

Beijing E-Government Vision and Framework

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Beijing will become the first city in China to overhaul its digital capacity and it will become the model of a modern international city in China by the year of 2010. With the object of constructing “Digital Beijing,” informatization is one of the important developing strategies of Beijing for 21st century and information society. The 2008 Beijing Olympic Games offer a rare strategic chance for the informatization of Beijing, and “Digital Olympics” is the main content of the “Olympic Strategy”. In order to realize the strategic vision of “New Beijing and New Olympic”, Beijing is promoting the construction of E-Government.

A. The object of the construction of E-Government

The vision of E-Government is to reduce the administrative hierarchies, reform the modes of government affairs, optimize the government business process, clarify the administrative work, improve the quality of government service and management, enhance the collaboration of the internal departments and the interactions between the government and the public, and finally to construct an honest, diligent, transparent and efficient government using technology as a means to the end.

Beijing is implementing its E-Government initiative from 2003 to 2008. By 2004, the publicity of governmental affairs based on the network will be carried out completely. By 2005, handling official business on-line as the means for the public and enterprises will be accomplished. And by 2008, government services will be available 24x7 for the public and enterprises.

In order to realize the objects above, the government needs to implement the following goals in detail:

1. Enhance the governmental capabilities for public service from all aspects.

To meet the requirements of the public, according to the functions and responsibilities of government departments, government business processes should be re-engineered and information resources should be shared and integrated. And the publicity of governmental affairs and construction of the E-Government system should be in place.

2. Fully improve the governmental capabilities for urban management, emergency response and social security management.

According to the principle of “meeting the need in both peacetime and wartime”, a uniform information platform and E-Government application system should be constructed by unifying the design, standards and dispatch of resources, increasing meaningful collaboration among government departments, strengthening the integration of information, and optimizing the management procedure of government.

3. Improve the government’s abilities to adjust and control the economy and to

monitor and supervise market from all aspects.

The government should improve its abilities to supervise economic activities and to optimize the developing environment by reforming the method of obtaining economic data, optimizing existing information systems, strengthening the integration of information resources and the construction of information systems such as the management of income and expenditure of government as well as the management of government assets.

4. Accelerate the sharing and integration of information resources

The sharing and integration of all information resources within the city should be accelerated. According to the principle of unified planning, budget, standard, and catalogue system, the basic, strategic construction of resource banks of information, such as population, corporate unit, natural resources, geographical space, etc. should be accelerated.

5. Strengthen the construction of the information infrastructure

To meet the practical requirements of various departments and to establish the monitoring and administrating intranet system of municipal affairs, the government should standardize and perfect basic network planning of E-government for the entire city; accelerate the construction of a government wired private network, a government wireless private network, and achieve the end-to-end security connection of network, and technological support and management.

B. The overall technical framework of Beijing E-government

Reference model of the overall technical framework of Beijing E-government is displayed as Fig. 1. It mainly includes the network layer, the information resources layer, the unified support platform layer, the application layer, the portal layer, the access channel, the information security system and the standard regulation and the management system. The services are targeted mainly at enterprises, the public, government and civil servants, etc.

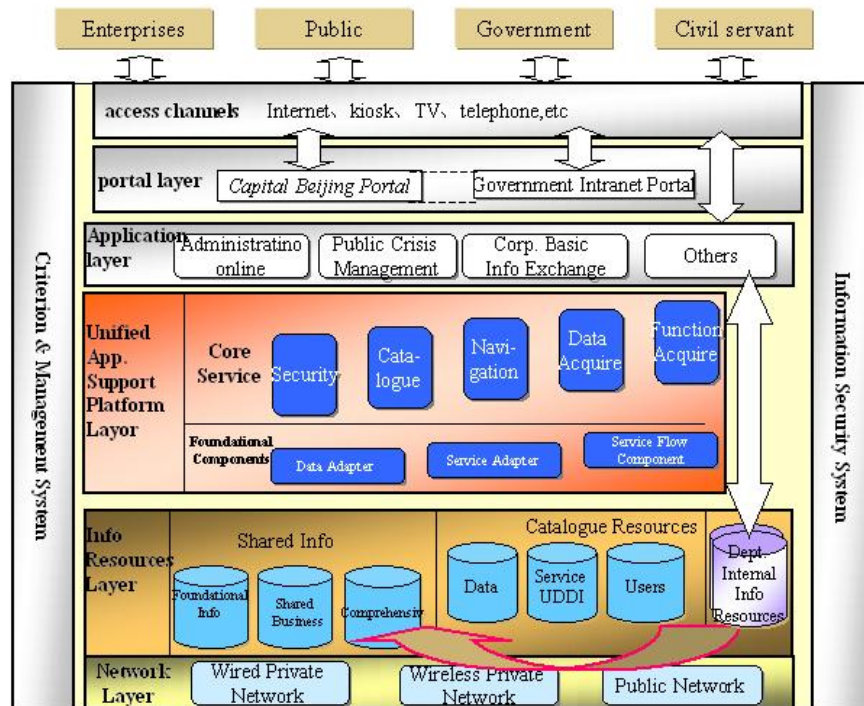


Fig. 1 Reference model of Beijing E-government Framework.

1. E-government access channels

Access channels means the way a user visits E-government portal. Users can use different kinds of terminal devices, and enjoy the personalized E-government services permitted any time and any place by different kinds of access channels.

The terminal devices that users can utilize include: PCs, portable computers, cell-phones, common telephones, PDAs and televisions, etc..

The access channels mainly include: Internet, government private network, information kiosk, telephone, TV, digital TV, e-mail and mobile communication, etc.

2. E-government portals

Composed of the "Capital Beijing Portal" (www.beijing.gov.cn) and government intranet portal, the E-government portal is the uniform entrypoint for the entire E-government system. It has an interactive main entrance for all kinds of users to find the services they need.

"Capital Beijing Portal" (www.beijing.gov.cn) is the portal of the Beijing municipal government for enterprises and the public. It is a group of websites for various Beijing government departments at all levels and the portals of some public institutions.

“Capital Beijing Portal ” is the important channel and unified entrypoint for enterprises, citizen, and visitors to access Beijing municipal government resources and obtain information services from the Beijing municipal government.

Support of a single sign-on and personalized services to each user, the government intranet portal is the internal government portal for the entire municipal government staff and leadership. It is the main entrance to all kinds of application system. As to the private application systems within each functional department or the higher security classified application systems, the relevant personnel can access via other channels.

3. Applications of E-government

The particular E-government systems constructed by functional departments mainly include vertical systems of functional departments, cross-departmental systems and comprehensive decision support systems for decision-makers within the government.

Besides the internal application systems which operate only within the functional departments, other application systems also need to utilize support functions of unified application support platforms, e.g. integrating the basic services such as security services, accessing all kinds of shared information resources, and realizing information exchange and conversion services offered via this platform.

4. Unified application support platform

Between the application and resource layers, the unified support platform plays a significant role in forming a connection in the E-government overall technical framework. It is an open infrastructure independent from the networks and its applications. This will help realize government information resource exchange, sharing and consolidation, as well as support the application of E-government. The Beijing E-government support platform is made up of a foundation component layer and a core service layer.

The foundation component layer is composed of basic function modules devoted to information navigation, exchanging and sharing. It also includes modules to support application integration and business process integration, such as access components to data catalogue and service catalogues, data adapters, service flow components and middleware, etc. These function modules protect from the heterogeneous structure of the base resources. Thus the unified application support platform can support all kinds of E-government applications through standard and uniform environments.

The core service layer mainly includes the following basic services:

- (1) Security services: Based on the unified catalogue system, it offers identity authentication service, authorization service, data encryption service and digital signature in different security hierarchies;

- (2) Catalogue Services: Based on the unified catalogue system, it offers registration, upgrade and management of the information resources and service resource;
- (3) Navigation services: Based on the unified catalogue system, it offers retrieving service and intelligent search engine service for structured data and non-structured data such as text, picture, sound, etc... Thus it provides users with a comprehensive scheme to obtain data or services;
- (4) Data obtaining Services: Based on the unified catalogue system and navigation service, it obtains catalogue information of service resources needed and help users acquire and use the service resources through the service adapter and service flow components. Thus it achieves cross-departmental data interchanging and sharing;
- (5) Function obtaining Services: Based on the unified catalogue system and navigation service, it obtains catalogue information of service resources needed and help users acquire and use the service resources through the service adapter and service flow components. Thus it achieves the sharing and integration of business and trans-departmental coordination.

The united application support platform is a key fundamental service and application support platform in the Beijing E-government technical framework, which provides the aforesaid services for all kinds of applications within the mode of security channel, information navigation, information agency, service navigation mode, service agency mode and etc.

5. Information resources of government affairs

Built on top of the network infrastructure, the information resources layer offers various kinds of information resources of government affairs in its upper layer, the unified application support platform layer. The government information resources are mainly composed of shared information resources, catalogue resources and the internal thematic information resources of each department, where shared information resources is combined with basic information resources, shared business information resources and comprehensive information resources while catalogue resources are made up of data catalogue, service catalogue and user directory.

- (1) Basic information resources. It mainly refers to basic and strategic information resources for public welfare used by functional departments in the course of business processing. It includes the database about population, organization unit, as well as the natural resources and geo-spatial information resources such as basic geographical information of city, public basic information of the public utilities, etc.;
- (2) Shared business information resources. All departments accumulate business information resources with respect to their routine work over a long period of time. Business information resources can be divided into shared business information resources and application information resources within

departments, in which shared business information resources are referred to as information resources that other departments need to use in the course of business process and that can provide the digital support to the cross-field and cross-system application systems of E-government. On the contrary, the application information resources within a specific department generally has nothing to do with other departments and mainly offers digital support for the application of E-government within the specific department;

- (3) Comprehensive information resources. These resources are derived by analyzing and combining the information resources of each department, such as information about the macro-economy, etc...;
- (4) Data catalogues. Data catalogue includes metadata information owned by every department. Through management of metadata of information resources, unified description, publication, searching and navigation of information resources may be implemented. It is easy to achieve the locating, exchanging and sharing of dispersed information resources;
- (5) Service catalogues. Service catalogues mainly include metadata information (application system) of information services owned by every department. Through management of metadata of service, unified description, registration and discovering may be implemented. It is easy to achieve the service sharing and business collaboration among departments;
- (6) User directory. User directory includes basic information on users of Beijing E-government, and the database of Beijing civil servants will be the important part. Through unified management and identity authentication in the user directory, the single sign-on service can be achieved.

6. Government network facilities

Government network facilities are an important infrastructure level to support Beijing E-government and “Digital Beijing”, which includes wired as well as wireless private networks at municipal, district and county levels, vertical departmental private networks constructed by departments of different functions according to departmental characteristics and needs, and various public website resources.

(1) Government wired private network and public network

Government wired private networks include private networks of municipal, district and county level. It is a high-speed information network connecting government departments of different levels throughout the city. It realizes interconnection within the internal network among different governmental departments. Finally, it establishes official business networks and operation resource networks of Beijing municipal CPC and governmental institutions, with the general office of municipal CPC committee and general office of municipal government as the hub of the network. It mainly supports the operation of the vertical departmental systems of all departments and the horizontal departmental systems of cross-departments. The government wired private network mainly includes the wired government private network constructed by the municipal government and the leased telecom network line. It is exclusively used by government institutions through dedicated lines constructed through VPN (virtual

private network) mode on top of the public network.

Public network, on the other hand, refers to all kinds of social and public network resources, which are beneficial supplementations for secured network and wired private network for government affairs. The public network is the major vehicle through which the government provides services to the public and enterprises.

Government wired private network is securely separated from the public network.

(2) Government wireless private network

The government wireless private network mainly constitutes switches, base stations, dispatch stations and mobile stations, etc. The wireless private network can be divided into two virtual networks, one for the government and the other for social users. The government virtual network is further divided into different sub-networks for different functional departments.

7. Information Security System

Information security system is a support system to ensure secure operation of E-government, and confidentiality, integrity, and availability of government administrative information. It runs through all aspects of E-government, mainly including the unified security strategies for E-government administrative information, the prevention system of information security technology, a support system for the supervision of information security, service system of information security and the information security standard regulation system, etc.

The overall technical framework of information security includes the core techniques of a support system for information security and services and the prevention system of information security techniques. Information security technology on prevention can be divided into network protection and fundamental facility protection in terms of protection scope. Information security is related to all aspects of E-government, and is embedded into all technical aspects of the framework of E-government.

8. Standard Regulation and Administrative System

The standard regulation system ensures E-government meets the related standard of the support system, in terms of application design, construction and operation. It has standard criteria covering all levels in the overall technical framework of E-government.

The administrative system is a support system, which ensures smooth construction and normal operation in the application of E-government, including the construction management and operations at various levels in the overall technical framework.

C. Major Technical Tasks

According to the framework of E-government, in order to realize the overall objectives of E-government construction, the major projects and corresponding work in recent periods include the following:

1. Improving existing applications

Under the guidelines of “content improvement and focus on effectiveness, Beijing will continue to improve the existing and ongoing applications to generate substantial effects.

- (1) Websites of all departments and Capital Beijing Portal (including those versions in foreign languages). The requirements on publicity of government affairs, administrative permissions and so on are to be put into practice.
- (2) Important service systems to provide citizens convenience, such as “Digital Beijing Information Kiosk”, community information service system, on-line annual checkup information system, on-line ratification (administrative permission) service system, investment service platform, etc.
- (3) Crucial application systems across departments throughout the city, such as social insurance information system (including medical insurance, the lowest living-standard insurance, etc.), import and export enterprises information sharing system, social fundamental unit information exchange system, enterprises credit information system, Beijing Greenbelt information system, spatial location information service system, wired private network for government affairs, wireless private network for government affairs, etc.
- (4) Crucial department information systems, such as decision-making service system for leaders of municipal CPC committee and municipal government, local tax information system, industrial and commercial information system, “Golden Finance” project, personnel information system, statistical information system, etc.

2. Integrating existing application systems

Under the guidelines of resource-sharing and well-planned and controlled development, we should continue to integrate the existing and ongoing applications, thus avoiding overlap investment and pursuing large scale benefit.

- (1) Integrating the channels and resources serving the citizens, and constructing a unified comprehensive public service platform. On-line services of all the departments will be integrated into the “Capital Beijing Portal”, which acts as a portal of the city and is oriented to the public. The call centers and resources such as video monitoring network throughout the city will also be integrated.
- (2) Integrating current routine administrative and emergency response systems, such as public security, public health, transportation, civil air defense, earthquake, anti-flood and drought works, inspection and quarantine, safety control in production, municipal administration, gardening, land and house, broadcast and television, precaution of agricultural risks, etc., to construct a unified municipal emergency response system.
- (3) Integrating enterprise basic information, enterprise credit information, bank credit information, macro economical statistical information, and thus realizing the sharing and integration of economic and social information.

3. Major new application system

- (1) Underground pipeline information system.
- (2) Comprehensive public information service platform. Establish a more convenient and efficient public information platform for enterprises and

- citizens.
- (3) Constructing four foundational, strategic and sharing information resource databases and thematic application databases—population information, corporate unit information, geo-spatial and natural resource information, and macro-economical & social development information.
 - (4) Constructing a unified catalogue system of urban information resources, publicizing and sharing government administrative information, promote the value-adding utilization of information resources, and thus bringing along the development of information content service industry.
 - (5) Constructing the E-government application support platform of Beijing. On the basis of this platform, construct respectively sub-platforms, such as sub-platform of municipal CPC committee general office and the municipal government general office, sub-platform of on-line ratification, sub-platform of traffic information, sub-platform of emergency response, sub-platform of all districts and counties, etc.
 - (6) Constructing urban information infrastructure continuously, including improving the network and digital conference system in CPC and government organizational yards, establishing E-government Public key infrastructure (PKI), making and releasing CA certificates for civil servants throughout the city and for governmental institutions, constructing off-site disaster-tolerance backup center and governmental private network management system.

4. Enhancing project feasibility research, and establishing a series of applications construction plan

Insist on the effort on project feasibility research, and then start up the projects right at their maturity. According to the responsibilities of the governmental departments, the need of “economic adjustment and control, market monitoring and supervision, social management and public service”, and the principle of “unified standard, unified schema”, initiate a series of project proposals from related departments, and then carry out preliminary work.