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**Information technology** — **Coded representation of immersive media (MPEG-I) — Part 18: Carriage of Geometry-based Point Cloud Compression Data — Amendment 1 : Support of Temporal Scalability**

CD stage

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# *Change 1:* *Temporal scalability support of in timed G-PCC data*

*Add following clauses after clause 7.*

# X. Temporal scalability in G-PCC content

## **X.1 Temporal levels**

A G-PCC temporal level is a subset of the frames in the G-PCC bitstream that constitute a sub-sequence with a frame rate that is smaller than that of the actual bitstream sequence. Each G-PCC frame may be associated with a particular temporal level. Each temporal level is identified by a unique temporal level identifier with the first temporal level having the id 0.

A G-PCC bitstream may be carried/stored in one or more temporal level tracks. Necessary information to describe the temporal level tracks and the mapping between samples and temporal level may be available in the file. A G-PCC sample belonging to a certain temporal level shall not have any decoding dependency on any G-PCC samples present in higher temporal levels. Prior to decoding process, necessary samples are extracted from the temporal level track(s) and combined into a single conforming bitstream. When extracting a G-PCC bitstream for a target temporal level with an id greater than 0 and target tile ids, data from all lower temporal levels samples are also included in the resulting bitstream, and the required tracks are selected accordingly during the extraction process.

Figure A shows an example of enabling the playback of a G-PCC bitstream at 30 fps, 45 fps, and 60 fps when the G-PCC bitstream are divided into three temporal levels; temporal level 0 represents a 30 fps subsequence, and temporal levels 1 and 2 represent a 15 fps subsequence, respectively.



Figure A. Temporal levels in a G-PCC sequence

## **X.2 Temporal level track**

A G-PCC track containing GPCCScalabilityInfoBox in the sample entry is referred as temporal level track carrying a subset of the bitstream.

**X.2.1 G-PCC scalability information box**

#### **X.2.1.1 Definition**

Box Types: 'gsci'  
Container: GPCCSampleEntry ('gpe1', 'gpeg', 'gpc1', 'gpcg', 'gpcb', 'gpeb')   
Mandatory: No  
Quantity: Zero or one

This box signals scalability information for a G-PCC track. When this box is present in tracks with sample entries of type 'gpe1', 'gpeg', 'gpc1', 'gpcg', 'gpcb', and 'gpeb', it indicates that temporal scalability is supported and provides information about the temporal levels present in that G-PCC tracks. This box shall not be present in a track when temporal scalability is not used. This box shall not be present in tracks with sample entries of type 'gpe1', 'gpeg', 'gpc1', 'gpcg', 'gpcb', and 'gpeb', when all the frames are signaled in one temporal level.

This box shall not be present in tracks with a sample entry of type 'gpt1'.

For track with sample entry type 'gpc1' or 'gpcg', GPCCScalabilityInfoBox may be present only in the track that carries geometry component. For track with sample entry type 'gpc1' or 'gpcg' that carries attribute component, GPCCScalabilityInfoBox shall not be present but it is inferred from the GPCCScalabilityInfoBox in the sample entry of the corresponding track that carries the geometry component.

[Ed.: The presence of multiple temporal level tracks with sample entry type 'gpe1', 'gpeg' are for further study as the current definition of tracks with sample entry type ‘gpe1’, ‘gpeg’ are defined as single track. The definition of those tracks has to be changed to tracks representing all G-PCC components data.]

#### **X.2.1.2 Syntax**

aligned(8) class GPCCScalabilityInfoBox   
 extends FullBox('gsci', version = 0, 0) {

unsigned int(1) multiple\_temporal\_level\_tracks\_flag;unsigned int(1) frame\_rate\_present\_flag;

bit(3) reserved = 0;

unsigned int(3) num\_temporal\_levels;

for(i=0; i < num\_temporal\_levels; i++){

bit(5) reserved;

unsigned int(3) temporal\_level\_id;

if (frame\_rate\_present\_flag){  
 unsigned int(16) frame\_rate;

}

}

}

#### **X.2.1.3 Semantics**

multiple\_temporal\_level\_tracks\_flag indicates the presence of multiple temporal level tracks in the file. Value 1 indicates the G-PCC bitstream frames are grouped into multiple temporal level tracks. Value 0 indicates all temporal levels samples are present in a track.

frame\_rate\_present\_flag indicates the presence of average frame rate information. Value 1 indicates the average frame rate information is present. Value 0 indicates the average frame rate information is not present.

num\_temporal\_levels indicates number of temporal levels present in the samples of the respective track. For ‘gpcb’and ‘gpeb’ track types this field value indicates the maximum number of temporal levels the G-PCC frames are grouped into. The minimum value of num\_temporal\_levels shall be 1.

temporal\_level\_id indicates temporal level identifier of a G-PCC sample in the respecitve track.

The following applies to the value of temporal\_level\_id:

* The value of temporal\_level\_id shall be in increment of 1. For a temporal level with temporal id *x*, the immediate next temporal level shall have temporal id equal to *x + 1*.
* When a track TrackB is said to be the next temporal level track of another track TrackA, TrackB shall contains samples with temporal id equal to the highest temporal id in TrackA plus 1.

frame\_rate gives the average frame rate of a temporal level in units of frames / (256 seconds). Value 0 indicates an unspecified average frame rate.

**X.2.2 Temporal level track samples**

The presentation time of samples present in different temporal level tracks belonging to the same point cloud component shall be different. For example, the presentation time of geometry component samples present in temporal level 0 and temporal level 1 geometry component tracks shall be different.

The smallest composition time difference between two consecutive samples in the temporal level Y shall be equal to or greater than the smallest composition time difference between two consecutive samples in the temporal level X when Y is greater than X.

**X.2.3 Temporal level sample group**

The temporal level sample grouping ('tele') defined in ISO/IEC 14496-12 provides a codec-independent sample grouping that can be used to group G-PCC samples in a track (and potential track fragments) according to temporal level, where samples of one temporal level have no coding dependencies on samples of other temporal levels.

The temporal level sample group 'tele' specified in ISO/IEC 14496-12 [2] shall be used to indicate the temporal level identifier value. When the G-PCC data is carried using multiple temporal level tracks, the 'tele' sample group shall be present only in tracks that carry geometry data. When the 'tele' sample group is present in a G-PCC track, the samples belonging to a temporal level identifier shall be mapped to the sample group description index equal to temporal level identifier plus 1. The sample description box shall signal the sample description for all the levels signaled in the decoder configuration record.

The temporal level of a sample in an attribute track is identical to the temporal level of the corresponding sample, i.e., the sample with the same composition time stamp, in the referenced geometry track.

**X.2.4 Temporal scalability track grouping**

#### **X.2.4.1 Definition**

The temporal level tracks carrying the geometry component of a G-PCC bitstream may be grouped into a G-PCC temporal scalability track group.

When G-PCC bitstreams are encapsulated using multiple temporal level tracks and there are one or more alternative tracks, all temporal level tracks carrying the geometry component of the same G-PCC bitstream shall be grouped into the same G-PCC temporal scalability track group.

A GPCCTemporalScalabilityGroupBox may be present in a track with sample entry type 'gpc1' or 'gpcg'. When GPCCTemporalScalabilityGroupBox is present, only the tracks with the same track\_group\_id of a GPCCTemporalScalabilityGroupBox shall be combined to get a bitstream with more temporal levels. When a geometry track contains a GPCCTemporalScalabilityGroupBox, the combination of geometry tracks within the same temporal scalability track group implies the combination of attribute tracks which are referenced by the geometry tracks.

#### **X.2.4.2 Syntax**

aligned(8) class GPCCTemporalScalabilityGroupBox

extends TrackGroupTypeBox('gtsg') {

// track\_group\_id is inherited from TrackGroupTypeBox;

}

## **X.3 Temporal level tile track**

**X.3.1 G-PCC tile track scalability information box**

A G-PCC tile track containing GPCCTileScalabilityInfoBox in the sample entry is referred as temporal level tile track and it carries only a subset of the bitstream.

#### **X.3.1.1 Definition**

Box Types: 'gtsi'  
Container: SampleEntry ('gpt1')   
Mandatory: No  
Quantity: Zero or one

This box contains the scalability information for a G-PCC tile track with sample entry type ‘gpt1’. When temporal scalability is not supported, this box shall not be present in any of G-PCC tile tracks. This box may only be present in a tile track when the sample entry of the associated G-PCC tile base track contains a GPCCScalabilityInfoBox. This box shall not be present in the G-PCC tile track when the GPCCScalabilityInfoBox is not present in the sample entry of the associated G-PCC tile base track.

The following applies:

* If this box is present in the sample entry of a G-PCC tile track, it indicates that temporal scalability is supported and the number of temporal levels in the G-PCC tile track is less than the number of temporal levels signaled in GPCCScalabilityInfoBox present in the associated G-PCC tile base track.
* Otherwise, if this box is not present in the sample entry of a G-PCC tile track and GPCCScalabilityInfoBox is present in the associated G-PCC tile base track, the temporal scalability is supported and the temporal scalability information for the G-PCC tile track is derived from the GPCCScalabilityInfoBox in the associated G-PCC tile base track. The number of temporal levels and temporal level identifiers for the G-PCC tile track are inferred to be equal to the number of temporal levels and temporal level identifiers signalled in GPCCScalabilityInfoBox,respectively.
* Otherwise (this box is not present in a G-PCC tile track and GPCCScalabilityInfoBox is not present in the associated G-PCC tile base track), temporal scalability is not supported.

This box may only be present in the G-PCC geometry tile tracks and shall not be present in the G-PCC attribute tile tracks, but the temporal level information is inferred from the GPCCTileScalabilityInfoBox present in the sample entry of the corresponding G-PCC geometry tile track or from the GPCCScalabilityInfoBox present in the sample entry of the associated G-PCC tile base track.

**X.3.2 Syntax**

aligned(8) class GPCCTileScalabilityInfoBox   
 extends FullBox('gtsi', version = 0, 0) {

bit(5) reserved;

unsigned int(3) num\_temporal\_levels;

for(i=0; i < num\_temporal\_levels; i++){

bit(5) reserved;

unsigned int(3) temporal\_level\_id;

}

}

**X.3.3 Semantics**

num\_temporal\_levels indicates the number of temporal levels present in the samples of the respective tile track.

temporal\_level\_id indicates a temporal level identifier of the samples signalled in the respective tile track.

# *Change 2: player behavior with temporal support*

*Add following clause.*

# Y. Player behavior with temporal scalability support

For handling G-PCC bitstream stored in an ISOBMFF file with temporal level tracks, the G-PCC player is provided with a target temporal level and target tile ids, if the file contains G-PCC tile tracks. When extracting a G-PCC bitstream for a target temporal level with an id greater than 0 and target tile ids, data from all lower temporal levels samples are also included in the resulting bitstream, and the required tracks are selected accordingly during the extraction process. The extracted G-PCC samples are used to form the output bitstream. The extracted G-PCC samples in the output bitstream shall be in increasing order of the decoding time.

The extraction process may extract samples from one or more temporal level tracks, and it combines the extracted samples into one single bitstream. Encoder may split a single G-PCC bitstream and store it into multiple temporal level tracks or multiple temporal level tile tracks and transmits the file over the network. Prior to decoding process, G-PCC player extracts samples from the temporal level tracks, combines them into an output bitstream, and feeds it to the single decoder.

NOTE: The player feeds the output bitstream to a single decoder as there is no scalability concept in G-PCC codec. However, implementation with multiple decoders may be possible but out of the scope of this specification.

[Ed.: For extraction process and combining the extracted samples into the output bitstream, there is no major changes is expected to parameter sets nor any need for generating new parameter sets. Exact mechanism of handling the parameter sets is for further study.]

NOTE: Example of extraction process is given in Annex xx.

*Add the following clause after Annex E.*

# Annex xx: Extraction Process (Informative)

To extract samples from temporal level tracks, the G-PCC player is provided with a given target temporal level and a variable lastPresentationTime. The process is as follows:

1. The G-PCC player identifies the set of tracks in which each of the identified track contains temporal level that is less than or equal to the given target temporal level.
2. From the set of tracks, the player extracts samples that belong to temporal level that is less than or equal to the given target temporal level and have presentation time greater than the value of lastPresentationTime.
3. The extracted samples are delivered to the decoder according to their decoding time.
4. Once decoded, the decoded samples are delivered for rendering according to their presentation / composition time.

To extract samples from temporal level tile tracks, the G-PCC player is provided with a given target temporal level, target tile ids, and a variable lastPresentationTime. The process is as follows:

1. The G-PCC player identifies a set of temporal level tile tracks in which each of the identified tile track contains a tile id which is one of target tile ids.
2. The player refines the selection criteria of the tile tracks in step 1 by selecting the set of tile tracks in which each of the identified track contains temporal level that is less than or equal to the given target temporal level.
3. From the set of selected tile tracks, the player extracts samples that belong to temporal level that is less than or equal to the given target temporal level, contains tile id which is one of the target tile ids, and have presentation time greater than the value of lastPresentationTime.
4. The extracted samples are delivered to the decoder according to their decoding time.
5. Once decoded, the decoded samples are delivered for presentation according to their presentation / composition time.

When the extraction process is invoked for the first time, the value of lastPresentationTime is set equal to the least possible presentation time.

When the target parameters (i.e., target temporal level and / or target tile ids) changes, the players invoke the following process:

1. Set the value of targetChangeTime equal to the time of the new target parameters is given plus a fixed amount of offset time. The fixed amount of offset time can be set externally. For example, this can be a one of configuration parameter for the player operation
2. Discard the following samples:
3. Samples that have been extracted but not yet decoded and that have presentation time greater than the value of targetChangeTime.
4. Samples that have been decoded but not yet presented and that have presentation time greater than the value of targetChangeTime.
5. Delivers the remaining extracted samples to the decoder according to their decoding time and then delivers the decoded samples for presentation according to their presentation time.
6. Set the value of lastPresentationTime to be equal to the presentation time of the last presented sample and invoke the extraction process based on the new target parameter(s).

Figure B presents an example of how G-PCC frames are divided into multiple temporal level tile tracks during encapsulation and how the G-PCC samples are extracted from the temporal level tile tracks. In this example, each G-PCC frame is composed of eight tiles and all the G-PCC frames in the bitstream are grouped into three temporal levels. The G-PCC samples are encapsulated into an ISOBMFF file using temporal level tile tracks. Each temporal level tile track represents G-PCC samples of a specific tile belonging to a specific temporal level. Each tile track carries all the G-PCC components data.

The G-PCC player selects the corresponding temporal level tile tracks based on the given target temporal level and target tile ids which are based on the user’s viewing orientation. The player may initially select tile tracks with a target temporal level id equal to 0 and enhance the temporal resolution by selecting additional tile tracks with temporal level 1 and higher at later stage. In this example, the G-PCC player initially receives tile tracks 1, 2, 5 and 6 with a target temporal level id 0. The player extracts the G-PCC samples of tiles 1, 2, 5 and 6 for a specific presentation time from those tile tracks. To enhance the user’s quality of experience, the player may receive additional tile tracks with temporal level id 1 and 2 for tiles 1, 2, 5 and 6 and extract the G-PCC samples of those tiles for a specific presentation time from the tile tracks.



Figure B. Example of G-PCC samples extraction from temporal level tile tracks

# *Change3: Signaling for temporal scalable G-PCC content in DASH*

*Add the following clause after clause 10.3*

## **10.4 Signaling temporal level information**

**10.4.1 GPCCTemporalLevelId descriptor**

A **SupplementalProperty** element with a @schemeIdUri attribute equal to "urn:mpeg:mpegI:gpcc:2020:temporallevelIds" is referred to as GPCCTemporalLevelId descriptor. A GPCCTemporalLevelId descriptor is used to identify the different temporal levels present in a Representation of a G-PCC content. At most one GPCCTemporalLevelId descriptor shall be present at the Representation level for the G-PCC media when the G-PCC media is stored in multiple temporal level tracks.

At most one GPCCTemporalLevelId descriptor may be present at the Representation level for the G-PCC media when the G-PCC component media samples are divided into multiple temporal levels and all temporal level samples are stored in a single temporal level track. The GPCCTemporalLevelId descriptor shall not be present at the Representation level when the G-PCC media samples are not divided based on temporal levels.

The @value attribute of the GPCCTemporalLevelId descriptor shall not be present. The GPCCTemporalLevelId descriptor shall include the attributes defined in Table A.

Table A Attributes for the GPCCTemporalLevelId descriptor

|  |  |  |  |
| --- | --- | --- | --- |
| **Attributes for GPCCTemporalLevelId descriptor** | **Use** | **Data type** | **Description** |
| gpcc:@temporal\_level\_Ids | M | xs:UIntVectorType | A list of space-separated temporal level identifiers for the temporal levels present in the G-PCC track of the Representation stream. |
| Legend:  For attributes: M=Mandatory, O=Optional, OD=Optional with Default Value, CM=Conditionally Mandatory.  For elements: <minOccurs>..<maxOccurs> (N=unbounded)  Elements are **bold**; attributes are non-bold and preceded with an @. | | | |

*In Annex B, replace*

|  |
| --- |
| <?xml version="1.0" encoding="UTF-8"?>  <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"  targetNamespace="urn:mpeg:mpegI:gpcc:2021"  xmlns:v3c="urn:mpeg:mpegI:gpcc:2021"  elementFormDefault="qualified">  <xs:attribute name="gpcId" type="xs:string" use="optional" />  <xs:attribute name="tile\_Ids" type="xs:UIntVectorType" use="required" />  <xs:attribute name="temporal\_level\_Ids" type="xs:UIntVectorType" use="required" />  <xs:element name="component" type="gpcc:gpccComponentType"/>  <xs:complexType name="gpccComponentType">  <xs:attribute name="type" type="xs:string" use="required" />  <xs:attribute name="attr\_type" type="xs:unsignedByte" use="optional" />  <xs:attribute name="attr\_index" type="xs:unsignedByte" use="optional" />  <xs:attribute name="tile\_ids" type="xs:UIntVectorType" use="optional" />  </xs:complexType>  <xs:element name="gpsr" type="gpcc:spatialRegionMapType" />    <xs:complexType name="spatialRegionMapType">   <xs:element name="spatialRegion" type="gpcc:spatialRegionType" minOccurs="1"/>   </xs:complexType>  <xs:complexType name="spatialRegionType">   <xs:attribute name="id" type="xs:unsignedShort" use="required" />   <xs:attribute name="x" type="xs:int" use="optional" default="0" />   <xs:attribute name="y" type="xs:int" use="optional" default="0" />   <xs:attribute name="z" type="xs:int" use="optional" default="0" />  <xs:attribute name="dx" type="xs:int" use="required" />   <xs:attribute name="dy" type="xs:int" use="required" />   <xs:attribute name="dz" type="xs:int" use="required" />  <xs:attribute name="tileIds" type="xs:UIntVectorType" use="optional" />   </xs:complexType>  <xs:attribute name="viewport\_id" type="xs:integer" use="optional" />  <xs:element name="ViewportInfo" type=" gpcc:ViewportInfoType"/>  <!-- viewport -->  <xs:complexType name="ViewportInfoType">  <xs:attribute name="vp\_pos" type="FloatVectorType" use="required"  minLength="3" maxLength="3"/>  <xs:attribute name="vp\_quat" type="IntVectorType" use="required"  minLength="3" maxLength="3"/>  <xs:attribute name="vp\_center\_view\_flag" type="xs:boolean" use="optional"/>  <xs:attribute name="vp\_left\_view\_flag" type="xs:boolean" use="optional"/>  <xs:attribute name="viewport\_description" type="xs:string" use="optional"/>  <xs:attribute name="viewport\_type" type="xs:integer" use="optional" default="0"/>  <xs:anyAttribute processContents="skip"/>  </xs:complexType>  </xs:schema> |

*with*

|  |
| --- |
| <?xml version="1.0" encoding="UTF-8"?>  <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"  targetNamespace="urn:mpeg:mpegI:gpcc:2021"  xmlns:v3c="urn:mpeg:mpegI:gpcc:2021"  elementFormDefault="qualified">  <xs:attribute name="gpcId" type="xs:string" use="optional" />  <xs:attribute name="tile\_Ids" type="xs:UIntVectorType" use="required" />  <xs:attribute name="temporal\_level\_Ids" type="xs:UIntVectorType" use="required" />    <xs:element name="component" type="gpcc:gpccComponentType"/>  <xs:complexType name="gpccComponentType">  <xs:attribute name="type" type="xs:string" use="required" />  <xs:attribute name="attr\_type" type="xs:unsignedByte" use="optional" />  <xs:attribute name="attr\_index" type="xs:unsignedByte" use="optional" />  <xs:attribute name="tile\_ids" type="xs:UIntVectorType" use="optional" />  </xs:complexType>  <xs:element name="gpsr" type="gpcc:spatialRegionMapType" />    <xs:complexType name="spatialRegionMapType">   <xs:element name="spatialRegion" type="gpcc:spatialRegionType" minOccurs="1"/>   </xs:complexType>  <xs:complexType name="spatialRegionType">   <xs:attribute name="id" type="xs:unsignedShort" use="required" />   <xs:attribute name="x" type="xs:int" use="optional" default="0" />   <xs:attribute name="y" type="xs:int" use="optional" default="0" />   <xs:attribute name="z" type="xs:int" use="optional" default="0" />  <xs:attribute name="dx" type="xs:int" use="required" />   <xs:attribute name="dy" type="xs:int" use="required" />   <xs:attribute name="dz" type="xs:int" use="required" />  <xs:attribute name="tileIds" type="xs:UIntVectorType" use="optional" />   </xs:complexType>  <xs:attribute name="viewport\_id" type="xs:integer" use="optional" />  <xs:element name="ViewportInfo" type=" gpcc:ViewportInfoType"/>  <!-- viewport -->  <xs:complexType name="ViewportInfoType">  <xs:attribute name="vp\_pos" type="FloatVectorType" use="required"  minLength="3" maxLength="3"/>  <xs:attribute name="vp\_quat" type="IntVectorType" use="required"  minLength="3" maxLength="3"/>  <xs:attribute name="vp\_center\_view\_flag" type="xs:boolean" use="optional"/>  <xs:attribute name="vp\_left\_view\_flag" type="xs:boolean" use="optional"/>  <xs:attribute name="viewport\_description" type="xs:string" use="optional"/>  <xs:attribute name="viewport\_type" type="xs:integer" use="optional" default="0"/>  <xs:anyAttribute processContents="skip"/>  </xs:complexType>  </xs:schema> |

*Add the following example after clause Annex G.4*

**G.5 Temporal level indication**

An example of a DASH MPD file signaling a G-PCC content with three temporal levels encapsulated into two temporal level tracks is as shown below.

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| --- |
| <?xml version="1.0" encoding="UTF-8"?>  <MPD   xmlns="urn:mpeg:dash:schema:mpd:2011"   xmlns:gpcc="urn:mpeg:mpegI:gpcc:2020"  type="static"  mediaPresentationDuration="PT10S"  minBufferTime="PT1S"  profiles="urn:mpeg:dash:profile:isoff-on-demand:2011">  <Period>   <!-- GPCC Geometry AdaptationSet -->   <AdaptationSet id="1" codecs="gpc1">   <Representation id="1">   <SupplementatlProperty schemeIdUri="urn:mpeg:mpegI:gpcc:2020:GPCCTemporalLevelId" temporal\_level\_Ids="0 1"/>   ...  </Representation>   <Representation id="2">   <SupplementatlProperty schemeIdUri="urn:mpeg:mpegI:gpcc:2020:GPCCTemporalLevelId" temporal\_level\_Ids="2"/>  ...  </Representation>  </AdaptationSet>  <!—Attribute 0 Component AdaptationSet -->  <AdaptationSet id="2" codecs="gpc1">   <EssentialProperty schemeIdUri="urn:mpeg:dash:preselection:2016" />   <EssentialProperty schemeIdUri="urn:mpeg:mpegI:gpcc:2020:component">   <gpcc:component component\_type="attr" attribute\_type="0" attr\_index="0"/>   </EssentialProperty>   <Representation id="3">  <SupplementatlProperty schemeIdUri="urn:mpeg:mpegI:gpcc:2020:GPCCTemporalLevelId" temporal\_level\_Ids="0 1"/>  ...   </Representation>  <Representation id="4">   <SupplementatlProperty schemeIdUri="urn:mpeg:mpegI:gpcc:2020:GPCCTemporalLevelId" temporal\_level\_Ids="2"/>  ...   </Representation>  </AdaptationSet>    <!-- Attribute 1 Component AdaptationSet -->  <AdaptationSet id="3" codecs="gpc1">   <EssentialProperty schemeIdUri="urn:mpeg:dash:preselection:2016" />   <EssentialProperty schemeIdUri="urn:mpeg:mpegI:gpcc:2020:component">   <gpcc:component component\_type="attr" attribute\_type="1" attr\_index="1"/>   </EssentialProperty>   <Representation id="5">  <SupplementatlProperty schemeIdUri="urn:mpeg:mpegI:gpcc:2020:GPCCTemporalLevelId" temporal\_level\_Ids="0 1"/>  ...   </Representation>  <Representation id="6">  <SupplementatlProperty schemeIdUri="urn:mpeg:mpegI:gpcc:2020:GPCCTemporalLevelId" temporal\_level\_Ids="2"/>  ...   </Representation>  </AdaptationSet>    <!-- Attribute 2 Component AdaptationSet -->  <AdaptationSet id="4" codecs="gpc1">   <EssentialProperty schemeIdUri="urn:mpeg:dash:preselection:2016" />   <EssentialProperty schemeIdUri="urn:mpeg:mpegI:gpcc:2020:component">   <gpcc:component component\_type="attr" attribute\_type="4" attr\_index="2" tile\_ids="1 2 3"/>   </EssentialProperty>   <Representation id="7">  <SupplementatlProperty schemeIdUri="urn:mpeg:mpegI:gpcc:2020:GPCCTemporalLevelId" temporal\_level\_Ids="0 1"/>  ...   </Representation>  <Representation id="8">  <SupplementatlProperty schemeIdUri="urn:mpeg:mpegI:gpcc:2020:GPCCTemporalLevelId" temporal\_level\_Ids="2"/>  ...   </Representation>  </AdaptationSet>      <!—G-PCC Preselections -->   <Preselection id="1" tag="1" preselectionComponents="1 2 3 4" codecs="gpc1">   </Preselection>  </Period>  </MPD> |