

# Implementation of 4D Cadastre Concept for Land Dispute Potential and Solution of Post Natural Disaster in Palu, Indonesia

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## SUMMARY

Indonesia is a law county and Pancasila regulations based in implementation of agrarian reform and presenting a 2D cadastral administration system for land registration, providing clarity of land rights, land valuation, and land use. However, the 2D cadastral system in Indonesia is vulnerable to overlapping because some agencies use different projection systems to present maps of land ownership, taxation, forestry, and so on. As sustainable development advances, applying 3D cadastre is the best solution in determining overlapping mapping and can identify 3R (right, restriction, responsibility) and represent 3D model information. However in implementation, it needs to be integrated with time as an additional dimension in 4D cadastre mapping (3D + time) because land disputes and natural disasters can occur at any time and brings many disadvantages to the land system, for example in December 26, 2004, earthquakes and tsunami devastating Banda-Aceh, North Sumatra which causes land registration documents and land ownership information or land parcel are gone. Recently in September 28, 2018, earthquakes around 7,5 ML and tsunami with height 3 meter above MSL destroyed Palu-Donggala, Sulawesi, causes more than ten thousand of peoples die. The goal of this research is to elaborate information system of 4D Cadastre to facilitate and explain the digital results of legal property law who owns land certificate or in specific of an owner of apartment. Using 3D model data from Orthophoto and Cesiumjs are expected to show 3D including position and height (x, y, z) and time (t) in the application or website. The land data will be recorded in a system, thus can be used as an archive of the history of ownership and can be used to simulate the lost data or add spatial planning in the future.

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