

cyclomedia

Smart Imagery Solutions



Data delivery description (HD) cycloramas

Date: 30 October 2019

Joost Kerkhof | Technical Consultant | T +31 (418) 556 100 | E: info@cyclomedia.com

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1. Introduction

This document describes the structure of a cyclorama delivery on disk.

1.1 Usage

This document may be used for information purposes only. A data delivery may only be used as a backup in case for some reason CycloMedia is unable to provide a viewing facility

1.2 Limitations

It is prohibited to use the data delivery for integrating in other software. Integrations are only allowed by the use of APIs that are provided by CycloMedia.

2. Data delivery description

The data delivery consists of two parts. Imagery and metadata.

2.1 Imagery

Cycloramas are delivered in a standard JPG format.

One cyclorama is split up in a number of tiles. This makes it quicker for the viewer to load the data. A cube representation with an equisolid projection is used.

2.1.1 Tile Description

The overview tile is defined as a linear representation of the cube faces :

F	R	B	L	D	U
---	---	---	---	---	---

In this, each cube face is 256x256 pixels, making a total of 1536x256 pixels.

The cube faces are:

- F = front
- B = back
- L = left
- R = right
- U = up
- D = down

The up and down cube faces are oriented in relation to the other faces as follows :

U			
F	R	B	L
D			

A cube face is defined from the inside of the cube, thus 'front' means front as seen from the inside of the cube, not the outside.

The front cube face always faces north.

Based on the overview tile, tiles are defined with the following naming convention
`{imageid}_{zoomlevel}_{side}_{x}_{y}.jpg`

- {imageid} is the imageid of the corresponding cyclorama, e.g. '5D3E4C5Q'
- {zoomlevel} is the zoomlevel of the tile.
- {side} is the side of the cubic tiling scheme to use, e.g. 'f', 'b', 'l', 'r', 'u', 'd' (front, back, left, right, up, down)
- {x} the zero-based column number of the tile of the cube face (side) (0 is left)

- {y} the zero-based row number of the tile of the cube face (side) (0 is top)
- For example: for {side}_{x}_{y} with 'f_0_0', will give the top-left tile of the front cube face.

2.1.2 Tile scheme specification

Zoomlevel	Tiles per cube face (rows x columns)	Size of a tile (pixels)	Cube face focal length (pixels)	Cube face projection	note
20 Megapixel Cyclorama					
0	-	1536 x 256	163	Equisolid	single overview tile (contains 6 cube faces)
1	1 x 1	512 x 512	331	Equisolid	
2	3 x 3	512 x 512	1000	Equisolid	
100 Megapixel Cyclorama					
0	-	1536 x 256	163	Equisolid	single overview tile (contains 6 cube faces)
1	1 x 1	512 x 512	331	Equisolid	
2	3 x 3	512 x 512	1000	Equisolid	
3	4 x 4	1024 x 1024	2500	Equisolid	
250 Megapixel Cyclorama					
0	-	1536 x 256	163	Equisolid	single overview tile (contains 6 cube faces)
1	1 x 1	512 x 512	331	Equisolid	
2	3 x 3	512 x 512	1000	Equisolid	
3	6 x 6	1024 x 1024	3566	Equisolid	

Note that the table specifies the tiles per cube face.

As such the 20Mpx tilescheme contains 61 tiles per panorama (1 + 6 x 1 x 1 + 6 x 3 x 3).

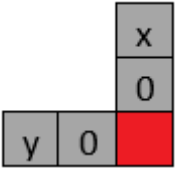
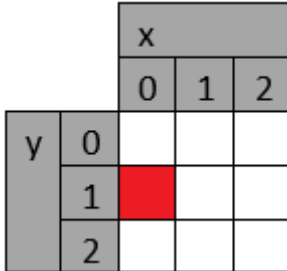
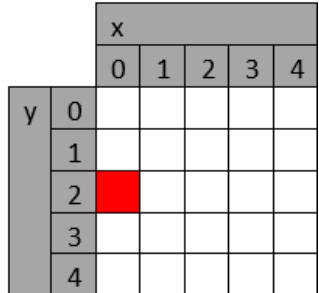
Total number of tiles for a 20 megapixel cyclorama : 61

Total number of tiles for a 100 megapixel cyclorama : 157

Total number of tiles for a 250 megapixel cyclorama : 277

2.1.3 Example tiles

Example 100 megapixel cyclorama tiles

zoomlevel	side	column (x)	row (y)	description	tile (downsized to fit)
0	A (all)	0	0	the overview tile F R B L D U	
1	F	0	0	A tile at this zoomlevel is one entire cube face 	
2	F	0	1	A tile at this zoomlevel is 1/9th of a cube face 	
3	F	0	2	A tile at this level is 1/16th of a cube face 	

2.2 Metadata

All to the imagery related data is available one datapackage XML file. The structure of the XML elements in the XML file is the following:

- A **DataPackage** element containing a **DataSets** element.
- A **DataSets** element containing one or more **DataSet** elements.
- One or more **DataSet** elements containing a **Recordings** element.
- **Recordings** elements containing zero or more **Recording** elements.

All the XML elements are defined below.

2.2.1 DataPackage Element

Defines a data package.

Child elements:

Element	Description
GeneratedAt	The data and time at which the data package is generated.
Datasets	The datasets contained in the data package.

2.2.2 Datasets Element

Defines a collection of datasets.

Child elements:

Element	Description
Dataset	A dataset in the collection of datasets.

2.2.3 Dataset Element

Defines a dataset of panorama recordings.

Child elements:

Element	Description
Name	The name of the dataset.
Recordings	The recordings in the dataset.
ExpiryPolygon	The polygon that specifies the area in which existing recordings must be expired when this dataset is installed.
Special	A flag that indicates if this dataset is special (e.g. exclusively acquired for a customer).
Year	The recording year of the dataset.

2.2.4 Recordings Element

Defines a collection of panorama recordings.

Child elements:

Element	Description
Recording	A recording in the collection of recordings.

2.2.5 Recording Element

Defines a panorama recording.

Child elements:

Element	Description
Imageld	The readable identification of the recording.
RecordedAt	The timestamp and offset to UTC of the recording.
Latitude	The latitude of the recording location (in degrees) in the specified coordinate system.
LatitudePrecision	The precision of the latitude coordinate (in meters).
Longitude	The longitude of the recording location (in degrees) in the specified coordinate system.
LongitudePrecision	The precision of the longitude coordinate (in meters).
Height	The height of the recording location (in meters) in the specified coordinate system.
HeightPrecision	The precision of the height (in meters).
Orientation	The orientation of the recording relative to the geographic north (in degrees).
OrientationPrecision	The precision of the orientation (in degrees).
ExpiredAt	The data when the recording is expired or null if the recording is actual.
GroundLevelOffset	The offset of the camera above the ground level (in meters).
ProductType	The type of the recording (Cyclorama, Aquarama).
RecorderDirection	The direction of the recorder (e.g. the car) relative to the geographic north (in degrees).
RecorderGeneration	The generation of the recording system (e.g. DCR9).
RecordingSystem	The identification of the recording system.
SRID	The spatial reference system identifier of the coordinate system in which the recording locations are specified.
SystemCalibration	The identification of the calibration of the whole recording system.
TileSchema	TileSchema used for image
Images	The collection of detail images of the recording (if available).