Research on Full-Chain Construction Mechanism of Digital Government Based on Power Data Value Realization

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Abstract. Strengthening data-enabled digital economic, social and ecological construction, and building a new smart city cluster with fully shared data have become an important link in the current construction of digital government. As a key data bearing the national economy and people's livelihood, power big data value realization benefits should be efficiently utilized to support the construction of digital government and the construction of smart city clusters. Based on this, a full-chain construction mechanism can be built for all-round power big data enabling digital government. Through multi-dimensional data fusion application, development of multiple power big data products and innovation of government-enterprise collaboration between power grid enterprises and government, high-quality development of power big data supporting digital government and construction of new smart city ecology can be realized.

Keywords: power big data · digital government · smart city · realization of value · full chain construction · data fusion

1 Introduction

With the continuous expansion of the new round of scientific and technological revolution and industrial transformation, IT has become an important measure for the government to realize the deep integration of industrialization, information technology and urbanization, strengthen the driving force of digital government for the development of digital economy and the construction of digital society, and build a new smart city ecology with full data sharing. As a key means and important embodiment of the government's digital transformation and smart city construction, big data technology has been comprehensively applied to every link of the digital government construction work.

How to realize the effective construction and effectiveness evaluation of digital government has been the focus of scholars at home and abroad. Some scholars choose to summarize the common experience of digital government construction based on the digital government policies and related construction cases of specific provinces and cities, while most scholars use digital technology, data and other means to support the construction of digital government based on the digital perspective. Hong Su [1] believed that information technology could be used to build a digital government platform to

S. Kadry et al. (Eds.): BDEIM 2022, AEBMR 233, pp. 284–293, 2023.
https://doi.org/10.2991/978-94-6463-124-1_34

realize the transformation of the internal mechanism of government operation Siyi Li [2], with the help of Canada's digital government construction experience, believes that technology and trust should be integrated. Feiwei Shen and Jingwen Zhu [3] believe that digital technology change, intelligent government service and modern government system innovation should be effectively connected. In addition, some scholars believe that the construction of digital government should also give play to the role of enterprises [4], establish a government-enterprise cooperation mechanism, and form a joint force for construction [5].

As an important part of industrial big data, power big data has significant advantages such as high accuracy, wide coverage, high real-time performance and strong correlation. It is an important data bearing the national economy and people's livelihood and a "barometer" highlighting the changes of the national economy [6]. Strengthening the application of power big data in the construction of digital government has increasingly become an industry consensus [7, 8]. At the same time, as the direct user and manager of power big data, State Grid, based on its own strong data technology foundation and experience in data integration and application [9], can build the value realization mechanism and measures of power big data, support the demand of digital government full link construction under the digital background, and demonstrate the mission responsibility and social responsibility of backbone state-owned enterprises [10]. Scholars in the field of electric power have carried out theoretical and practical research on the construction of digital government supported by electric power big data. Zhimin Zhan and Yingjie Tian [11] believe that it is necessary to build a value-added model of power big data to realize business model innovation and then promote the development of digital economy.

Based on the demand of digital government whole-chain construction, this paper relies on the features of power big data, such as strong timeliness, high accuracy and wide coverage, and builds a whole-chain construction mechanism of digital government infrastructure construction, scientific decision-making and efficiency deepening by promoting the construction of power big data infrastructure, creating power big data products and innovating government-enterprise cooperation. It is of great significance for power grid enterprises to play their mission role to help the construction of digital government.

2 The Necessity of Digital Government and the Demand for Full Link Construction

Digital government is a new form of national administration arising out of the tide of digital age. It is an important means to enhance the modernization level of national governance and comprehensive competitiveness. Therefore, it is imperative to put the construction of digital government on the agenda and construct an efficient and feasible mechanism of the whole link construction of digital government.

2.1 Connotation of Digital Government

Digital government is a new form of national administration which uses modern digital technology to realize the digitization and networking of government daily office,

information collection and release. Building the government operation mode of "business data, data business" and the governance mode of "dialogue, decision, service and innovation with data" is a prominent feature of digital government.

2.2 Necessity of Digital Government Construction

With the vigorous development of emerging digital technologies, it has become a global consensus to use digital technologies to innovate the way of government operation and improve the behavior of government governance. Developed countries in Europe and the United States, such as the United States and the United Kingdom, took the lead in putting forward the concept of digital government to enable government business process reengineering with digital technologies. Based on the background of the digital age and the demands of international competition, the construction of a new type of digital government has indispensable value significance. The specific construction necessity mainly includes the following three aspects.

Implementing the Needs of "Digital China" Macro Strategy Construction
In order to adapt to the trend of the new round of scientific and technological revolution and industrial transformation, the national level has put forward the macro construction strategy of "digital China", and repeatedly pointed out the necessity and demand of the construction of digital government in major Party and state conferences and key construction programs. For example, the Fourth Plenary Session of the 19th Central Committee of the Communist Party of China proposed to optimize the system of government responsibilities, establish and improve the application of the Internet, big data, artificial intelligence and other technological means for administrative management systems and rules; The Fifth Plenary Session of the 19th Central Committee of the Communist Party of China also pointed out that we should strengthen the construction of digital society and digital government, and improve the digital and intelligent level of public services and social governance. *The 14th Five-Year Plan for National Economic and Social Development of the People's Republic of China and the Outline of 2035 Vision Goals* also highlight the need to improve the level of digital government construction, strengthen the open and sharing of public data, promote the sharing and sharing of government information, and improve the efficiency of digital government services.

Advancing the Modernization of National Governance System and Governance Capacity
At present, our country has entered the new journey of comprehensively building a modern socialist country, and needs to further promote the modernization level of national governance system and governance capacity. As an organ of state power, the governance structure and level of the government will directly determine the performance of the country's governance capacity and effectiveness. Only by strengthening the construction of the digital government, giving full play to the leading role of the digital

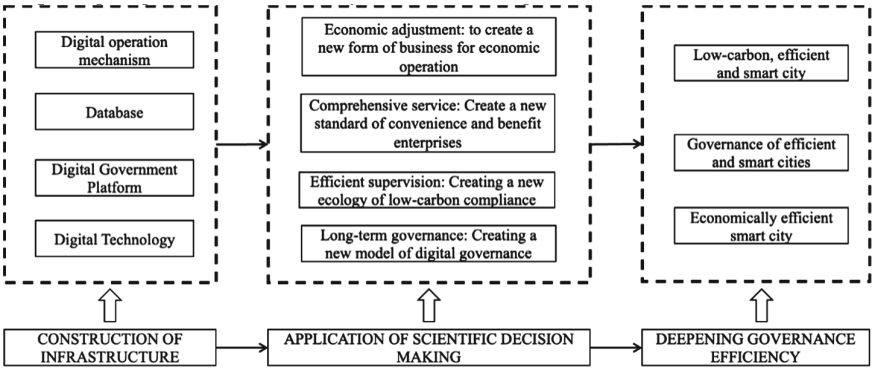

Fig. 1. Demand for Digital Government Full-link Construction [Self-drawing]

government in economic, social and ecological aspects, and achieving high-quality economic and social development, can the country be comprehensively upgraded to the level of modernization.

To Promote the Development of a New Type of Smart City Cluster

Building a new smart city is an important strategic choice to realize sustainable urban development and improve our comprehensive competition level in the era of vigorous digital economy. In this regard, the government, as the direct executor of urban economic, social and ecological construction, strengthens the use and empowerment of big data from the government side, and lays out the top-level design of smart city construction, which is conducive to realizing the full sharing of data elements and promoting the construction of smart city ecology and smart city brain.

2.3 Demand for Digital Government Full Link Construction

According to the government business operation process and the scope of performance, in order to realize the comprehensive construction of digital government, integrate digital concept into each link of construction work and improve the government's governance capacity, it is necessary to define the construction demand of digital government from infrastructure to scientific decision-making application and finally realize the deepening of governance efficiency, as shown in Fig. 1.

Construction of Infrastructure

As the basic support for the construction and operation of digital government, it is necessary to build a digital government platform and simplify administrative approval procedures with the help of emerging digital technologies. To realize efficient integration and safe management of massive data resources, strengthen market data supervision and application, build digital operation mechanism, and optimize business workflow.

Application of Scientific Decision-Making

As a direct manifestation of the performance of the digital government, it is necessary to comprehensively apply digital technology to help the digital government create

new business forms of economic operation, new standards for the convenience of people and enterprises, new ecology of low-carbon compliance and new models of digital governance in combination with the government's responsibility attributes of economic regulation, social governance, public service and ecological supervision.

Deepening Governance Efficiency
As a key goal of digital government transformation and upgrading, it needs to base on national and regional construction needs, give play to the leading role of the government in economy, society and ecology, comprehensively build a smart city model with high economic efficiency, high governance and low carbon efficiency, and enhance its international competitiveness in the new era.

3 The Value of Power Data to Support Construction of Digital Government

Based on the demand of digital government full link construction, it can be found that big data, as an important part of emerging digital technologies and government database, plays a key supporting role in the construction of digital government. At the same time, as an important branch of big data, the realization of the value of big data of power is of great value for supporting the function of digital government in macroeconomic regulation, social comprehensive management, and promoting ecological, green and low-carbon transformation.

3.1 Help Macro-economic Adjustment

As a "barometer" and "weather vane" of social and economic operation, big data of electric power can directly and truly reflect the operation situation and development trend of national economy. By analyzing the data of power consumption and power load of power users within the region and the industry, and combining with the development characteristics of the region and the industry, it can comprehensively reflect the macro-economic operation and industrial development within the region, and help the government to timely carry out macro-economic regulation and rational planning of industrial layout and promote industrial transformation and upgrading.

3.2 Strengthen the Comprehensive Social Management

In view of the advantages of power data covering almost the whole area of power users and residents' lives, the integration of the whole network of power data, combined with social production and operation, meteorological, spatial layout of public facilities and other external data indicators, can comprehensively reflect the living conditions of residents and the management level of enterprises. Based on this, big data products for people's livelihood of electric power can help the government rationally plan public infrastructure construction and spatial layout to improve people's livelihood. Monitor the production and operation activities of enterprises, ensure the compliance and safety of production of enterprises, and finally assist the government to realize the comprehensive management of social production activities.

3.3 Promote Green and Low-Carbon Transformation

With the advantage of the strong correlation of power data, the effective interconnection and integration of energy and resources can be realized, which can help the government realize the comprehensive utilization and collaborative governance of ecological resources. In addition, the real-time power data can be used to monitor the carbon emissions of enterprises, assist the government to help enterprises develop targeted green and low-carbon transformation plans, realize the optimization and upgrading of industries with high energy consumption and high pollution, and promote the rapid development of green and low-carbon economy and the effective promotion of the national "double carbon" goal.

4 Digital Government Whole Link Construction Scheme Based on Power Data Value Realization

Based on the demand for the construction of the full link of digital government from infrastructure construction to scientific decision-making to efficiency deepening and the construction goal of facilitating the development of digital economy, improving the capacity of digital governance and driving the green and low-carbon transition, The comprehensive value realization mechanism of power data can be built by building power data infrastructure, expanding the application of power data products, and innovating the government-enterprise cooperation model based on power data.

4.1 Lay the Foundation

Build the enabling infrastructure of innovative power data technology. On the one hand, based on the demand of digital government to build a comprehensive database and digital government platform, it can strengthen the effective integration of power data and government data, and build a unified data application standard; On the other hand, the digital technology advantages of power grid enterprises can be used to support the construction of government data security system and improve the level of data security management.

4.2 Decision Application

Mining the advantages of power data and broadening the application scenarios. Based on power data coverage based on the life and timeliness of power users and residents in the whole region. Power data can be taken as the basis point, with "power data + economy", "power data + social governance" and "power data + low-carbon transformation" as the core direction, to build power data products including multi-dimensional evaluation index system, in-depth evaluation report, real-time monitoring map, etc., to broaden the application scenarios of power data and support the government's scientific decision-making.

4.3 Efficiency Deepening

Activate power data value enabling governance efficiency deepening. Power grid enterprises, as the leading enterprises and backbone state-owned enterprises in the energy industry, play a vital role in promoting industrial chain coordination and ecological construction and serving economic and social development. Therefore, we can provide diversified government-enterprise collaboration modes such as government-enterprise joint work and government-enterprise collaborative standard setting, so as to further play a role in the continuous deepening of digital government governance efficiency from the enterprise side and build an economic, safe and low-carbon smart city.

5 Path of Digital Government Full Link Construction Based on Power Data Value Realization

In order to realize the full value realization of power data and support the construction of digital government full link, it is necessary to build a safe and reliable data infrastructure, multi-dimensional application of power data products and a diversified interactive government-enterprise cooperation model in strict accordance with the construction scheme.

5.1 Build Secure and Reliable Data Infrastructure

Multivariate Data Fusion
On the one hand, power data can be connected to government data to build a collaborative and efficient co-construction system of "All Access", improve the service level of digital government and promote the transformation of government into a service-oriented government; On the other hand, it should strengthen the multiple integration of power data, gas data, heat data, intelligent transportation data and other energy industry and upstream and downstream industry chain data, and build a modern industrial Internet platform.

Establish Data Application Standards
First of all, power grid enterprises and the government can jointly clarify the channels and methods of compliance data collection, standardize the collection frequency and caliber, and jointly develop compliance energy collection, storage and invocation systems to ensure that the data obtained can be checked at the source, safe and reliable, and applied in compliance; Secondly, it can work with the Department of Commerce, the Department of Water Resources and other relevant departments to classify all the data from the dimensions of macro economy, industry and environmental protection, and jointly develop a data index system, and finally form a comprehensive energy data system architecture with power data as the core, so as to comprehensively improve the data governance ability of the digital government.

5.2 Create Multi-dimensional Application Power Data Products

Evaluation Index System
Based on the characteristics of power data covering almost the whole region of residents, enterprises and industries, electricity consumption between industries and regions in different periods can be analyzed and compared to build key indicators with power data as the core, comprehensively reflecting the multidimensional characteristics of urban development, and guide the government to carry out economic and social construction work such as industrial structure adjustment, business district site selection construction and urban and rural construction planning.

Analysis of Decision Reports
In addition to building the relevant evaluation index system for the government's reference, we can also evaluate the effectiveness of rural revitalization, the effectiveness of digital city construction and the effectiveness of low-carbon ecology from the perspective of power grid enterprises with the help of multi-power data analysis, so as to give full play to the power grid's power and give advice for the government's precise policies.

Production Monitoring Map
Power grid enterprises can improve the construction of internal data center with the help of digital technology, bring all kinds of power data of the whole industry into one platform, intuitively and comprehensively show the changes of various data, and then assist the government to have a real-time insight into the changes and trends of various data in the market, so as to take corresponding treatment measures and formulate relevant economic, social and market regulation policies in time.

5.3 Innovate Government-Enterprise Cooperation Models

Establish Joint Working Groups
Based on the construction needs of relevant government departments, data and information sharing can be carried out with power grid enterprises through joint working groups. Relevant government departments can copy the data of rural industrial development, enterprise construction and residents' life to the power company synchronously. The power company can realize effective integration and analysis of government data and power data, and submit it to the government regularly to create a closed loop of government and enterprise data.

Carry Out Normal Monitoring in Coordination
Based on the needs of the government in the normal monitoring of housing conditions, real-time monitoring of enterprise production behavior, daily carbon emission monitoring, road safety monitoring and other aspects, it can establish an electric power supervision system through the normal cooperation mode with power grid enterprises. We will effectively investigate and handle non-compliant business behaviors of the elderly living alone, such as safety risks, road safety risks, high pollution and energy consumption

emissions of enterprises, unpaid labor wages, abnormal electricity consumption, etc., so as to improve people's well-being and promote long-term social stability.

Play the Role of Bridge

In the post-COVID-19 economic downturn, power grid enterprises can not only help the government to carry out relevant economic adjustment and social governance activities through collaborative work, but also further play the role of communication bridge between the government and other enterprises. For example, in view of the problems such as the broken capital chain and difficult operation of micro, small and medium-sized enterprises during the epidemic, we can build an enterprise power credit index based on the historical electricity credit of enterprises, select enterprises with high credit, issue electricity credit certificates, and open up "green channels" for these enterprises to apply for financing under the leadership of the government together with relevant banks and financial institutions. Meanwhile, we will improve and optimize the information docking mechanism between financial institutions and private enterprises, and realize efficient online connection between capital supply and demand, so as to ensure the normal operation of enterprises during the epidemic.

6 Conclusion

The tide of digital age and the international competitive environment force the government to improve its digitalization level, strengthen the construction of digital full link, and create a smart city ecology has become an important requirement for the government construction in the new era. As a key data bearing the national economy and people's livelihood, power big data plays a vital role in the construction of digital government. As direct managers and users of power big data, power grid enterprises led by State Grid should realize the full value of power big data by giving full play to their advantages in data technology, developing diversified power big data products, innovating government-enterprise cooperation modes and other means and tools. Give full play to the value advantages of power big data to enable the digital government from digital infrastructure to scientific decision application and finally realize the need for the construction of the full link of governance efficiency deepening.

However, this paper only summarizes and conceiving the core direction and means of electric power big data value realization supporting data government construction, and there is still some deficiency in the research and formulation of specific practice and detailed strategies for each means. The next stage will further focus on specific data technology application methods, power big data products that meet the actual needs and concrete forms of joint work with government departments, so as to build a practical path of power big data to support the construction of digital government.

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