Web-GIS technology for the establishment and dissemination of land databases: A case study and potential integration with Artificial Intelligence

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Abstract **- Since its inception, WebGIS has been showing advantages to the traditional GIS as WebGIS has made it very easier to share and manage spatial data via the internet, without needing any special GIS software loaded on the user's computer. WebGIS has therefore been widely applied in research and management, among which land management is the area that it has shown suitability and efficiency. This study was conducted to establish and disseminate a database of a land price database on a WebGIS platform and analyzed potential integration between WebGIS and Artificial Intelligence. The database was built for Dich Vong Hau ward of Cau Giay urban district, a highly populated and developed area of Hanoi, where the land market is vibrant and where is critically in need of a WebGIS-based land price management system. The database contains spatial data and sufficient attribute data of the land parcel system, transportation system, drainage system, service system, and other supporting data and information. The Web-based shared land price database serves the need of searching for information on land price and related information of people and professional managers. The website provides interactive functions on maps that allow users to query information, search land parcels, edit spatial data and update information, navigate and measure distance by manipulating the map displayed on the Web browser, etc. The result of the study is expected to bring a modern way in land management in general and land price information management and sharing in particular, which could help to improve the efficiency in land management in the study area.**

Keywords: GeoAI, Database, Land Price, WebGIS.

1. INTRODUCTION

Before the blooming of the Internet era, most digital geographic information was only used on personal computers or in-house mainframes and information sharing among users and among organizations was not an easy task. However, along with the rapid development of information technology and the increasing demand of using and sharing data, a new branch of GIS namely WebGIS was invented.

WebGIS provides users with functions to share maps, spatial data, and geographic processing operations throughout internet common Web communications protocols such as HTTP and WebSockets (Dragicevic, 2004). A WebGIS system can be used on desktop personal computers, smartphones, or any type of device with an internet connection. A typical WebGIS system was illustrated by ESRI as presented in Figure 1.

Since its inception, WebGIS has been showing advantages to the traditional GIS as WebGIS has made it very easier to share and manage spatial data via the internet, without needing any special GIS software loaded on the user's computer. It has therefore been widely applied in research and management, among which land management is the area that WebGIS has shown its suitability and efficiency. For instance, Mathiyalagan et al. (2005) used ArcIMS, a Web Map Server produced by ESRI to develop an interactive WebGIS and geodatabase providing map and data services of wetlands in Florida, the United States. Lin et al. (2010) designed and implemented a WebGIS based Land Management Information System for Lujiazui district of Shanghai, China. The WebGIS system structure used in this study was proved practicable. Di Giacomo (2015) developed a WebGIS for simulation of land development, especially focused on the effects of land-use change on water resources in Acilia and Infernetto, south of Rome,