Server computing model can exert the potentialities of servers and clients. Because only the service requests from clients and the service results from servers are transmitted on the communication lines, the communication burden is lowed down, and the working efficiency of network system is raised.

2.3 Equipment of system software and hardware

In 1990's, one hot topic of computer application technology all over the world is the downsizing trend and Client/Server computing model. Two key points in the application environment construction using Client/Server model are the selection of back end server support and front end client platform. After the investigation to many successful downsizing examples of many famous business organization, we find most of them select UNIX or Windows NT as back end server support, select Windows as front

end client platform, and use GUI and object-oriented visual technology to raise friendliness of system interface and efficiency of development and maintenance.

After comprehensive consideration to graph processing ability, hardware requirement, easy maintenance, security, investment cost and practice of government work, we select Windows NT Server 3.5 networking operating system and SQL Server database system as back end server support and Windows as front end client platform to build up networking support environment, and use GUI and object-oriented visual technology to develop the application system.

As to system hardware, we select a pentium-based server as a primary server, select a 486-based computer as a backup server, select 486-based computers as client workstations, and use ethernet and telephone net to build network.

3 System functionalities

The end users of GGISS software system are heads of Guangxi government, the main functions of GGISS software system are to provide convenient and immediate information querying service. Information provided in GGISS can be classified as follows

- (1) Important official document;
- (2) Governmental affairs information;
- (3) Indexs of Guangxi economy and society development;
- (4) Guangxi customs;
- (5) Guangxi comprehensive information.

Important official document information includes every kind of important official documents issued by the state council and Guangxi provincial government, such as national command files and Guangxi provincial government reports, totally nearly 20 kinds.

Governmental affairs information includes information in Guangxi province, information from other provinces and express news from Xinhua news agency.

The characteristics of information service of the above two kinds is quickness and immediateness. All information can be displayed on computer screens in government heads' offices, they can be read in detail. Hard copy printing function is also available.

Indexes of Guangxi national economy and society development mainly reflect the state of every aspect of the current development of national economy and society of Guangxi. The information can be divided into economy, social life, science, education and legal system.

Guangxi customs information mainly reflect customs of every official region of Guangxi, such as history survey, civilian life, nature and geography.

Guangxi comprehensive information mainly provides every kind of historical statistical datas of comprehensive development of Guangxi, these datas are classified with scientific methods, and provided for users to view mainly in form style.

Except government-head-oriented information service functions, GGISS also provides enough system maintenance functions, which are used to organize and manage every kind of information, to ensure system security and running condition.

4 Implementation

The target of GGISS is to provide information querying service for government heads. The system must have the ability of information collection, classification, recognition and management. It must provide good security mechanism as well.

4.1 Information collection

The information sources of GGISS are located in a wide range of areas. Through networking medias, every kind of information flows onto the computer server in the information network service center from computer wordstations where information sources are located. Information from outside Guangxi are received by a remote communication workstation connected to the state council's information center, while information generated in Guangxi are transmitted through wide area network (WAN) or local area network (LAN) need to be built by us.

4.2 Information classification

Information collected from all sorts of information sources are of great amount and in various types, so the first thing has to be done is to classify and organize information reasonably. Considering both the current requirement and the development possibility in the future, in order to adapt changing

environment, we design a general purpose program model to perform information classification and organization. This model makes the information classification not limited to program source codes, and provides flexibility of information classification to senior users, enabling them to add new information types or adjust original classifying method conveniently without any need to modify programs.

4.3 Information preprocessing and recognition

Original information received from every kind of information sources are expressed as data files, which might be edited with different word processing software. Typical data files are Founder publishing files, WPS files or Wordstar files. In all these data files, there are many publishing control characters which are not in our need. Before extracting information from these data files, we have to filter publishing control characters in them and get equivalent text files without any publishing control character in them. With concern to these problems, we design a set of information preprocessing toolkits to transfer raw format information to text format information.

A text file is a stream of characters. One of the most difficult works in GGISS design is to recognize the useful information from them. In order to design perfect information recognizing function model, there are many technical problems as below to be solved

- (1) Recognition of multiple file formats;
- (2) Recognition of indistinct concept;
- (3) Processing of nonstandard content;
- (4) Processing of errors in data file.

All of the original information received by GGISS have a certain format definition. For the sake of the variety of information sources, it is impossible for us to define a unique information format to be used. We have to handle many different formats of information. In the aspect of processing multiple-format information, we define a interface standard between low level format recognition and high level information processing, with reference to the processing method of Network Driver Interface Standard (NDIS). Base on the standard, we design a specific recognizing driver for each information format, and use a general strategy for high level information processing.

The indistinct concept mentioned above is re-

ferred to multiple different expressions of one concept in an information file, for example, “Guangxi Provincial Government” and “Guangxi Government” have the same meaning.

Nonstandard content results from mistakes made by information providers who break the processing rules predefined for editing the information. In view of this situation, we first make use of multiple-characteristics recognizing method to remove local interference, and process the information as much as possible through indistinct recognizing technology. Only when the information can not be processed any more does the system administrator need to correct the errors in a data file manually with error corrector and to process the information again.

For the quality of communication lines or other reasons, original information may sometimes cause bad results when they are being recognized, so we must take consideration to this error interference when we design the recognizing program.

4.4 Information management

Using information recognizing model, GGISS can extract every kind of meaningful field data of information from original information files, such as title, security level, sender and text content. We save all field data to the related database tables and organize them as an information database for querying service.

GGISS has perfect statistical function model for information management, the model can generate many kinds of statistical reports according to various information fields.

4.5 Querying service

In GGISS, we supply many querying methods for users to look for every kind of information they want on information database so as to meet their need. The main methods supplied are as follows

- (1) Querying for the latest information;
- (2) Querying through multiple selection step by step;
- (3) Querying with combined condition.

Base on the main information classes, GGISS can list the topics of the latest information automatically and users can select the interested information to view from the list.

With a hierarchical classifying method, information can be organized onto a tree structure. Starting from the root of a tree, users can go along

branches of the tree step by step, giving a selection on each middle node. When they reach a leaf of the tree, they will finally find out the content of the information they want to view. This is the way to look for information which we call querying step by step.

GGISS also allows user to retrieve information they need from information database with the conditions they give. Querying condition given can be multiple and can be indistinct.

4.6 Security measures

In GGISS, many measures are taken to ensure system security and information secrecy

- (1) Authentication of legal user;
- (2) Static permission control;
- (3) Dynamic permission control.

Only users registered on the system are legal users, and only legal users are able to use the system. Before a user can enter the system, the system will check to see whether he/she is a legal user. We use password disks to assist user identity verification. Every user has a password disk. To pass identity verification, a user need to insert his password disk into the floppy disk drive before verification begins. The system read identity information from the password disk and authenticates them.

In the static permission controlling method, users' operation capabilities on the system are specified by system administrators. The system provide relevant program model for the administrators to accomplish this work.

In the dynamic permission controlling approach, information itself brings certain accessing permission messages, which determine the users or user groups who have the opportunity to operate the information.

5 User interfaces

On desinning user interfaces of GGISS, we utilize the “True World” designing technology very popular all over the world on the basis of Windows graphical user interface (GUI). Base upon the concept of the “True World” interface designing technology, we make the system's displaying interface, operation interface, operation habit and explanation words as nearer to the real world as possible. The layout of the whole system is built in the style of an

“Electronic Library”, and every kind of information in the system is organized as in an “electronic book”.

On the computer screen, what a user see are groups of interesting and beautiful pictures, what a user need to do is just to move a mouse and click a button at ease, then what they want to do will be performed by the computer immediately.

To government heads, they can accomplish all operations about information service very quickly just by clicking a mouse. Only when they want to query information with conditions do they need to use a keyboard.

6 Conclusions

GGIS was put into use in June 1995. Since then, the system has been being in good running condition and users' reflections are also good. Certainly, this is just the beginning of the office automation construction of Guangxi government. The services provided so far in GGIS are still far from the requirement of the government heads. On the next stage of system construction, we will try our best to perfect the system so as to make it be a better assistant to decision making of the government.

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广西软科学研究成绩斐然

记者从5月9-10日召开的广西全区软科学工作会议获悉:广西“八五”期间完成软科学研究课题207项,一批软科学研究成果已被各级领导决策采用,在推进广西改革开放和经济建设中发挥了重要的作用。

广西软科学研究起步比较早。早在1984年自治区科委就把软科学研究列入了科学技术发展计划的内容,并采取了促进软科学发展的3条措施:(1)制定软科学研究专项发展计划;(2)每年从三项科技经费中划出100万元作为软科学研究的支持经费;(3)把软科学成果纳入广西科技进步奖评奖序列。在自治区党委、政府领导的重视和关怀下,广西的软科学研究经过10多年的努力,现已形成咨询业、软科学应用研究、软科学基础性研究三层次格局,初步建立了全区软科学研究的工作体系和管理体系。广西已有30多家软科学研究机构,450多名专职研究人员和数以千计的兼职研究人员。到1995年底止,广西的软科学研究共取得自治区成果168项,获广西科技进步奖53项,其中1项获得国家科技进步二等奖,这些成果为加快我区经济、社会、科技发展起到了重要的作用。《广西经济社会发展战略研究》《广西在大西南区域经济的地位和作用研究》,为合理调整和布局广西的产业,制定发挥区位优势,建设大西南出海通道决策提供了科学依据。自治区科委以点带面,先后组织全区68个县开展的县级经济、社会、科技、生态协调发展总体规划的研究,对广西区域发展起到重要指导作用。由广西科学院、自治区计委承担完成的《石山地区发展战略与综合治理、开发实施方案研究》《北部湾海洋资源开发规划和实施方案的研究》为广西组织扶贫攻坚和开发一片海拓宽了思路。

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