



Information Sheet on 3D Visualisation Map (Non-textured models)

Introduction

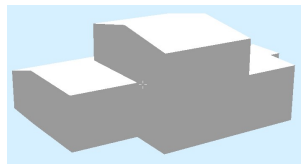
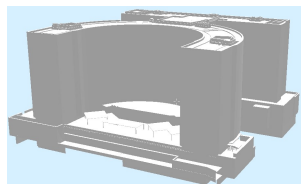
The 3D digital map forms a major building block of the Common Spatial Data Infrastructure (CSDI), facilitating the sharing and opening of government geospatial data and meeting digital map applications' needs. To meet the increasing needs of 3D digital map applications and enhance a better understanding of multilevel spaces of a modern city like Hong Kong, the Lands Department of the Hong Kong SAR Government (LandsD) has been actively developing a set of high-quality 3D Digital Map covering the whole territory of Hong Kong since 2020.


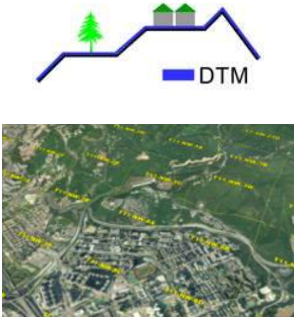
The 3D digital map project comprises the generation of a set of high-quality 3D visualisation map showing topographical and exterior features of terrain, buildings and infrastructures over the territory; 3D indoor map showing the accessible interior of buildings and structures for 1 250 buildings; and 3D pedestrian network data over the territory.

The 3D Visualisation Map (Non-textured models) is a set of digital data of 3D models featuring geometry models and terrain texture maps to represent the geometrical shape and position of different types of ground objects, including building, infrastructure and terrain. Following the release of the 3D Visualisation Map of the whole territory of Hong Kong in March 2025, the LandsD prepares non-textured building and infrastructure models. The LandsD will continuously update the 3D Visualisation Map to provide up-to-date information with a view to promoting smart city development.

Classification

The 3D Visualisation Map (Non-textured models) is classified into three (3) types, namely Building, Infrastructure and Terrain. Building and Infrastructure (e.g. flyovers / bridges / footbridges) are individualised on feature basis. Terrain is individualised on tile basis.

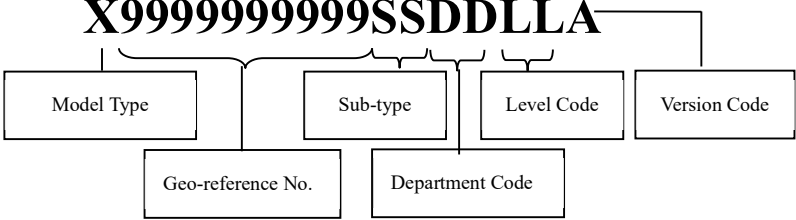
Types	Individualized	Level of Detail (LOD)	Description	Examples
Building (e.g. building and podium)	Feature basis	LOD1	A uniform prism to represent the general footprint and the overall height.	-
		LOD2	A polyhedron to represent the general footprint and roof top structures.	
		LOD3	A polyhedron to represent a miniature of a building.	

Infrastructure (e.g. flyovers / bridges / footbridges)	Feature basis	LOD1	A polyhedron to represent the general outline of an infrastructure.	-
		LOD2	A polyhedron to represent the general outline and major ancillary features of an infrastructure e.g. noise barrier and sign gantries on highways.	-
		LOD3	A polyhedron to represent a miniature of an infrastructure with all ancillary features e.g. sign boards on highways.	
Terrain	Tile basis	n.a.	Terrain Model is in the form of Digital Terrain Model (DTM) which is a surface model to represent the elevation of the bare ground with an orthophoto draped on. Terrain Model is subdivided into standard tiles and referenced in the same manner as the LandsD's 1:1,000 topographic map tiles (i.e. 750m x 600m).	

Data Structure

Data files

Each 3D model is identified by a unique model identity number (model ID) with 18 alphanumeric characters, and associated with a file folder storing the digital files of its 3D geometry model and texture image(s). The file folder and digital files are named according to the model ID.

Model Identity Number of 3D Model			
<p>X9999999999SSDDLLA</p> 			
	Begin Column	Type	Remarks
Model Type	1st	String	“B” stands for building models, “I” stands for infrastructure models and “T” stands for terrain models

Geo-reference No.	2nd to 11th	10-digit geographic reference number
Sub-type	12th to 13th	<p>Building Models: 01 = Tower, 02 = Podium</p> <p>Infrastructure Models: 01 = Road 02 = Bridge 03 = Footbridge 04 = Tunnel/Subway 05 = Railway 06 = Highway 07 = Elevated road/Flyover 08 = Tunnel portal 99 = Miscellaneous</p> <p>Terrain Models: 01 = Terrain 99 = Miscellaneous</p>
Department Code	14th to 15th	“06” stands for the models created by the Lands Department
Level Code	16th to 17th	<p>“2G” (LOD2) or “3C” (LOD3) for all exposed models (except terrain model) without photo-realistic texture</p> <p>“E1” if all exposed terrain model facades are attached with photo-realistic texture, “E2” if none of the exposed terrain model facades are attached with photo-realistic texture</p>
Version Code	18th	<p>When the 3D Model or the Photorealistic Texture of the 3D Model is revised, Version Code shall be changed following the below sequence</p> <p>A = 0,1,2,3,.....9,A, B,Z</p>

File format

The 3D Visualisation Map (Non-textured models) are available in the **MAX, FBX and gITF** formats. The photo-realistic texture of the Terrain Model is a single texture image or multiple texture images used to map on the exposed faces of 3D geometry model with the JPEG format.

Accuracy

Horizontal accuracy is assessed using root-mean-square-error (RMSE) statistics in the horizontal plane, i.e., RMSE_x, RMSE_y and RMSE_r. Vertical accuracy is assessed in the z dimension only. Absolute accuracy is a measure that accounts for all systematic and random errors in a dataset. Relative accuracy is a measure of variation in point-to-point accuracy in a dataset.

Absolute Accuracy			Relative Accuracy	
Horizontal		Vertical	Horizontal	Vertical
RMSE _x and RMSE _y	RMSE _r	RMSE _z		
≤ 0.30 m	≤ 1.414x0.30 m	≤ 0.50 m	≤ 0.20 m	≤ 0.20 m

Tile Reference

The 3D Visualisation Map (Non-textured models) is supplied on tile basis. The whole set of data is sub-divided into standard tiles and referenced in the same manner as the 1:1000 topographic map tiles, i.e. the data of a tile, say No. 11-NE-17A, will include all 3D models which are partly (based on centroid) or completely located within the area as covered by this map tile.

Enquiries

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