

A Design for E-government SMS Platform Based on Web

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Abstract—The structure and system function module of short message platform are analyzed in this paper firstly. An E-government SMS system is designed then. Connected with mobile operators and shared resources with them, this system can not only satisfy the need of E-government but also reduce construction cost and management cost.

Keywords—WEB; E-government; SMS platform

I. INTRODUCTION

With the rapid development of mobile communication technology, it has brought E-government into a rapid development stage in China. A new mobile E-government mode occurred which can help perform government functions by using mobile terminals, such as notes releasing, mobile officing. Administrative efficiency and service quality are improved.

Most information can be sent and received by cell phones. Clients can receive all kinds of information in the communication network coverage area. SMS (Short Message Service) is a standard, cheap, convenient information transmission mode. SMS and all services can be provided to clients after they connect any SMS gateways of mobile telecom carriers, such as China Mobile, China Unicom, China Telecom, via Internet.

Government information system can be connected with SMS center via short message gateways of mobile telecom carriers. After this, mobile officing, information presentation and query can be realized, including administrative examination and approval, government information, other information that are closely related to people's everyday life, such as society insurance information, traffic information, traffic violation presentation. As a basic and efficient way of mobile E-government, SMS plays important role. It can make communication between government and common people convenient with advantages of efficiency and low cost.

II. SYSTEM STRUCTURE OF SMS PLATFORM FOR E-GOVERNMENT BASED ON WAP

There're two SMS platform modes now in China based either on WAP or on PC clients inside enterprises. Websites always use the former mode to send customized information to clients, such as news, weather forecast, stock quotation. Enterprise and public institutions often use the latter to provide SMS to their clients^[1].

SMS platform based on Web can help to exchange information among different networks. It expands the service area of short message by sending information on demand. Both big application service provider and small and medium-sized enterprises can make use of it. Its structure is shown as figure 1.

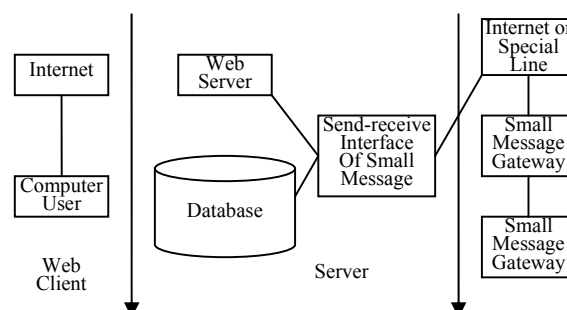


Figure 1. SMS Platform System Structure Based on WEB

Web clients can visit the SMS platform on web server. Interface of SMS receiver and transmitter communicates with SMS gateway via CMPP (China Mobile peer to peer) protocol. SMS gateway communicates with SMS center via SMPP (short message peer to peer). SMS center receives and transmits information via mobile network.

E-government affairs system can be connected with SMS platform of mobile operators on a thorough E-government SMS platform^[2]. The E-government SMS platform need to perform such functions as follows:

A. Organization Structure

An organization structure needs to be established to manage and maintain clients. Deploy and dispose of put-in messages can be done on this basis.

B. Small Message Broadcast

Government sends mass brief messages to the public and the relevant people, such as government notifications, greetings, meeting summaries.

C. Small Message Log Management

All the messages sent through SMS gateway can be queried and summarized accordance with send time or other key terms.

D. Service Access

Business data can be disposed, filtered according to every query a corresponding format package can be gotten. This system is composed of several modules, each perform different application process respectively. Diversified operation flows can be formed through different module portfolios.

E. Customized services

Clients can acquire all kinds of E-government information and public service information by sending customized code or by logging E-government web portals.

III. SYSTEM DESIGN FOR SMS PLATFORM OF E-GOVERNMENT BASED ON WEB

The E-government SMS platform is composed of three layers, which are developed by Language C++. XML (Extensible Markup Language) is deployed and SQL Server 2000 is adopted in this system. Embedded browser is used to integrate the system with extended object interface card. HTML (Hyper Text Mark-up Language) is used to lay out desktop^[3]. The framework is shown by figure 2.

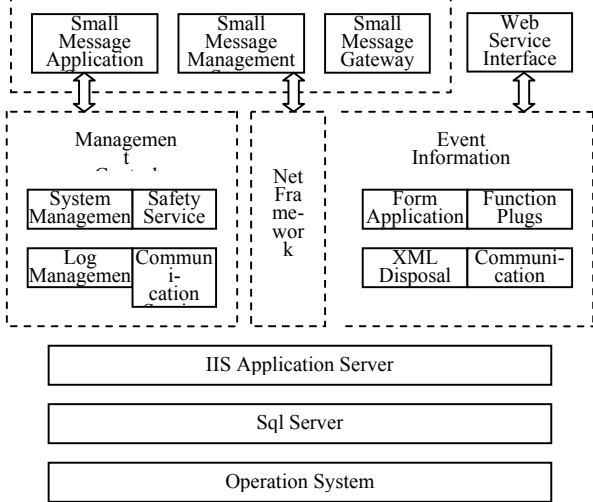


Figure 2. Technology Framework of SMS Platform Based on WEB

The whole system is divided into three logic layers reasonably, each has a defined interface.

The first one is presentation layer. It presents graphics to system managers and maintainers and relative users. It includes any system that can display data, such as HTML menu, XML, multimedia technology. Business is processed with normal flow and interface. Personalized interfaces are designed for different characters according to their authorities in this system.

Application logic layer, the interlayer, which is developed by Language C++ and is realized by ADO.NET technology, is a formatted display with a package form, that is to say a class library, after data is received at the presentation layer. Abstract functions such as client management, bottom layer data visit, data transmission, are divided into several packages according to their functions

and logics. This integrated and standardized API (Application Programming Interface) will support the visit from upper layer.

Data layer or data center is at the bottom of the system. It is used to manage and exchange data uniformly. Its main functions are data management and maintain, data exchange, data extract and data filter.

An E-government SMS platform system based on Web, as shown by figure 3 is designed in order to improve the efficiency, quality and transparency of government's public service.

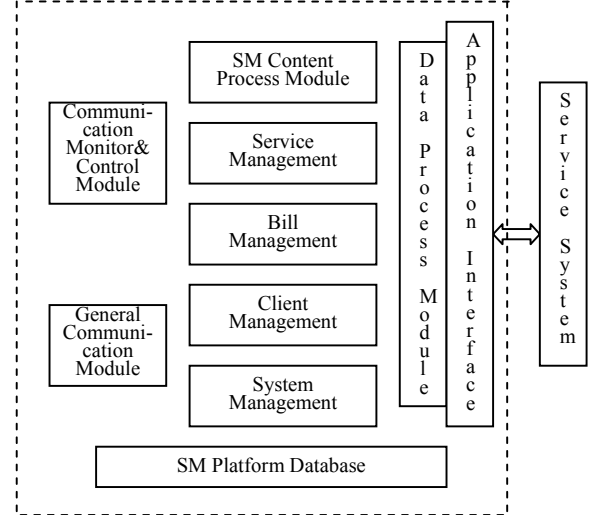


Figure 3. System Design for E-government SMS Platform Based on WEB

A. Small Message Gateway Platform

E-government SMS gateway can be connected with mobile operator SMS gateway either by private line or by public network. It consists of four modules, communication, service process, data process and billing. Control connection can be made among these modules through connection interface or connection pool. The data process is the main part. The communication module is in charge of communication with SMS gateway. And under the support of business process module, specific business can be finished^[4].

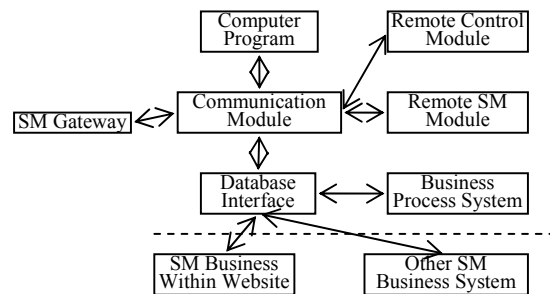


Figure 4. SMS Gateway Based on WEB

- Communication module. Multi-processing mechanism is used to handle messages. So that the processing speed and handling ability can be enhanced. Message queue mechanism is adopted to send message smoothly and safely. Data loss almost won't occur.
- Data process module. Data from each module are processed in this module with the help of Oracle's powerful storage, analysis, trigger and mining functions. Other auxiliary programs are helpful to improve handling ability and intelligent level.

B. Service access of small message system

Service access system is the core of E-government short message management system. It provides a standard interface with the E-government service system and is responsible for data exchange with these service systems. Relative service data can be gotten by query function. These data transmission formats are supported in the system, message flow, XML format data file. Clients' data can be transmitted by Socket message flow, HTTP (Hyper text transmission protocol), Web Service. The service access system can also be deployed or developed according to different E-government needs.

C. Interface maintenance of small message system

- Setting long service number. When a string of user-defined numbers is added to the special service number, a long service number is generated. The length of the number string is defined by operators, always not exceed 20. 4 to 6 numbers are practically added for the memory convenience. For example, the special service number of China mobile is 05555, 055551000 can be defined as small message broadcast number. Service system can be subdivided by using long service number. It is good to both government users and the service system.
- Setting the service code. The charge rate, charge type and the cell phone number which will pay for the charge are provided by service code. Small message gateway is responsible for sending and receiving these charge information. Service codes are adopted to classify services, such as service query, service customizing or service cancel, always in acquiescent mode. Long code numbers are recommended for the good of system classification.
- Setting call interface. All service process systems must be registered at the E-government application system prior to their connection with small message gateway. IP address and port numbers are recorded. System numbers and long service numbers are allocated. All service process systems are deployed, developed or reengineered according to the interface provided by E-government application system. Small messages are received and transmitted by arranged message format. All of the service query contents and the service data exchange are set on this interface.

D. SMS data process module

This module is responsible for the identification, verification of service codes, the analysis of ongoing transmission, the dispatch of Web service. The verification of service codes is necessary. There must be an exclusive service code for every SMS name, which is put on records at mobile company and be verified too. The ongoing transmission is identified by service data process module firstly, dispatched by Web service then. If the ongoing transmission needs response, the returned result is transmitted downward and fed back to cell phone users.

E. Small message content process module

There're two core functions in this module. One is the filter function of sensitive words. The small message sent by any platform must be filtered. The other function is the disposals of small message, such as the division of excessive long message, label service code and receive number. The divided excessive long message is added to dueout list.

F. Small message service management module

It performs such core management functions of the whole SMS platform as service management, client management, bill management, system management and service login. It provides the information of all service types, code rules, charge type, account information, subscription rules, blacklist management and data maintenance. It has another key function to register on the Web service. The service request from mobile terminal can be forwarded to service system through small message platform after register.

IV. CONCLUSION

In order to save construction cost, the E-government SMS platform system should be built base on these principles, unified planning, resource integration and information sharing. Government information can be sent to the public on this platform and advices for government can be fed back. The construction and application of this platform system are significant for improving the efficiency and quality of government service.

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