Analysis on the Application of Data Exchange Platform in E-government

A-ling LUO and Shi-ping LIU

Information Technology & Business Management Department, Chengdu Neusoft University, Chengdu Sichuan 611844, China

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Abstract. With the development of Internet technology, E-government has become an important way for the governments in public information service and public management. This paper mainly expounded the technical background and the contribution of the data exchange platform in E-government system, discussed some problems that the current E-government is facing in the construction of data exchange platform, and then gave some solutions to the general architecture of data exchange platform technology.

Introduction

After several years of development, E-government has covered many areas of public service. That formed the rich data resources system and application service system, which put forward higher requirements to the information sharing between government departments and business synergy. How to construct, manage and use the data exchange platform well is an important problem in E-government construction and development.

Common Data Exchange Platform in E-government

In the field of E-government system construction, the application of data exchange platform is everywhere, which mainly has following categories, as shown in figure 1.

1. Horizontal regional data exchange platform: national E-government resources exchange system is the most basic public resources data exchange platform. Besides, local resource exchange and directory system constructed by provincial and municipal level administrative organizations is a typical horizontal data exchange platform. Four basic database construction access relevant member units need horizontal data exchange platform.

2. Longitudinal data exchange platform: this data exchange platform mainly provide vertical information transmission business support for a particular industry. It has not many accessing categories, but has wide range of network transmission and covering. As “Golden Agriculture” engineering data exchange platform in the ministry of agriculture, and “Golden Shield” engineering data exchange platform in the ministry of public security.

3. Theme application data exchange platform: we called data exchange platform which the range is not large and for few departments work together theme application data exchange platform. As “Integrated Tax System” between industrial and commercial department and “Integration of Fiscal and Taxation Database” between several related department, etc.

![Figure 1. E-government system.](image-url)
Problems of Data Exchange Platform

Problems

1. “Information Island”. Due to the mechanism system, the standardized construction, and government workers of our government don't meet the needs of the development of the current E-government, the application of the system can't interconnectivity, work together well, and formed “Information Island”.

2. Lack of unified infrastructure. Systemic e-government needs a set of infrastructure, to provide a reusable foundation network, software environment. And through the construction, gradually unified e-government technology route, implementing an interface between each system and related standards, provide the conditions for the development of the integrated system.

3. Potential safety trouble. At present different departments private network security protection level is uneven, there are different levels of security hidden trouble. We must strengthen the construction of security system, unified planning, unified guidance.

4. Involved social entities lack of basic information database. Public basic information related to the functional departments and social production and living areas, is of great significance. But most areas are lack of basic information construction and investment, caused the lack of infrastructure and resources.

Construction Principle

1. Openness and standardization. As the data exchange platform need access to the data and services of other systems and departments, it must has the ability to join and work together with other technical, we referred this as “openness”. Involved software technology has been standardized by technology area, which can better realize openness.

2. Maturity and stability. As the basic platform, data exchange platform is different from other business systems or web portals; it must conform to the requirements of the mature and stable. The simplest way to inspect the maturity and stability is checking if it supported one similar large system operation.

3. Flexibility and extendibility. The scale and scope of future system always changes. System should be able to process various combinations and flexible configuration according to actual situation, and by makes the system easy to extend using component technology.

4. Security. Safety is the basis of e-government construction and the core part of the national information security strategy. E-government system design and construction must comply with the relevant safety standards. As the data transmission channel, the data exchange platform needs more high requirements in information security.

Function and Value of the Data Exchange Platform

The Logical Structure of Data Exchange Platform

Data exchange platform deployment mainly includes exchange center node and preposition exchange access node deployment. Exchange center is home to exchange, can with the next level center, also can be connected directly to the front exchange access.

Front of exchange access is the link and terminal of the exchange platform. For data exchange platform, front access is the most common access model achieves the exchange for e-government departments or secondary department. Which is effective for isolation system, shield security risks, and provide information and data processing buffer. And the maintenance is very convenient.

For the data synchronization between some of the background system access or part of relative centralized system, the concept of front is very weak, even directly replace its position by a software component of the exchange platform, directly connect and process to the business system and data sources. The logical relationship between data exchange center and front access is as shown in figure 2.
Positioning of Data Exchange Platform

Data exchange platform is the informatization infrastructure of construction department, support base data collection and storage, information exchange service support, general function components and other functions. On the function, data exchange platform is mainly responsible for the following work:

1. Collect basic information resource, provide sharing services of basic information resources for objects in sharing exchange platform;
2. Collect information and data decision making required, provide information service for leadership decision-making;
3. Construct and manage information exchange functional components interdisciplinary, intercity area county, across departments, provide services for information resources sharing between departments;
4. Business information interdisciplinary, intercity area county, across department interaction, transmission and synchronization, provide service for business collaboration among departments;
5. Construct and manage functions components as application system common requirements, authentication and authorization. Provided basic function service for work object of sharing exchange platform.

Functions of Data Exchange Platform

Data exchange platform mainly provides the following functions:

- Provide various of conversation mode based on message and event-driven; Support different conversational strategies; Data exchange including two kinds of data exchange methods: peer exchange model and sharing exchange model; Support multiple data interface; Support multiple transport protocols; Able to implement exchange data across network segment; Guarantee information security; Provides data exchange log. Able to record detailed log for all data exchange task, ensure tracking and post audit data exchange tasks; Support various deployment model; Realize share exchange function and information resources sharing exchange process visualization display; Has verification means for data validity; Data exchange routing analytic function; Resume broken transfer functions; Users can realize the task scheduling function according to the priority order of actual task; Data exchange is independent from specific application, no changes over application.

Specific Measures of Data Exchange Platform Construction

Determine project construction goal and demand: project construction goals should be made clear.

Demand research: determine participate department and the scope of system for goals. Research and classify related information resources and business system according to overall demand.

Design solution: according to project targets and data resources planning, design overall structure and technical means for system. Determine the architecture, mode and frequency for data collection, exchange and processing. Determine the distribution of data resource, the relationship between parts and data processing.

Project implementation: first step, exchange platform exchange center and basic software platform; second, deploy data acquisition content of each unit and process based on data structure
and needs of access units. This is also the work done by access construction. Third, for the system construction necessary, need realize data processing in exchange center and data management system based on collecting data.

**Value of Data Exchange Platform**

The positioning and value of data exchange platform in e-government resources sharing system is as shown in figure 3:

![Figure 3. E-government resources sharing system.](image)

In recent years, the value of various e-government data exchange platform in China is generally reflected in the following aspects:

1. Data exchange platform makes the business system operation is no longer "closed itself", but can learn more useful information resources.
2. Exchanging and integration of exchange platform make E-government informationization construction develop gradually into a system. The same time, protect the original investment and conform the laws of scientific development.
3. Data exchange platform makes e-government information resource no longer a fragmented, but activate and integrated, take full advantages and value of data resource.
4. Data exchange platform provide broad channels and supported means for departments needed exchange information and business system.

**Conclusions**

Data exchange platform support construct data resource center, makes your system can collect all areas of data information, auxiliary decision-making, statistical analysis, electronic supervision, public sharing, transparent, fast service, collaborative management, because of the comprehensive and timely information interaction.

**References**

