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An Attempted Analysis on China's Grass-Roots E-Government Construction in the Age of Big Data

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Abstract
The arrival of the Age of Big Data has brought new challenges to China's grass-roots E-government construction. Based on an overview of Big Data, grass-roots E-government construction, this paper illustrates the urgent need to further deepen e-government construction at the Age of Big Data, analyzes challenges facing the grass-roots E-government construction at the Age of Big Data and then puts forward the user-oriented countermeasures from human resource development related to Big Data, the perfection and integration of database and the government information resources, and public demand prediction.

Key words: The age of big data; Grass-roots; Government; E-government construction

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INTRODUCTION
As information technologies, such as internet, cloud computing, Internet of Things and big data develop vigorously, we are in an age of Big Data. Collection, reservation, analysis, processing and application of a large number of data are becoming more convenient, especially the combination of electronic government affairs in local governments and big data will bring new challenge to local governments' electronic affairs construction and new opportunity to local governments' public service. Big Data will cause a big influence on the nation's government pattern, resolution, organizational business process and ways of providing public service. In China, as local government affairs open to the public and electronic government affairs develop, Big Data resource has came into being in many areas. Gradually, governments or public will make decisions based on the analysis of Big Data, not on experience or instinct. How to further develop our country's local governments' electronic affairs construction under the circumstance of Big Data and how to maximize Big Data' value in the process of governments' informatization is research focuses at present.

1. THE CONCEPT OF BIG DATA
Early in 1980's, Alvin Toffler, a famous American futurist, predicted in his book "The Third Wave" that around the 21st Century, mankind would enter the Era of Information, and he also warmly extolled Big Data as "the cadenza of the Third Wave". On September 4, 2008, "Nature" magazine published an album—"Big Data", and this was the first time that the concept of "Big Data" was put forward. At the end of 2011, the research report—"Big Data: A new field under innovation, competition and productivity" released by McKinsey, a global well-known consulting company, first used the term "Big Data", which was used to refer to the huge amount, more than PE level and including structured, semi-structured and unstructured data.

1.1 The Definition of Big Data
At present, there is no standard definition for Big Data, and various institutions and organizations hold different opinions. IDC, a famous consulting firm for international data defines Big Data as "the new structure

and technology designed to gain value from the different types and structures data with high frequency and large capacity economically" which includes the four aspects of infrastructure, data management, analysis of mining and decision support; IBM summarizes Big Data as the "4 V theory" of volume, variety, velocity and veracity; while the definition given by Wikipedia is straightforward: Big data refers to the set of data consuming time exceeding that could be tolerated in the use of common software tools to capture, manage and process data.

None of these explanations has their own focus of attention, and the author thinks that, in a certain extent, the understanding of Big Data depends on who is defining, apply and obtain the potential value.

1.2 The Characteristics of Big Data

For the characteristics of Big Data, the IT circle has summarized them in 5 V, namely Volume, Velocity, Variety, Veracity and Value, which contain five aspects of meaning: Firstly, the volume of data is huge. The collection and analysis data is very big, surging from the XT level to the CT level. Secondly, the processing velocity is quick, the data need to be analyzed in real time, which is different from the traditional data mining technology in nature. Thirdly, the data variety is large, the big data come from multiple sources, and its types and formats increasingly rich, containing structured, semi-structured and unstructured data. Fourthly, the veracity of the data. The content in Big Data is closely linked with the real world, and the study of Big Data is the process to extract data from the huge network of data which can be explained and predicted. Fifthly, low value density and high commercial value. Through the analysis of the data, it can be drawn on how to seize the opportunity and harvest the value.

2. THE MEANING AND NECESSITY OF GRASS-ROOTS E-GOVERNMENT CONSTRUCTION IN THE AGE OF BIG DATA

In order to cope with the coming of the Age of Big Data and firmly grasp the pulse, study of China's E-government construction is particularly urgent and necessary.

2.1 The Basic Meaning of the Grass-Roots E-Government Construction in the Age of Big Data

The scholars in the circle hold different opinions and focus on the concept of E-government. Some believe that the E-government is the informationization of the government, which is to arm the government authority with the use of advanced information technology, communication technology and network technology; others think that the E-government is the change of the government's administrative mode realized through the support of computer and network; while still others believe that the E-government is that the government uses modern information technology and communication technology in the management and service function to realize the optimization of government organization and work flow to surpass the control by time, space and separation of departments, so as to establish a simplified, efficient, clean and honest, and fair government operation mode

Under the background of the Age of the Big Data, combing the views of all scholars, the author is more inclined to think that the process of E-government is the informationization of government administrative activities. The Age of Big Data is the inevitable trend of social development, and it will definitely promote the opening and using the information and data, and strengthen the public information disclosure and transparency. At the same time, the opening of data is bound to affect the innovation of the grass-roots governments' management, and the interaction between the network society and real society management of the grass-roots government behavior will also be greatly enhanced, thus giving new connotation and requirements for the E-government construction.

2.2 The Necessity of Grass-Roots E-Government Construction in the Age of Big Data

In March 29, 2013, the Obama administration announced American "Big Data Research and Development Initiative", on the same day, China's Science and Technology Ministry issued the "The Annual Alternative Project Solicitation Guidelines in the Information Technology Field of the National Science and Technology Plan in 2013 in the twelfth 'Five Year Plan'" which put Big Data and related theories, technology research in the first place. In view of this, "Big Data" deservedly become the breakthrough of the new economic growth point of all countries and it is of great value. In the Age of Big Data, more emphasis would be put on transparency and sharing of information, and the grass-roots interaction between government and public has become increasingly frequent. The degree and level of E-government construction directly affects the public's impression and understanding of government administrative ability and management level,and the grass-roots E-government construction is also the directory window of the service government to the public. Therefore, it should be given high attention.

3. THE CHALLENGES FACING THE CHINA'S GRASS-ROOTS E-GOVERNMENT CONSTRUCTION IN THE AGE OF BIG DATA

The statistics of the investigation data given by researchers was: At the end of 2012, Internet users in China reached

546,000,000, the popularization rate of Internet was 42.1%, mobile phone users was 420,000,000, micro-blog user was 309,000,000; E-government network of public service system gradually formed, and popularization rate of central and provincial government websites has reached 100%, that of regional, and municipal government achieves 99.1%, and that of district level was over 85%. Although, the informationization development in our country has made significant progress, information network and intelligent terminal spread quickly, China's current administrative system remains complex, all levels of governments have different levels of E-government development. There's still wide gap between grass-roots governments and governments at other levels in the construction of E-government. Therefore, in the Age of Big Data, China's grass-roots E-government construction is faced with more severe challenges, specifically in the following aspects:

3.1 The More Urgent Need of Grass-Roots E-Government Construction

The E-government construction of grass-roots governments is to build a service-oriented government as the direct window to the public. There's natural advantages for the grass-roots governments to interact and communicate with the public, therefore, channels of communication at grass-roots levels between the public should be expanded. Through the construction of E-government, the platform of government portal websites can be perfected so as to strengthen communication and exchanges between the governments at all levels, between the government and the public. At present, China has basically completed the establishment of government portal websites for governments at the grass-roots level, but the integration and application efficiency of information is low, in addition, a considerable number of grass-roots government portal websites only put introduction of government departments in the Webpage, lacking links and information service, then it is difficult to meet the public's social needs from the government official websites.This is not only with largely different from what the grass-roots government should be in the Age of Big Data, but also quite different with the our country's original intention of informationization construction.

3.2 The Lack of Qualifications and Funds for the Grass-Roots E-Government Construction

In the Age of Big Data, for all levels of governments, there will be problem, such as a shortage of resources and conditions, etc to realize the construction of e-government. At the bottom of our administrative structure, the plight that grass-roots governments suffer for E-government construction is often more prominent, specifically reflected in the following aspects: Firstly, compared with the government at a higher level or government in the developed area, the government funding for grass-roots government is usually not sufficient, and there's little direct investment from state finance, especially in the implementation of "the reform of taxes and fees" in the vast rural areas, which causes the grass-roots government losing a large source of income. Secondly, in addition to a few coastal areas, most of the grass-roots governments lack profitability projects, and the source of revenue is few. It's inevitable that the construction of E-government requires human, material and financial resources, only to wait for investments from governments at higher levels is not enough. Thirdly, the Age of Big Data has put forward high requirements for the information collection and storage abilities of grass-roots governments and also the computer using abilities of the servants at grass roots governments. It is a process for quality and ability of civil servants and the general users to adapt to the Age of Big Data, and huge capital investment.

3.3 The Utilization of Facilities for the Grass-Roots E-Government Construction Needs to Be Improved

In the Age of Big Data, e-government construction relies on the support of highly developed electronic information network technology, therefore, if we do not have a good grasp of the electronic information technology, then it is difficult to make full use of the electronic government affairs resources, and the benefits brought by it can not be enjoyed, then the development of E-government will lose its significance. The cultural level and technical ability of most civil servants at grass-roots governments in our country is generally not high, and the majority do not have the basic electronic information technology and network knowledge, even many civil servants can't use the computer, not forming the consciousness of E-government construction or only with weak concept. In this way, the heavy state investment in the E-government network system construction has become a kind of decoration, resulting in a serious waste of social resources. Even if the facility construction of China information infrastructure has made great development, the grass-roots government still cannot change serious idle phenomenon of the communication resources, then the idea of the modernization and paperless office in the workplace will become a bubble.

4. THE COUNTERMEASURES FOR GRASS-ROOTS E-GOVERNMENT CONSTRUCTION IN THE AGE OF BIG DATA

The arrival of the Age of Big Data and the development of big data technology will undoubtedly bring about new opportunities for the grass-roots E-government construction. Some scholars have said, big data can not only help the grass-roots governments eliminate

information isolation, improve the level and efficiency of government decision-making and accelerate the transformation of government functions, but also reduce the E-government construction costs, improve the people's enthusiasm and initiality in participating in politics. But these are all boosting functions that big data has played for E-government construction of grass-roots governments. Then, for the grass-roots E-government construction itself, how to adjust themselves to better meet the challenges brought by environmental variation in the Age of Big Data, how to meet the public demand for grass-roots government information, and how to make reasonable use of the infrastructure owned by the grass-roots government to better serve the public are all problems must be considered for grass-roots E-government construction, and the author has referred to the conclusions of predecessors and put forward the following countermeasures:

4.1 Be Clear of the Main Body Status of the Users and to Orient to the Users

In the Age of Big Data, the government is no longer the only subject to release information, and the public enjoys great freedom of information access and release rights, and the era that the government is the leading source of information has gradually gone far away. Here, the "user" refers to the people actually use electronic government affairs resources, including the public and civil servants. First, user centered, builders of information capacity and the service providers should listen to the views of users, give full consideration to their needs, and put what the users hold most important into priority in the deployment of businesses in the case of the scarcity of resources, and strive to achieve the unification of relative importance, utilization and service satisfactory in E-government construction. Secondly, in order to eliminate "information isolation" and resource idle phenomenon in the process of grass-roots E-government construction, it needs to formulate a unified plan and design for grass-roots E-government construction, and then it should have long-term strategic vision to make the current information facilities adapt to the development process of E-government construction in the Age of Big Data, and also according to the local economy and social development level to carry on informatization construction.

4.2 To Develop the Human Resources Related to Big Data

To promote the application of Big Data in grass-roots E-government construction, the input of human resources is a key factor, the more deeply of the application, the more obvious the demand for human resources. To realize the application of Big Data technology in E-government, a large number of talented personnel with technical and business complex and high-quality are needed to ensure the development and implementation of technology does not separate from the urgent need of the government business. Specific recommendations are as follows: Firstly, we must do a good job in the training of relevant personnel in the business department at the grass-roots government, including the people mainly in charge of the government, director of information technology and general civil servants, both guiding on the application of the technology, and the popularization of the application of the concept. Secondly, to vigorously bring in professional talents of Big Data to meet the demand for talents to promote the application of Big Data and strengthen technology innovation strength of the E-government team in the application of Big Data. Thirdly, to make full use of human resources outside the government to strengthen cooperation and exchanges with enterprises, educational and scientific research institutions to further promote the application of Big Data through external forces.

4.3 To Complete Relevant Database, and Integrate Administrative Resources

With the development of E-government process, basically, all grass-roots governments have their own portal websites and set up the related resource database at their own level, but they do not integrate the information resources in their database, which are mostly in the state of dispersion, isolation and silence. The use of data is no longer confined to the first time use of them in the Age of Big Data, and more is the two-time use or even repeated use. Firstly, the grass-roots government should further information collection, based on the original database, to enrich data types in the database, and make classifications of the collected data. Secondly, the grass-roots government construction on information base should be standardized in accordance with the unified leadership and organization of state institutions for government informationization, in order to reduce the waste of resources due to the lack of standardization. Thirdly, integration among database resources can give full play to the relevant relationship between data, and the use of correlation among the data can help get a lot of new information, enhancing the various system compatibility and sharing among governments, government departments.

4.4 To Predict Public Demand and Improve Government's Decision Making

Known as the "the predictor in the Age of the Big Data", Victor—Meyer—Schoen Berg thinks that the core of Big Data is to forecast. In the Age of Big Data, because the total amount of data is huge and content complex, the information collection costs are low and the feedback from public on the policies is convenient when the grass-roots government is making decisions. Firstly, with the development of Big Data, various social networks and instant messaging platforms will become publishing media and tools for public opinions. Therefore, the grass-

roots government can gather, mine and analyze Big Data through the mobile phone, Internet and other tools to make more timely and responsible response to public opinions. Secondly, using the related technology of Big Data, the grass-roots government can fully consider the public views and opinions on the decision in the initial stage of decision-making, and make timely collection and processing of public feedback on the policy in the implementation of the decision, it can, to a certain extent, improve the public's acceptance and satisfaction of the policies so as to enhance the decision quality.

CONCLUSION

In the age of Big Data, construction of local governments' electronic affairs means a lot to transformation of local governments' function, raising local governments' efficiency, promoting local governments' transparency, narrowing the digital gap between urban and rural areas and driving the process of new countryside. Currently, electronic government affairs in city are growing vigorously, but local governments are in a low level. Focus shifted to the construction of lower level governments' electronic government affairs and application of technologies related to Big Data provide a new opportunity to the construction and development of local government's electronic affairs. Big Data is like a propeller to the development of local government's electronic affairs. In the process of development, full understanding of the effect of Big Data, accelerating Big Data' research and development and application of them in the construction of local governments' electronic affairs are required.

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