

Fit-For-Purpose Cadaster Approach in Metro-Colombo with UAV Image Compilation

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Abstract

While the broad meaning of Cadastre and Land Information System (LIS) to facilitate better Land Administration, Sri Lanka LIS from its inception in 2007, had been designed to cater the need of land ownership theme in order to deal with specific project; for issuing of land titles in collaboration with three stakeholder organizations; Title Registration Department, Land Settlement Department and the Survey Department; from which an accurate land parcels were generated through time consuming field surveying. However, in concerned with project outcome, almost for one decade, around 1-million land parcels could be accomplished in land information system and also its sustainability is utterly questionable due to lack of extended attribute information for planning and taxation aims.

Subsequently, studying a corrective path for a sustainable LIS, through project proposal; “Developing of Land Data Infrastructure in Sri Lanka” in support of the government of south Korea, a pilot project was conducted in 2017 in order to find possible directives to use image data sources for compiling of ownership based land plot boundaries to cater the social realistic needs in land information. Among the project’s specific objectives; uplifting of national doing business index through sustainable land information delivery, it was considered in the pilot project to select a specific project location; Havelock-city in Colombo municipality limits in western maritime region.

Colombo Municipality Council (CMC) as the local government authority responsible in planning, taxation and social well-being in the capital city of Colombo, conduct its conventional proceeding based on assessment plans prepared in 1960s with manually compiled subsequent spatial and non-spatial descriptive information. However, several efforts had been taken by the municipality in digitalizing of existing layout diagrams with updating of textual information in digital records. Sustainability of the attempts is being failed due to complexity of growing strata properties in the region while rapid urbanizing and growth of population.

Procedure; Initially attended in capturing of UAV images, geo-referencing with suitable ground control points to get better rectification. Then, identified possible specific features of the land parcel boundaries to automate image interpretation. However, obviously process outcome was not closed polygons. We had to follow ground human efforts to close the sketched polygons to make object entities as land parcel polygons. Then municipality sketches were digitalized and processed to get centroids with point attribute tables for linking the two datasets. Finally, we followed in extended attribute data collection in field to elaborate fit-for-purpose cadaster in the pilot area through Land Information services.

The successive efforts and project outcomes shall be discussed in this technical paper with further elaborating the recommendations to be followed in main project to be commenced in 2020 with extended over the whole country.

Keywords: Cadaster, Fit-for-Purpose, Land-Parcel, LIS, UAV.