

# Web-Based 3D Cadastre's Data Visualization In Indonesia: Challenges And Opportunity

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## SUMMARY

Web-Based GIS (WebGIS) is one of the digital platforms to disseminate spatial information. To implement one map policy, electronic government system, and national geospatial network, the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (BPN) Indonesia has published a geoportal namely Bhumi WebGIS (hereinafter called Bhumi) since 2020. The Bhumi is used to disseminate several geospatial data generated or managed by several directorate generals at BPN. There is a demand for Bhumi to display 3D cadastral data. Government Regulation No. 18/2021 on Rights to Manage Land Rights, Strata Title, and Land Registration support the implementation of 3D cadastral system, especially to support vertical infrastructures development in several cities in Indonesia such as Jakarta, Bandung, and Surabaya. In this paper, Building Information Modelling (BIM) data from 3D modeling of BPN's PUSDATIN building will be visualized on Bhumi along with other supporting data such as DEM Lidar, orthophotos, and 2D land parcels. The platform to visualize these data is Cesium JS with Cesium 3D Tiles and Terrain datasets. This project aims to develop a web-based 3D cadastre prototype capable to represent 3D objects of land parcels (below or above ground) and if possible, to retrieve an attribute database of legal spaces of 3D units similar to the Right Restriction and Responsibility (RRR) concept applied in 2D cadastral. The developed prototype is designed to answer some issues and challenges from previous research such as rendering large 3D data, retrieving legal spaces information, base terrain integration, occlusion management, and interoperability.