

# The Research of Service E-Government System Based on Web Service

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**Abstract.** This paper puts forward a kind of special service e-government system according to the current status and development direction of e-government. Firstly, the paper discusses the current classification of e-government system, and then puts forward the concept and framework of the service e-government system. Then it carries out detailed design descriptions for the database system framework, software system framework, and the knowledge discovery & data mining subsystem framework of 12315 e-government system, the application case of service e-government system.

**Keywords:** Web Service, E-Government, Service, 12315, Framework

## 1 Introduction

The core tenet of e-government is to integrate the resources with people-oriented basis and service object as the center to serve the society with high-quality electronic public services, make government affairs public, guide public participation in government decision-making, and help create a service-oriented, transparent and responsible government [1]. To provide the citizens and enterprises with electronic public services which are convenient and easy to access will greatly improve the quality of service, help the government provide services more properly, enhance public confidence in electronic trading, and promote social application information technology [2].

This paper puts forward a kind of e-government, which provides the public with service and has a close relationship with the coordination between government departments and enterprises, and is hoped to play a due role in the healthy and rapid development of e-government system.

## 2 Traditional Classification for E-Government System

E-government refers to the government affairs activity carried out with the aid of electronic information technology. In order to realize the goal of healthy and steady economic and social development, major role of the government is to continuously establish and improve various laws and regulations, provide guarantee for the

development of the society, and at the same time, implement macroeconomic regulation and control for the economy. That is to say, the core of government affairs activity should be to provide service for economic construction and social development. Therefore, e-government is a kind of activity “with electronic as the method and service as the core”; that is, the goal of e-government should be to provide guarantees on the "means" during the process when the government provides services to the community.

E-government has an abundant content. In general, we usually make analysis according to the service object; the e-government system mainly includes the following categories: the Government to Government e-government system (G2G); Government to Business e-government system (G2B); Government to Citizen's e-government system (G2C).

### 3 Service E-Government System

Compared with the e-government platform provided by the developed countries, currently there are lots of work need to be done to improve its advanced extent and the service scope and level in China, as the practicability, effectiveness, convenient degree and level of humanization cannot meet the requirements of the public; besides, there are only very few e-government systems with flexible online interactive processing function. Some government websites still cannot complete parallel approval and online collaborative businesses due to the poor practicability, lack of information, not-in-time information update, lack of interactivity and other reasons, which makes it impossible for the e-government to play its deserved role in transforming government functions and improving government work efficiency. For this regard, we propose a service e-government system.

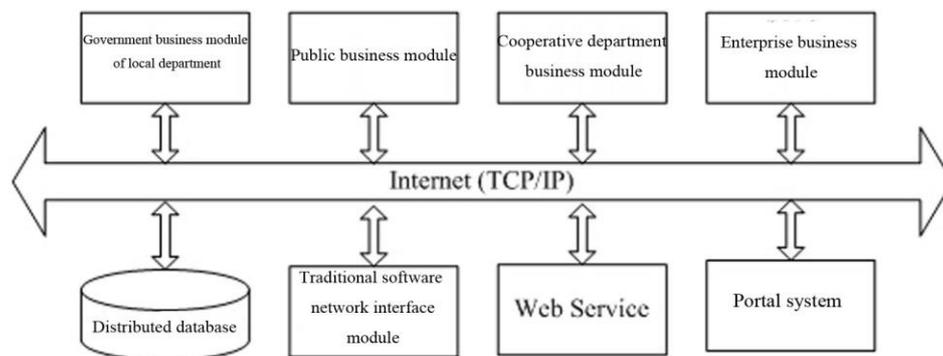


Fig. 1. Framework of Service E-Government System

Figure 1 shows the framework of service e-government system based on Service Web. Service Web technology shall be used to realize this system.

The various business modules on the upper layer are designed to complete all kinds of corresponding user functions. The local government business module targets at working staff of government departments; the public business module is mainly open to the masses; the cooperative business module is oriented for the department closely related to local department; and the enterprise business module is to solve all kinds of relationship between government and enterprises.

For the traditional non Web Service system software modules, which are already in sound running, we can design the corresponding web service interface layer for them as far as possible through analysis and investigation, which will not only realize mutual communication between those traditional software modules and the new services based on Web Service architecture, but also allow new Web Service client-side to invoke functions of those modules by using SOAP protocol. This plan will provide a smooth transition from the existing system to the new system and at the same time will realize software reusing to the maximum extent.

#### 4 Application Examples of the Solution: 12315 E-Government System

Based on the above researches on service e-government system, we have realized 12315 e-government system. Here are solutions to the several key aspects during the implementation link of 12315 system, which include: distributed database system, distributed software system and data mining and knowledge discovery subsystem.

##### 4.1 Framework of 12315 Distributed Database System

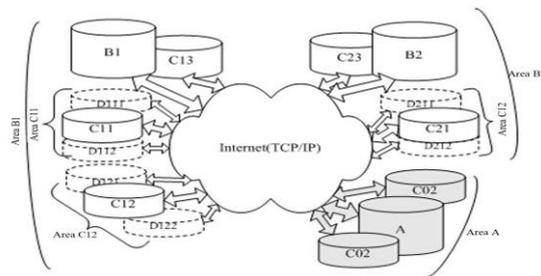


Fig. 2. Framework of 12315 Distributed Database System

Figure 2 shows the Framework of 12315 distributed database system. The above framework can be regarded as a database framework of a general bureau level system or a provincial level system.

The database in this system is divided into two types of regions: Type A and type B. Type A region (the lower right part of the figure is an example) targets at the most senior management departments (general bureau or the provincial bureau), and type B (the left part B1 and upper right part B2 are two example regions, whose scales are of

difference to show configurability of the whole area) is aimed for secondary management area (provincial or municipal bureau). There is a main database in each of the region, such as A, B1, B2, which are middle and top database servers in that area. Type C database in the figure can be a departmental (such as 12315 telephone department) level database server among the 12315 system with certain independence, and also can be a highly dependable server in a certain geographical area.

Type D database server belongs to a general database server, whose information may be temporary, irregular and unreliable. Information in type D server needs to be strictly screened and sorted through the preprocessing module in data mining, and stored in the distributed type C database.

#### 4.2 Knowledge Discovery and Data Mining Subsystem Framework

Fig. 3 displays the complete framework of knowledge discovery and data mining subsystem in the 12315 system. This framework is also designed on the basis of Web Service core technology; as the underlying network, ordinary TCP / IP Internet adopts SOAP protocol to realize information communication between multiple modules.

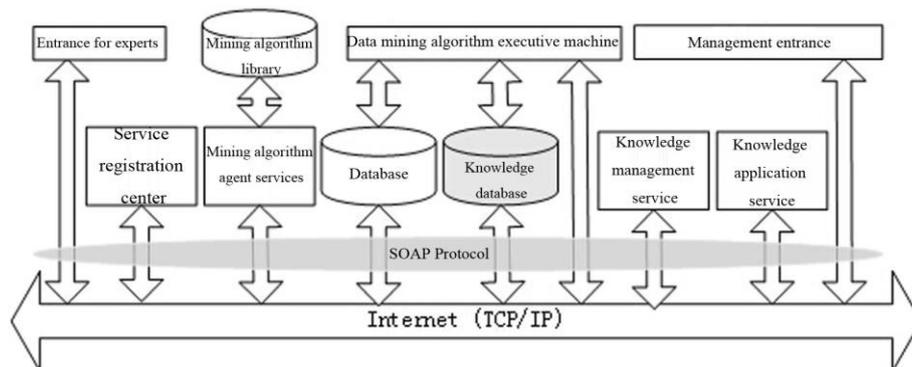


Fig. 3. 12315 System Data Mining and Knowledge Discovery Subsystem Framework

The registration of multiple Web Services relies on the service registration center. In the data mining algorithm library, we can make flexible use of a variety of different algorithms. In addition to the knowledge discovery and data mining algorithm with rich content and mature technology, there are still some new algorithms under research stage or in need of continuous improvement. The agent service of data mining algorithm will transfer the code continuously, so that the code can be executed locally, which can improve the efficiency of data mining.

As the algorithm of knowledge discovery and data mining requires complicated operations and sufficient resource spending, which can only be completed smoothly when the execution process is equipped with high-speed internet connected to the database; this function will be executed through the data mining algorithm executive machine. The executive machine not only contains conventional mining algorithms,

but also includes new version of data mining algorithms, or even new algorithms that haven't been used previously. The results of data mining, especially risky or sensitive results, can be used as permanent information and saved in the knowledge base for later using; otherwise, the results can also be sent directly to the corresponding client station for display, processing, judging or use.

The knowledge management service module mainly implements some general knowledge management functions, which is convenient for the managers to select and judge the acquired knowledge. Knowledge application service has general functions of knowledge using, so that different users can call the knowledge that has been confirmed.

Although researches on the knowledge discovery and data mining have been relatively mature, people are still needed as auxiliary to identify and judge the authenticity and credibility of the knowledge acquired by machine through the existing algorithms. Considering the above factors, the system designs two knowledge management entrances, one is the expert entrance, through which experts of this field complete two tasks: one is to screen and confirm the various knowledge automatically discovered by the machine, preserve permanently the useful knowledge, delete the counterfeit knowledge, and correct the knowledge; expert through human judgment of the acquired knowledge added to the doubtful knowledge; the other task is to add the knowledge acquired through manual judges into the system knowledge library to enrich its content. Another entrance is the entrance for IT professionals, who can carry out parameter adjustment as well as management and maintenance for the knowledge discovery and data mining algorithms using the entrance. In addition, to a certain degree, it is also to screen and determine the data mining results.

## 5 Conclusion

This paper carries out discussions on the key technologies used in the 12315 e-government system, and meanwhile puts forward the distributed database framework, distributed software framework as well as software framework of the data mining and knowledge discovery; in addition, it also states necessary discussions on the security of the system.

Although the research object of this paper is the 12315 system, the research results of this paper have considerable universal applications, which can provide references for the study of other e-government systems and even the general information system.

## References

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