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Information Sheet on 3D Spatial Data

Introduction

In 2011, SMO has created a dataset called 3D Spatial Data, which is a set of digital data of 3D models featuring geometry model, texture map and textual attribute to represent the geometrical shape, appearance and position of three types of ground objects i.e. Building, Infrastructure and Terrain. The 3D Spatial Data can be used in the applications such as analysis, visualization and presentation in carrying out technical study or public consultation for different land development and infrastructure construction projects.

Classification

Primary classes

The 3D Spatial Data consists of three primary classes of 3D model which are Building, Infrastructure and Terrain Models.

Secondary classes

Building Model and Infrastructure Model

The Building Model and Infrastructure Model each have three secondary classes Level 1, 2 and 3 according to the level of details of the models.

Primary Class	Secondary Class	Description	Examples
Building (e.g. building and podium)	Level 1 (L1)	A uniform prism to represent the general footprint and the overall height. No texture images are applied.	
	Level 2 (L2)	A polyhedron to represent the general footprint and roof top structures. Photorealistic textures are added if available.	
	Level 3 (L3)	A polyhedron to represent a miniature of a building. Photorealistic textures are added if available.	
Infrastructure (e.g. road and bridge)	Level 1 (L1)	A polyhedron to represent the general outline of an infrastructure. No texture images are applied.	
	Level 2 (L2)	A polyhedron to represent the general outline and major ancillary features of an infrastructure e.g. noise barrier and sign gantries on highways. Photorealistic textures are added if available.	
	Level 3 (L3)	A polyhedron to represent a miniature of an infrastructure with all ancillary features e.g. lamp posts and sign boards on highways. Photorealistic textures are added if available.	

Terrain Model
Terrain Model is supplied in the form of Digital Terrain Model (DTM)

Primary Class	Secondary Class	Description	Example
Terrain (e.g. ground surface)	Digital Terrain Model (DTM)	A surface model to represent the elevation of the bare ground with an orthophoto draped on.	

Data Structure

Data files

Each 3D model is identified by a unique model identity number (model ID), and associated with a file folder storing the digital files of its 3D geometry model, texture image together with a texture mapping file (if applicable) and the model attributes. The file folder and digital files are named according to the model ID.

File format

The 3D geometry model is available in the **3DS, 3ds MAX, FBX and VRML** formats. The texture image and the model attributes are in the JPEG and the delimited text formats respectively. For the texture mapping file, it is applicable to the Building Model and Infrastructure Model of 3ds MAX formats only.

Model attributes

The following three types of attributes are contained in the model attribute file.

Attributes	Description
Model_ID	A system-assigned unique 18-alphanumeric-character identity number. The 1st character represents the primary class, i.e. B = Building, I = Infrastructure and T = Terrain. For Building Model only, the 2nd to 11th numerical character from the left represents the Geographic Reference Number of the building kept in the B1000 Digital Map.
Model_Level_Code	A 2-alphanumeric-character code to indicate the secondary class, i.e. 01 = Level 1, 2X = Level 2, 3X = Level 3, EY= DTM, where X and Y are two system-assigned characters for system's internal use only.
Model_Publication_Date	The publication date of individual3D model in format of YYYYMMDD.

Example

A Level 2 Building Model in 3ds MAX format with model ID "B417021931301062C0", a single texture image and the publication date "13-12-2011" is associated with the digital files as shown below.

Folder/Files	Remarks
📂 B417021931301062C0	File Folder
B417021931301062C0.max	3D geometry model file in 3ds MAX format
B147021931301062C0.jpg	Texture image file in JPEG format
B147021931301062C0.uvw	Texture mapping file in 3ds MAX format
B417021931301062C0.att Storing "B417021931301062c0", "2C", "20111213"	Model attribute file in delimited text format with attribute data stored in an order of Model_ID, Model_Level_Code and Model_Publication_Date. The Geographic Reference Number is '4170219313'.

Tile Reference

The 3D Spatial Data 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-SE-2C, will include all available secondary classes of 3D models which are partly or completely located within the area as covered by this map tile.

Enquiries

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