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Shengzhong Feng



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Government Affairs Service Platform for Smart City

Zhihan Lv¹, Xiaoming Li^{2,3}, Weixi Wang^{2,3}, Baoyun Zhang⁵, Jinxing Hu⁴, Shengzhong Feng⁴

1 Qingdao University, Qingdao, China

2 Shenzhen Research Center of Digital City Engineering, Shenzhen 518034, China

3 Key Laboratory of Urban Land Resources Monitoring and Simulation, Ministry of Land and Resources, Shenzhen 518034, China

4 Shenzhen Institute of Advanced Technology(SIAT), Chinese Academy of Science, Shenzhen, China

5 Jining Institute of Advanced Technology Chinese Academy of Sciences, Jining, China

Abstract—Using a 3D geographical information system (GIS) and cloud computing, a new government affairs service platform is presented. To manage and use the city's data efficiently, the 3D analysis and visualization of the city's information are held on the platform of the smart city. With the new platform, a series of e-government services can be conducted to manage the makers and operation supervisors in the government agencies and other smart city industries, such as urban disaster and environmental protection, intelligent transportation, monitoring and evaluation of the urban resource centers. All services presented on the platform are extracted from the government departments' practical demand.

Keywords: WebVRGIS, Smart City, GIS, e-Government, Cloud Computing

I. INTRODUCTION

THE cities' growth provides a new dimension in the city management.^[1] The e-government can help bridge the gap between the government and the citizens, which can reduce the conflict between both parties.^[2] The municipal applications of geographic information system (GIS) across the different countries showcase the potential use of GIS in the e-government agencies such as property management, traffic, and transportation, urban planning, waste management, urban design and renewal, financial resource mobilization, etc.^[2] The territory plays a decisive role in the allocation of the financial, technological, and human resources. With this, the optimization of the infrastructure planning and health resources and the combination knowledge is important^[3]. The GIS uses can provide the urban services and identify the related solutions.^[4] GIS, apart from contributing to data integration from the different data sources, enables data visualization using the maps, which enhances the system usability and assists in the decision-making process^[5]. In GIS tool presentation, it involves a new spatial visibility into the transparency of state activities, makes the activities of the public administration transparent to all citizens, and contributes the e-democracy evolution.^[7] The web and GIS technologies-based e-government system can promote the dissemination of urban information and enable the citizens to register objections to the land use plan during the different phases of the planning process, along with responding to those objections.^[6] Public Participation GIS (PPGIS), which broadly refers to the citizen participation in enhancing the public services and decision-making using the GIS, is a main theme of GIS research^[7]. Although e-government scholars are centrally interested in enabling e-democracy, there is a dearth of public administration literature on allowing public participation using GIS technology^[8]. The advancements have widened GIS' accessibility from the domain of the expert users to the lay citizens^[9]. Some cases that employ GIS for urban planning have been shown, e.g. Sweden^[10], Italy^[11], UK^[12], Canada^[13], USA^[14], and so on^[15]. The 3D GIS provides a visual presentation and is used as a real 3D tool -for both queries by using a 3D model and visualizing geoinformation in 3D^[16]. Our previous work based on WebVRGIS engine^[17], which is WebGIS, 3D GIS and PPGIS, have proved the usability of 3D GIS for information management of e-government^[18], including 3D interactive system for transportation^[19], underground^[20], water resources^[21], virtual community^[22]. By integrating the friendly interactive interface of Virtual Reality System and spatial analysis specialty of GIS, WebVRGIS is preferred in practical applications, especially in the geographical and urban planning. The contribution of this paper is proposing top design of a government affairs service platform which sufficiently uses GIS and cloud computing technologies to provide a service for facilitating and handling government affairs of a smart city.

The urban areas are in good position to avail the services of e-governance as they all have the required infrastructure. While in rural areas, the biggest problem is the non-availability of the necessary infrastructure and the lack of computer awareness among the citizens. Cloud computing can be an effective solution in the future to fulfill those needs,^[23] which would be intelligent and accessible to all.^[24] Also, e-government must be built on a fluid and constantly adapt to the collaborative governance systems that respond to the twin challenges of external alignment and internal integration and cooperation^[25], and a cloud context is a good solution for this demand. So far, implementation of cloud computing based e-governance is still a challenge that needs to be given emphasis by the government.^[26] All kinds of city devices and sensors are considered as part of the e-governance system^[27].

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Corresponding author: Zhihan Lv

E-mail address: lvzhihan@gmail.com

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