

# Research on Implementation of E-Government Integrated Information Services

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**Abstract.** In order to meet the needs of developing E-government, E-government integrated information services are proposed in this paper. First, we define E-government integrated information services. Second, we explore E-government integrated information service patterns. Third, we construct an E-government integrated information service platform. Finally, we give some suggestions on developing E-government integrated information services. This paper enriches the notion of E-government integrated information services, improves E-government information services and provides a practical solution for government applications.

## 1 Introduction

In the five applications (E-commerce, E-government, Distance education, Telemedicine, E-entertainment) of “information superhighway”, “E-government” was ranked number one. Development of E-government accelerates a major transition of government functions from management to services; however, one crucial thing is to provide efficient services. Hans Jochen Scholl indicated that, E-government is government specific in its various formats of government-to-citizen, government-to-business, government-to-government, and internal effectiveness and efficiency. And E-government provides citizens, businesses, and other government agencies with direct, every time access to government resources and services. [1] Citizens and

businesses alike face significant obstacles during interactions with public administrations and governments. However, the trends toward delivery of E-government information services and development of integrated customer-oriented administrative service offerings represent efforts to alleviate these problems. [2, 3] In the implementation of E-government applications, governments are seeking efficiency, effectiveness, and data quality improvement gains. [4] The public sector is one of the most primitive and predominant service domains in any community, with a wide array of governmental services catering to all aspects of society and economy. [5]

With the development of information technology “integration” is widely applied. In system integrations, integrations have brought people to a common level of understanding, namely system optimization through integrating subsystems or elements. [6] In the management, people air their views of integrations; however, they all emphasize transformations from combinations to integrations. [7] In the information services, integrations mean to promote information service effects. To a great extent E-government information services are public services, therefore, there are some obstacles, i.e. “information barriers”, “information system isomerism”, low standardization levels. Actually, it makes a requirement of integrated information services, and at the same time flings down new challenges to integrated information services.

## 2 The definition of E-government Integrated Information Services

In academic circles some thought that integrations are a process, which aim at optimum system state through integrating the elements. Some thought that integrations are a target. Directed at the particular target it organizes and manages information, and integrates information. By different standards integrations of information services are classified into the following five categories:

① Corresponding to object scopes it includes information integrations, technology integrations, application integrations, management integrations, staff integrations and institution integrations;

② Corresponding to degrees of optimization it includes contact integrations, joint integrations, communication integrations, and shared integrations;

③ Corresponding to degrees of affinity it includes collaboration integrations, coordination integrations and harmony integrations;

④ Corresponding to integration properties it includes logical integrations and physical integrations;

⑤ Corresponding to priorities of the task it includes information integrations, process integrations and institution integrations.

E-government integrated information services we introduced are users-oriented information services, and they are integrations of resources, platforms and services according to integrated information service patterns. Therefore, E-government integrated information services are an entire and dynamic process, which is based on classifications and integrations of information resources, aims at the needs of specific users or organizations, and is realized by combinations of service integrations,

cooperations, technologies integrations. And users obtain “one-stop” information services, that is, users can access information resources of all levels of governments from one government web. The characteristics of E-government integrated information services are as following:

①Integrations. It means not only integrations of information resources, but also integrations of all levels of E-government platforms, so that it forms into a structured, coordinated and complementary whole, and performs the overall function of E-government.

② Cooperations. E-government integrated information services rely on cooperations, i.e. standard cooperations, information integration cooperations, and platform cooperations.

③Dynamics. E-government information services are constantly developing and changing. Therefore, information resources, government system integrations, etc., are increasingly improving with changes of goals and external environments.

④Relative independences. E-government integrated information services require interactivities among all levels of government platforms; however, all levels of E-government platforms have relative independences to ensure safeties, flexibilities and personalities.

⑤ “one stop ” services. Based on full integrations, users can access all government information through an interface, and it exemplifies the concept that governments center on users.

### **3 Construction of E-government Integrated Information Service Patterns**

E-government information services include a wide range of contents, including almost all traditional government services. According to international E-government development and E-government practices in our country, E-government information services are divided into the following six patterns: governments and governments-oriented information services, internal affairs of a government-oriented information services, rural-oriented information services, education-oriented information services, business-oriented information services, and public-oriented information services. The six patterns embody user-oriented features fully, however, all the service patterns are not isolated, and they are associated, which is shown in **Fig. 1**.

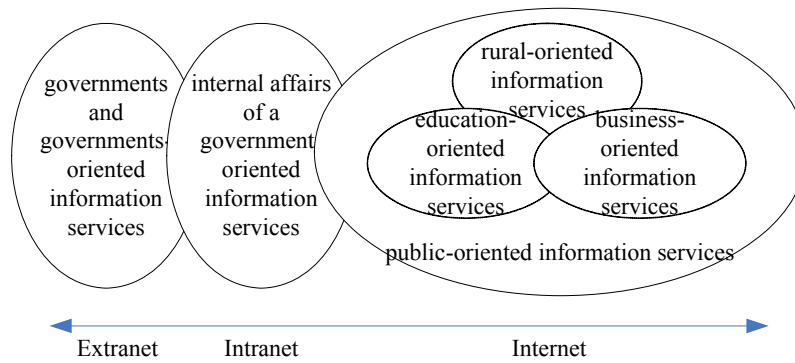


Fig. 1. E-government integrated information service patterns and relations

### 3.1 Governments and Governments-oriented Information Services

This pattern focuses on governments, and links up higher and lower governments, which provides office work and professional services. Specifically, the work and services include three aspects. First, it collects and processes requisite national and local information, i.e. population information, geographic information, and resources information. Second, it collects and processes information that is required in affairs among governments, i.e. planned management, economic management, socio-economic statistics, and national security. Third, it provides communication systems, which deal with affairs among governments, i.e. announcements in an emergency, measures in an emergency, etc.

### 3.2 Internal Affairs of a Government-oriented Information Services

Internal affairs of a government, namely, internal information of a government, is occult information, which is required in internal management or internal affairs, is used to adopt important decisions, or is related to classified documents. Such information is only shared in internal systems or Intranet.

### 3.3 Rural-oriented Information Services

The governments should guide and promote agricultural information services actively. On the one hand, they integrate agricultural information resources, establish and improve agricultural information services; on the other hand, they optimize distribution of resources and establish sharing mechanisms. While they provide guidance information for farmers, they coordinate operations of all information service providers, and provide “one stop” service, namely, policies, science, and

market information, for farmers, and realize industrialization and socialization of agricultural information services. [8]

### **3.4 Education-oriented Information Services**

Education informationization is an important part of government information services. Sharing knowledge resources, Network education and tele-education are important ways to raise the quality of people, and they are also foundations to construct knowledge-based society, learning society and innovation-oriented country.

### **3.5 Business-oriented Information Services**

Enterprises are an important component in the national economy, and are important service target for governments. Governments increase working efficiency, provide services for enterprises fast, lighten the burden on enterprises and promote enterprise development through using information technology and streamlining management business processes. In 2005 Chinese governments at all levels applied macro-control, market supervision and management means, achieved remarkable success in administrative justice, administrative approval, taxation, and special funds control, and created good market conditions for the development of enterprises and improved the quality and efficiency of services.

### **3.6 Public-oriented Information Services**

It refers to making government affairs public, that is, through portal website governments provide relevant policies and regulations, latest advances of government affairs, industry development, economic development, information related to people's livelihood, and so on.

## **4 Construction of E-government Integrated Information Service Platform**

E-government integrated information service platform, from a structural perspective, is a platform integrated by interface structures, technical architectures, logic structures, organizational structures and standards, and it can be described by "portal website and database"; from a specific content perspective, it is a comprehensive information service platform including agriculture, commerce, government, education and scientific research and the public. It mainly provides user-oriented information services; and from a social benefit perspective, it is the key to realize information integrations. It raises office efficiency, accelerates economic, cultural and technological development, and improves efficiency of various sectors.

Based on E-government integrated information service patterns, we can see that different users need different information services. And the core is integrations in construction of E-government integrated information service platform, namely, it

constructs information service platform by integrating resources, technologies and services. And the support of E-government integrated information service platform is illustrated in Fig.2. To some extent resource integrations depend on resource acquisitions. However, various governments have their own E-government system, and they provide information services independently. So we need use technology integrations to realize government resource exchanges. Service integrations are that, governments provide different service platforms according to E-government integrated information service patterns. Governments deal with internal affairs through Intranet, serve the public through Internet, and communicate with other governments through Extranet.

Service integrations	Network service platform integrated by Intranet, Extranet, Internet	E-government standard and security system
Technology integrations	Data mining, multi-data source integration, Web intelligent management technology, heterogeneous web platform exchange technology and isomeric web management technology	
Resource integrations	Data integration layer: data conversions, extraction, integration, filtering, classification, clustering, categorization Resource layer: government data center, namely, data warehouse	

Fig.2. Support of E-government integrated information service platform

## 5 Suggestions on Developing E-government Integrated Information Services

### 5.1 Promote Integration Capabilities of E-government Information Services through Knowledge Management

Information is the raw material of knowledge, and knowledge is the reorganization and distillation. Only through identification, analysis, synthesis, extraction, etc. information is converted into knowledge. Through accelerating the flow of knowledge by use of networks and information technologies we actualize the true value of information resources. And this process is knowledge management. E-government should adopt knowledge management to identify key information, extract and mine

information, and form special knowledge to support corresponding information services in E-government.

## **5.2 Unify E-government Standards and Form a Unified Platform for Information Announcements**

Standardization is groundwork in E-government constructions, is a premise that E-government system realizes sharing information, cooperations and interactions, and information security, but also is a guarantee to integrate E-government information. China National Committee of Standardization for E-government has produced E-government Standardization Guide, Six E-government Standards, and E-government References, however, these standards and references are not specific enough. We should unify E-government infrastructure components, and then on this basis, develop coordinated government system platforms, information announcement platforms, workflow platforms and data exchange platforms. In this way, we will not have any difficulties in sharing information resources. Also, with unified standards, E-government will break the isolated islands of information, so that the free flow of information is available to form a complete information flow.

## **5.3 Promote Information Process Reengineering (IPR) in E-government**

Traditional E-government information process design is grounded on division of functions and hierarchical theory, and the result is dispersed, clumsy, closed and unpowered E-government information process. So, E-government information resources can not flow freely, and E-government information services are not achieved effectively. Therefore, IPR is needed. In order to achieve complete information processes and integrated information services, we should promote IPR and integrate information exchange models.

## **5.4 Establish Mechanisms of Open and Shared Government Information Resources**

In a free market economy, governments have been transformed from economy superintendents into economy servers. Under the circumstances, non-confidential information governments grasp should be open to the public and shared with the public without pay. Therefore, we should break monopoly of governments at all levels on information resources, vigorously release and use government information resources, and strengthen the exploitation and utilization of public information resources, market information resources and other areas of information resources. Specific practices can be learnt from other countries, or we can formulate laws and regulations to ensure open and shared government information resources.

### **5.5 Adopt Personalized Information Services**

E-government personalized information services mean that governments take the initiative in providing information services, which is based on users' interest. While governments choose content and format of information announcements, they should consider the related information users. First, governments analyze and classify information users to identify different service groups, such as businessmen, farmers, intellectuals, etc, and then summarize the characteristics of various service groups, i.e. knowledge structures, psychological orientations, historical experiences and behavior characteristics. Based on this, governments expand personalized information services to meet the needs of different users.

### **5.6 Foster a Good and Healthy Service Concept——“Customer Relationship Management” (CRM)**

CRM is an important means for enterprises to impress customers and maintain customer loyalty. By nature, CRM is a new service concept, which adapts to knowledge economy and information social, and it is a new management mechanism to provide quality services for customers. The core of “new public administration” theory is to reform governments by “enterprise managerial spirit”, and its purpose is to pursue “economy, efficiency, and effectiveness”, namely, the goal of 3E. In this circumstance, administrative scholars introduce CRM into government management, and they compare service objects to customers and compare governments to product or service suppliers. They believe that governments should proceed from the needs of customers, and that customer satisfaction is a measure of public services. The connotation of E-government and the concept of CRM have the same point. They both emphasize services. In E-government, CRM is realized through self-service portal web. So it is required to understand the needs of users, to establish efficient service standards, and to set up a winning service team, and they provide value-added services through inspecting, monitoring, feed backing and improving services.

## **6 Conclusion**

Development of E-government has accelerates a major transition of government functions from management to services. However, wide and relatively centralized users, extensive content, etc. are characteristics of E-government. Therefore, in order to provide efficient services, integrations are very crucial. In this paper, we adopt one key perspective based on integrations. And according to E-government information service patterns, they are integrations of resources, platforms and services. According to international E-government development and E-government practices in our country, we proposed six E-government information service patterns. Each pattern faces specific users. We also construct an integrated information service platform from the perspective of services, technologies and resources. Finally, we give some suggestions on developing E-government integrated information services.



However, there are many issues and challenges in implementation of E-government integrated information services that need to be further addressed, including information gulf issues among governments, security problems, individual privacy and data and technology standardization, etc., which is included in our future work.

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