**INTERNATIONAL ORGANISATION FOR STANDARDISATION**

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**ISO/IEC JTC1/SC29/WG11**

**CODING OF MOVING PICTURES AND AUDIO**

**ISO/IEC JTC1/SC29/WG11 MPEG2015/** **N16333**

**June 2016, Geneva, CH**

**Source: 3DG**

**Title: Draft\_Dataset\_for\_Point\_Cloud\_Coding (PCC)**

**Status: Approved**

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# Introduction

While so far the most common way of representing the visual component of the world has been to take the output of a camera, compress it for transmission and storage using one of the MPEG video coding standards and eventually decode it and present it on 2D displays, there are now more and more devices that capture and present 3D representations of the world.

A point cloud is a set of points in a 3D space each with associated data relative to the value of the two angles (phi and theta) used in the acquisition, e.g. color, material properties and/or other attributes. Point clouds can be used to reconstruct an object or a scene as a composition of such points. Point clouds can be captured using multiple cameras and depth sensors in various setups and may be made up of thousands up to billions of points in order to represent realistically reconstructed scenes.

As compression technologies are needed to reduce the amount of data required to represent a point cloud, MPEG is planning to develop a Point Cloud Compression standard targeting lossy compression for use in real-time communications, lossless compression for GIS, CAD and cultural heritage applications, with attributes of efficient geometry and attributes compression, scalable/progressive coding, coding of sequences of point clouds captured over time, and random access to subsets of the point cloud.

The acquisition of Point Clouds is outside of the scope of this standard.

# Test material Datasets

Below is a list of the 3D point cloud and mesh content sequences to be used, organized in sections based on the data characteristics. All datasets will be uploaded to the MPEG Content repository.

URL: <http://157.159.160.118/MPEG/PCC/DataSets/pointCloud/>

**Table 1 - Test Sequences provided by CERTH**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Resolution** | **Sequence name** | **fps** | **Frames to be encoded** | **Copyright conditions (Annex A)** |
| ~300K | Dimitris2-Zippering | 24 | ~500 | CC2 |
| ~300K | Alex-Zippering | 24 | ~500 | CC2 |
| ~300K | Christos-Zippering | 24 | ~500 | CC2 |
| ~300K | Dimitris2-PoissonHigh | 24 | ~500 | CC2 |
| ~300K | Alex-PoissonHigh | 24 | ~500 | CC2 |
| ~300K | Christos-PoissonHigh | 24 | ~500 | CC2 |

**Table 2 - Test Sequences provided by Microsoft**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Resolution** | **Sequence name** | **fps** | **Frames to be encoded** | **Copyright conditions (Annex A)** |
|  | Andrew |  |  |  |
|  | David |  |  |  |
|  | Phil |  |  |  |
|  | …. |  |  | … |

**Table 3 - Test Sequences provided by QueenMary**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Resolution** | **Sequence name** | **fps** | **Frames to be encoded** | **Copyright conditions (Annex A)** |
|  | PointClouds\_Kinect2 |  |  | CC1 |
|  | …. |  |  |  |

**Table 4 - Test Material provided by IMT (Culture 3D Clouds project)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Resolution** | **Sequence name** | **Number of Points** | **Copyright conditions (Annex A)** |
|  | 00001.ply |  | CC3 |
|  | 00002.ply |  | CC3 |
|  | … |  | CC3 |
|  | 00077.ply |  | … |

**Table 5 - Test Material provided by UPM (Bridget project)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Resolution** | **Sequence name** | **Number of Points** | **Copyright conditions (Annex A)** |
|  | Arco Valentino |  |  |
|  | Palazzo Carignano |  |  |
|  | Villa La Tresoriera |  |  |

**Annex A: Data Set Licensing**

**CC1: Queen Mary University of London (QMUL) (BSD)**

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\*   \* All work that makes use of this data should cite the following publications:

\*   \* A. Doumanoglou, D. Alexiadis, D. Zarpalas, P. Daras,

\*   \* "Towards Real-Time and Efficient Compression of Human Time-Varying-Meshes",

\*   \* IEEE Transactions on Circuits and Systems for Video Technology, Vol: 24, Issue: 12, Dec 2014

\*    \* A. Doumanoglou, D. Alexiadis, S. Asteriadis, D. Zarpalas,

\*    \* P. Daras, "On human time-varying mesh compression exploiting activity-related characteristics",

\*    \* IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP),

\*    \* FLORENCE, ITALY, MAY 4-9, 2014

\*

\*    \* examples include visual quality evaluation comparison, compression algorithm evaluation,

\*    \* rendering evaluation, networking transmission evaluation etc.....

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