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Information technology — Media context and control —

Part 4: Virtual world object characteristics

Technologies de l'information — Contrôle et contexte de supports —

Partie 4: Caractéristiques d'objet du monde virtuel

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

ISO/IEC 23005-4 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

ISO/IEC 23005 consists of the following parts, under the general title *Information technology — Media context and control*:

— *Part 1: Architecture*

— *Part 2: Control information*

— *Part 3: Sensory information*

— *Part 4: Virtual world object characteristics*

— *Part 5: Data formats for interaction devices*

— *Part 6: Common types and tools*

— *Part 7: Conformance and reference software*

Introduction

ISO/IEC 23005 (MPEG-V) provides an architecture and specifies associated information representations to enable interoperability between virtual worlds, e.g. digital content provider of a virtual world, gaming (serious), simulation, DVD, and the real world, e.g. sensors, actuators, vision and rendering, robotics (e.g. for revalidation), (support for) independent living social and welfare systems, banking, insurance, travel, real estate, rights management and many others.

Virtual worlds (often referred to as 3D3C for 3D visualization and navigation and the 3Cs of Community, Creation and Commerce) integrate existing and emerging media technologies (e.g. instant messaging, video, 3D, VR, AI, chat, voice, etc.) that allow for the support of existing and the development of new kinds of social networks. The emergence of virtual worlds as platforms for social networking is recognized by businesses as an important issue for at least two reasons:

1) it offers the power to reshape the way companies interact with their environments (markets, customers, suppliers, creators, stakeholders, etc.) in a fashion comparable to the Internet;

2) it allows for the development of new (breakthrough) business models, services, applications and devices.

Each virtual world, however, has a different culture and audience making use of these specific worlds for a variety of reasons. These differences permit users to have unique experiences.

Although realistic experiences have been achieved via devices such as 3D audio/visual devices, it is hard to realize sensory effects only with presentation of audiovisual contents. The addition of sensory effects leads to even more realistic experiences in the consumption of audiovisual contents. This will lead to the application of new media for enhanced experiences of users in a more realistic sense.

Such new media will benefit from the standardization of control and sensory information which includes sensory effect metadata, sensory device capabilities/commands, user sensory preferences, and various delivery formats. The MPEG-V architecture can be applicable for various business models for which audiovisual contents can be associated with sensory effects that need to be rendered on appropriate sensory devices.

The International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) draw attention to the fact that it is claimed that compliance with this document may involve the use of patents.

ISO and the IEC take no position concerning the evidence, validity and scope of these patent rights.

The holders of these patent rights have assured ISO and the IEC that they are willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statements of the holders of these patent rights are registered with ISO and the IEC. Information may be obtained from the companies listed in Annex E.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights other than those identified in Annex E. ISO and the IEC shall not be held responsible for identifying any or all such patent rights.

Information technology — Media context and control —

Part 4:
Virtual world object characteristics

1 Scope

This part of ISO/IEC 23005 specifies syntax and semantics of description schemes and descriptors used to characterize a virtual world object related metadata, making it possible to migrate a virtual world object (or only its characteristics) from one virtual world to another and/or to control a virtual world object in a virtual world by real world devices.

The system architecture is depicted in Figure 1 and the scope of this part of ISO/IEC 23005 is highlighted. That is, only the information representation that acts as an input to the possible Adaptation VV and Adaptation RV/VR, as defined in ISO/IEC 23005-1, is specified in this part of ISO/IEC 23005.

NOTE The actual Adaptation VV and Adaptation RV/VR are deliberately informative and left open for industry competition.

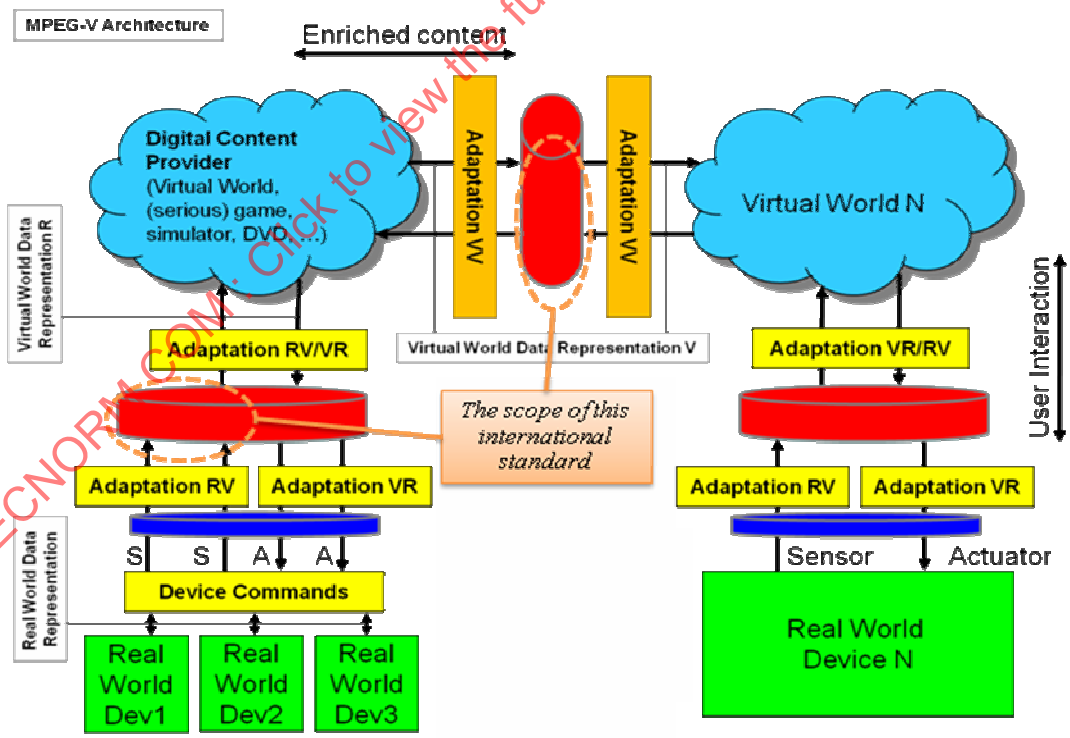


Figure 1 – System Architecture

2 Normative references

The following referenced documents are indispensable for the specification of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 15938-5, *Information technology — Multimedia content description interface — Part 5: Multimedia description schemes*

ISO/IEC 21000-5, *Information technology — Multimedia framework (MPEG-21) — Part 5: Rights Expression Language*

ISO/IEC 23005-6, *Information technology — Media context and control — Part 6: Common types and tools*

3 Terms, definitions, symbols, and abbreviated terms

3.1 Terms and definitions

For the purpose of this document, the terms and definitions given in ISO/IEC 23005-6 and the following apply.

3.1.1
avatar
entity that can be used as a (visual) representation of the user inside the virtual environments

EXAMPLE A player's representation in the video game and human or fantastic representations of a person's self in non-gaming online worlds.

3.1.2
avatar metadata
defines the description schemes and descriptors to represent **avatars** (3.1.1)

3.1.3
Extensible Markup Language
set of rules for encoding documents in machine-readable form

3.1.4
Rights expression language
machine-readable language that declares rights and permissions

3.1.5
Uniform Resource Identifier
compact string of characters for identifying an abstract or physical resource

3.1.6
Uniform Resource Locator
compact string representation for a resource available via the Internet

3.1.7
virtual object
entity that is any (visual) object except for avatars in the virtual environment

3.1.8
virtual object metadata
defines the description schemes and descriptors to represent **virtual objects** (3.1.7)

3.1.9
virtual world object
entity that includes avatars and virtual objects in the virtual world

3.1.10
virtual world object metadata
defines the description schemes and descriptors to represent **virtual world objects** (3.1.9)

3.2 Symbols and abbreviated terms

For the purposes of this document, the following symbols and abbreviated terms apply.

MPEG-21: multimedia framework (ISO/IEC 21000-5)

MPEG-7: multimedia content description interface (ISO/IEC 15938)

REL: rights expression language

URI: Uniform Resource Identifier

URL: Uniform Resource Locator

XML: Extensible Markup Language

4 Virtual world object metadata

4.1 Introduction

A specificity of Virtual Environments (VEs) with respect to other multimedia applications consists in the representation of virtual world objects inside the environment. The "virtual world object" can be classified into two types: avatars and virtual objects. An avatar can be used as a (visual) representation of the user inside the environment. These virtual world objects serve different purposes:

- characterize various kinds of objects within the VE,

- provide an interaction with the VE.

In general, creating an object is a time consuming task. Even though some components of the object may be related to the virtual environment (e.g. the avatar wearing a medieval suite in a contemporary style VE may be inappropriate), there is a real need of being able to create the object once and import/use it in different VEs. In addition, it should be possible to control the object from external applications (e.g. the emotions one avatar exposes in the VE can be obtained by processing the associated user's physiological sensors).

The current standard proposes an XML Schema, called Virtual World Object Characteristics XSD, for describing an object by considering three main requirements:

- it should be possible to easily create importers/exporters from various VEs implementations,

- it should be easy to control an object within an VE,

- it should be possible to modify a proprietary template (specific to the virtual world) of the object by using data contained in Virtual World Object Characteristics file.

The proposed schema deals only with metadata and does not include representation of the geometry, sound, scent, animation or texture. To represent the latter, references to media resources are used.

There is a base type of attributes and characteristics of the virtual world objects which is shared by both avatars and the virtual objects.

The base type of the virtual world object characteristics is composed of following type of data:

- **Identity**: contains an identification descriptors,
- **Sound**: contains sound resources and the related properties,
- **Scent**: contains scent resources and the related properties,
- **Control**: contains a set of descriptors for controlling motion features of an object such as translation, orientation and scaling.
- **Event**: contains a set of descriptors providing input events from a mouse, keyboard and etc.,
- **Behaviour Model**: contains a set of descriptors defining the behavior information of the object according to input events.
- **id**: contains a unique identifier for identifying individual virtual world object information.,

The virtual world object base type is inherited to both avatar metadata and virtual object metadata to extend the specific aspects of each of metadata.

4.2 Root element and top-level tools

4.2.1 Introduction

This Subclause specifies the root element and the top-level tools which can follow root element in virtual world object characteristics information. The root element is the only element which can appear as the topmost element when the world object characteristics information specified in this Part of ISO/IEC 23005 is instantiated. The top-level tools are defined as the elements which are allowed to appear as the topmost element within the root element.

4.2.2 Syntax

```
<!-- ################################################ -->
<!--  Declaration of Root Element                     -->
<!-- ################################################ -->
<element name="VWOCInfo" type="vwoc:VWOCInfoType"/>

<complexType name="VWOCInfoType">
   <sequence>
      <element name="AvatarList" type="vwoc:AvatarListType" minOccurs="0"/>
      <element name="VirtualObjectList" type="vwoc:VirtualObjectListType"
minOccurs="0"/>
   </sequence>
</complexType>

<complexType name="AvatarListType">
   <sequence>
      <element name="Avatar" type="vwoc:AvatarBaseType" maxOccurs="unbounded"/>
   </sequence>
</complexType>

<complexType name="VirtualObjectListType">
   <sequence>
      <element name="VirtualObject" type="vwoc:VirtualObjectBaseType"
maxOccurs="unbounded"/>
   </sequence>
</complexType>
```

4.2.3 Semantics

Name	Description
VWOCInfo	The root element that serves as the topmost element in the virtual world object characteristics description.
VWOCInfoType	The root type provides basic structure that the virtual world object characteristics information description should follow through the root element.
AvatarList	Optional wrapper element that serves as the placeholder for the list of avatar characteristics information.
VirtualObjectList	Optional wrapper element that serves as the placeholder for the list of virtual object characteristics information.
AvatarListType	Wrapper element type which allows multiple occurrences of avatar characteristics information.
Avatar	Specifies the description of avatar characteristics information.
AvatarBaseType	AvatarBaseType is a type providing a characteristic description of an individual avatar.
VirtualObjectListType	Wrapper element type which allows multiple occurrences of virtual object characteristics information.
VirtualObject	Specifies the description of virtual object characteristics information.
VirtualObjectBaseType	VirtualObjectBaseType is a type providing a characteristic description of an individual virtual object.

4.2.4 Examples

The following shows two use cases of VWOCInfo element, which are for listing avatar characteristics information and for listing virtual object characteristics information.

The first example shows the case when the VWOCInfo is used for AvatarList.

```
<vwoc:VWOCInfo>
    <vwoc:AvatarList>
        <vwoc:Avatar xsi:type="vwoc:AvatarType" id="ID_1" gender="male">
            . . .
        </vwoc:Avatar>
    </vwoc:AvatarList>
</vwoc:VWOCInfo>
```

The second example shows the case when the VWOCInfo is used for VirtualObjectList.

```
<vwoc:VWOCInfo>
    <vwoc:VirtualObjectList>
        <vwoc:VirtualObject xsi:type="vwoc:VirtualObjectType" id="ID_80">
            . . .
        </vwoc:VirtualObject>
    </vwoc:VirtualObjectList>
</vwoc:VWOCInfo>
```

Note that these examples are only showing a part of the complete XML description to show the use of the root element, VWOCInfo, with the AvatarList and the VirtualObjectList.

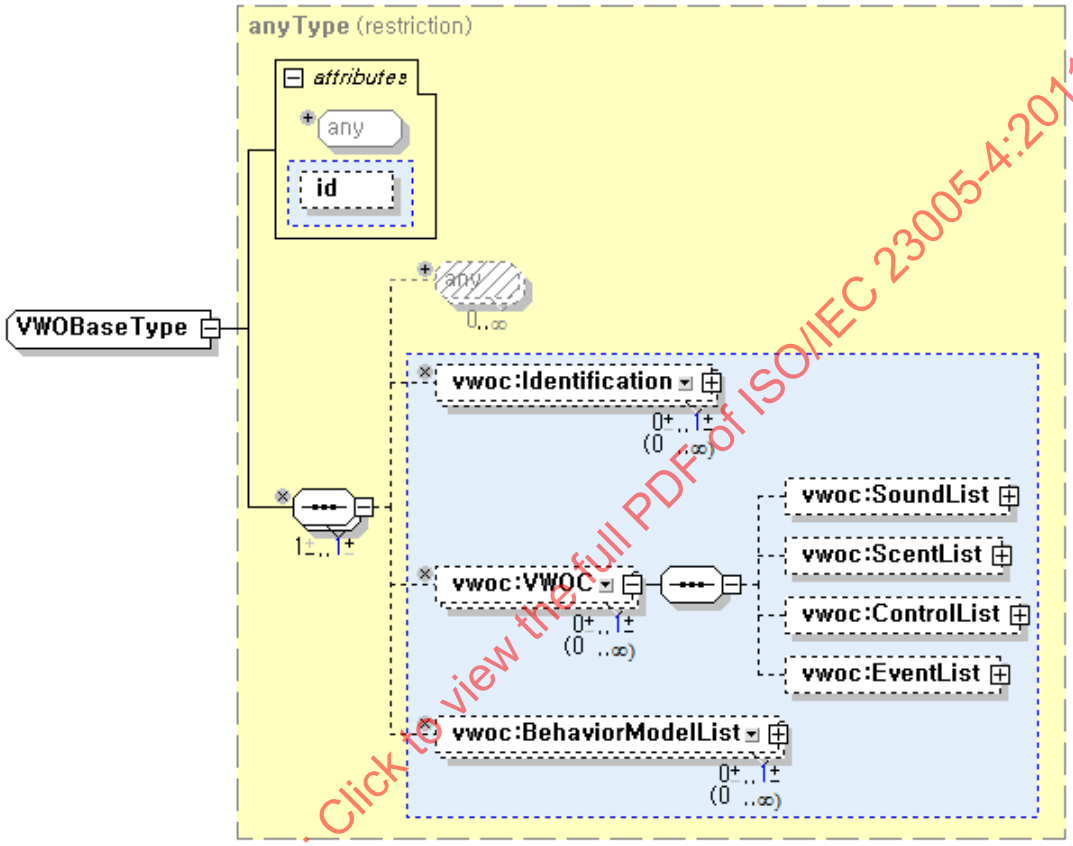
4.3 Virtual world object base type

4.3.1 Introduction

This Subclause defines a complex type of `VWOBaseType`, which the avatar characteristics information and virtual object characteristics information should inherit.

4.3.2 Syntax

Diagram



Source

```
<!-- ################################################ -->
<!--  VWO Base Type                                   -->
<!-- ################################################ -->
<complexType name="VWOBaseType" abstract="true">
  <complexContent>
    <restriction base="anyType">
      <sequence>
        <element name="Identification" type="vwoc:IdentificationType" minOccurs="0"/>
        <element name="Description" type="string" minOccurs="0"/>
        <element name="VWOC" minOccurs="0">
          <complexType>
            <sequence>
              <element name="SoundList" type="vwoc:VWOSoundListType" minOccurs="0"/>
              <element name="ScentList" type="vwoc:VWOScentListType" minOccurs="0"/>
              <element name="ControlList" type="vwoc:VWOControlListType" minOccurs="0"/>
              <element name="EventList" type="vwoc:VWOEventListType" minOccurs="0"/>
            </sequence>
          </complexType>
        </element>
        <element name="BehaviorModelList" type="vwoc:VWOBehaviorModelListType" minOccurs="0"/>
      </sequence>
      <attribute name="id" type="ID" use="optional"/>
    </restriction>
  </complexContent>
```

```
</complexType>

<!-- ################################################ -->
<!--  Avatar BaseType                                 -->
<!-- ################################################ -->
<complexType name="AvatarBaseType" abstract="true">
  <complexContent>
    <extension base="vwoc:VWOBaseType"/>
  </complexContent>
</complexType>

<!-- ################################################ -->
<!--  Virtual Object BaseType                         -->
<!-- ################################################ -->
<complexType name="VirtualObjectBaseType" abstract="true">
  <complexContent>
    <extension base="vwoc:VWOBaseType"/>
  </complexContent>
</complexType>
```

4.3.3 Semantics

Name	Description
VWOBaseType	The base type that describes common attributes and elements in both avatars and virtual objects.
Identification	Describes the identification of the virtual world object.
Description	Contains the description of the virtual world object.
VWOC	Describes a set of characteristics of the virtual world objects.
SoundList	Describes a list of the sound effects associated to the virtual world object.
ScentList	Describes a list of the scent effects associated to the virtual world object.
ControlList	Describes a list of the controls associated to the virtual world object.
EventList	Describes a list of the input events associated to the virtual world object.
BehaviorModelList	Describes a list of the behaviour models associated to the virtual world object.
id	Unique identifier for identifying individual virtual world object information.
AvatarBaseType	AvatarBaseType is a type providing a characteristic description of an individual avatar.
VirtualObjectBaseType	VirtualObjectBaseType is a type providing a characteristic description of an individual virtual object.

4.3.4 Examples

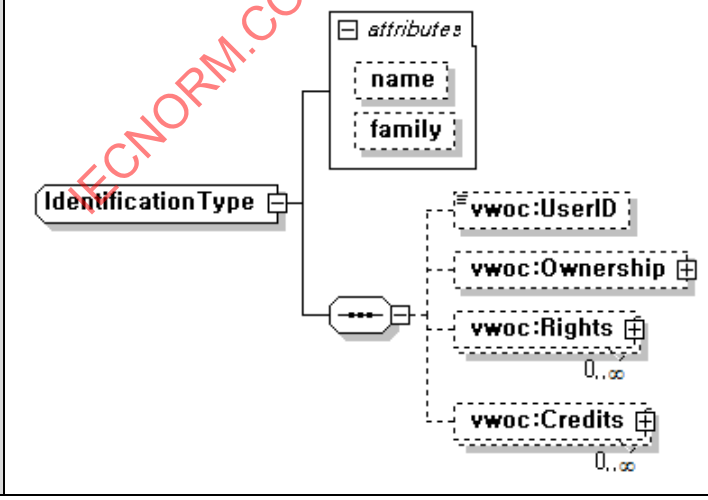
```
<vwoc:VWOCInfo>
   <vwoc:AvatarList>
      <vwoc:Avatar xsi:type="vwoc:AvatarType" id="AVATARID_1" gender="male">
         <vwoc:VWOC>
            <vwoc:SoundList>
               <vwoc:Sound loop="1" soundID="SOUNDID_10" duration="10"
intensity="3" name="BurpSound">
               <vwoc:ResourcesURL>http://www.BurpSound.info</vwoc:ResourcesURL>
               </vwoc:Sound>
            </vwoc:SoundList>
            <vwoc:ScentList>
               <vwoc:Scent loop="2" duration="1" intensity="3"
name="BurpingScent" scentID="SCENTID_11">
                  <vwoc:ResourcesURL>http://www.Burp.info</vwoc:ResourcesURL>
               </vwoc:Scent>
            </vwoc:ScentList>
            <vwoc:ControlList>
               <vwoc:Control controlID="CTRLID_12">
                  <vwoc:MotionFeatureControl>
                     <vwoc:Position>
```

```
                            <mpegvct:X>1</mpegvct:X>
                            <mpegvct:Y>1</mpegvct:Y>
                            <mpegvct:Z>10</mpegvct:Z>
                        </vwoc:Position>
                        <vwoc:Orientation>
                            <mpegvct:X>0</mpegvct:X>
                            <mpegvct:Y>0</mpegvct:Y>
                            <mpegvct:Z>0</mpegvct:Z>
                        </vwoc:Orientation>
                        <vwoc:ScaleFactor>
                            <mpegvct:X>1</mpegvct:X>
                            <mpegvct:Y>1</mpegvct:Y>
                            <mpegvct:Z>3</mpegvct:Z>
                        </vwoc:ScaleFactor>
                    </vwoc:MotionFeatureControl>
                </vwoc:Control>
            </vwoc:ControlList>
            <vwoc:EventList>
                <vwoc:Event eventID="ID_13">
                    <vwoc:Mouse>Click</vwoc:Mouse>
                </vwoc:Event>
            </vwoc:EventList>
        </vwoc:VWOC>
        <vwoc:BehaviorModelList>
            <vwoc:BehaviorModel>
                <vwoc:BehaviorInput eventIDRef="ID_13"/>
                <vwoc:BehaviorOutput controlIDRefs="CTRLID_12"
scentIDRefs="SCENTID_11" soundIDRefs="SOUNDID_10"/>
            </vwoc:BehaviorModel>
        </vwoc:BehaviorModelList>
    </vwoc:Avatar>
</vwoc:AvatarList>
</vwoc:VWOCInfo>
```


4.3.5 IdentificationType

4.3.5.1 Syntax

Diagram



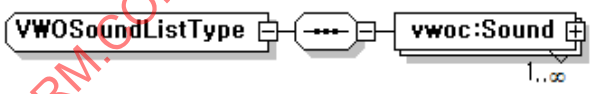
Source	<!-- ## --> <!-- Identification Type --> <!-- ## --> <complexType name="IdentificationType"> <sequence> <element name="UserID" type="anyURI" minOccurs="0"/> <element name="Ownership" type="mpeg7:AgentType" minOccurs="0"/> <element name="Rights" type="r:License" minOccurs="0" maxOccurs="unbounded"/> <element name="Credits" type="mpeg7:AgentType" minOccurs="0" maxOccurs="unbounded"/> </sequence> <attribute name="name" type="string" use="optional"/> <attribute name="family" type="string" use="optional"/> </complexType>

4.3.5.2 Semantics

Name	Definition
IdentificationType	Describes the identification of a virtual world object.
UserID	Contains the user identification associated to the virtual world object
Ownership	Describes the ownership of the virtual world object which shall be based on the type "AgentType" defined in subclause 7.4.2 of ISO/IEC 15938-5:2003.
Rights	Describes the rights of the virtual world object which shall be based on the type "License" defined in ISO/IEC 21000-5:2004.
Credits	Describes the contributors of the virtual object in chronological order which shall be based on the type "AgentType" defined in subclause 7.4.2 of ISO/IEC 15938-5:2003. Note: The 1st listed credit describes an original author of a virtual world object. The subsequent credits represent the list of the contributors of the virtual world object chronologically.
name	Describes the name of the virtual world object.
family	Describes the relationship with other virtual world objects.

4.3.6 VWOSoundListType

4.3.6.1 Syntax

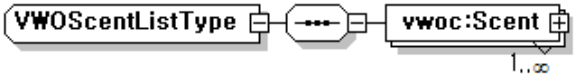
Diagram	
Source	<!-- ## --> <!-- VWO Sound List Type --> <!-- ## --> <complexType name="VWOSoundListType"> <sequence> <element name="Sound" type="vwoc:VWOSoundType" maxOccurs="unbounded"/> </sequence> </complexType>

4.3.6.2 Semantics

Name	Definition
VWOSoundListType	Wrapper element type which allows multiple occurrences of sound effects associated to the virtual world object.
Sound	Describes a sound effect associated to the virtual world object.

4.3.7 VWOScentListType

4.3.7.1 Syntax

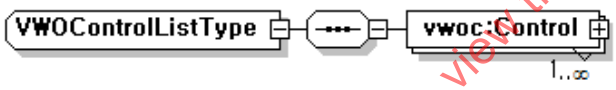
Diagram	
Source	<!-- ## --> <!-- VWO Scent List Type --> <!-- ## --> <complexType name="VWOScentListType"> <sequence> <element name="Scent" type="vwoc:VWOScentType" maxOccurs="unbounded"/> </sequence> </complexType>

4.3.7.2 Semantics

Name	Definition
VWOScentListType	Wrapper element type which allows multiple occurrences of sound effects associated to the virtual world object.
Scent	Describes a scent effect associated to the virtual world object.

4.3.8 VWOControlListType

4.3.8.1 Syntax

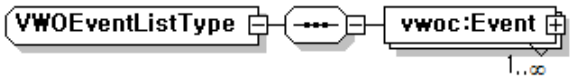
Diagram	
Source	<!-- ## --> <!-- VWO Control List Type --> <!-- ## --> <complexType name="VWOControlListType"> <sequence> <element name="Control" type="vwoc:VWOControlType" maxOccurs="unbounded"/> </sequence> </complexType>

4.3.8.2 Semantics

Name	Definition
VWOControlListType	Wrapper element type which allows multiple occurrences of the controls associated to the virtual world object.
Control	Describes a control associated to the virtual world object.

4.3.9 VWOEventListType

4.3.9.1 Syntax

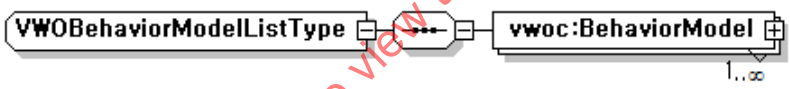
Diagram	
Source	<!-- ## --> <!-- VWO Event List Type --> <!-- ## --> <complexType name="VWOEventListType"> <sequence> <element name="Event" type="vwoc:VWOEventType" maxOccurs="unbounded"/> </sequence> </complexType>

4.3.9.2 Semantics

Name	Definition
VWOEventListType	Wrapper element type which allows multiple occurrences of the input events associated to the virtual world object.
Event	Describes an input event associated to the virtual world object.

4.3.10 VWOBehaviorModelListType

4.3.10.1 Syntax

Diagram	
Source	<!-- ## --> <!-- VWO Behavior Model List Type --> <!-- ## --> <complexType name="VWOBehaviorModelListType"> <sequence> <element name="BehaviorModel" type="vwoc:VWOBehaviorModelType" maxOccurs="unbounded"/> </sequence> </complexType>

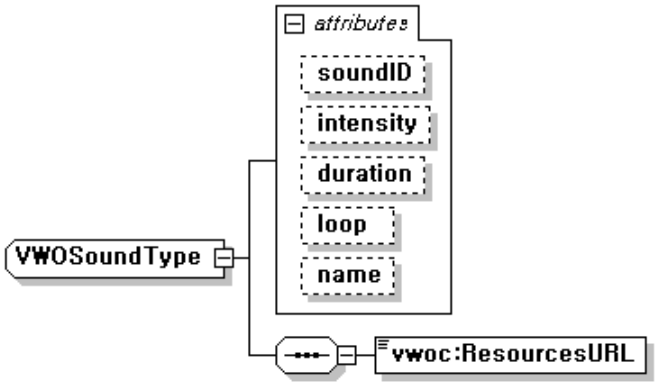
4.3.10.2 Semantics

Name	Definition
VWOBehaviorModelListType	Wrapper element type which allows multiple occurrences of the behavior models associated to the virtual world object.
BehaviorModel	Describes a behavior model associated to the virtual world object.

4.3.11 VWOSoundType

4.3.11.1 Syntax

Diagram



Source

```
<!-- ################################################ -->
<!--  VWO Sound Type                                  -->
<!-- ################################################ -->
<complexType name="VWOSoundType">
      <sequence>
            <element name="ResourcesURL" type="anyURI"/>
      </sequence>
      <attribute name="soundID" type="ID" use="optional"/>
      <attribute name="intensity" type="float" use="optional"/>
      <attribute name="duration" type="unsignedInt" use="optional"/>
      <attribute name="loop" type="unsignedInt" use="optional"/>
      <attribute name="name" type="string" use="optional"/>
</complexType>
```

4.3.11.2 Semantics

Name	Definition
VWOSoundType	A type that contains the descriptions of a sound effect associated to the virtual world object.
SoundResources URL	Element that contains a link to sound file, usually MP4 file..
soundID	A unique identifier of the object sound.
intensity	The strength(volume) of the sound
duration	The length of time that the sound lasts.
loop	A playing option to describe the number of repetition (default value: 1, 0: indefinite repetition, 1:once, 2: twice, …, n: n times)
name	The name of the sound.

4.3.11.3 Examples

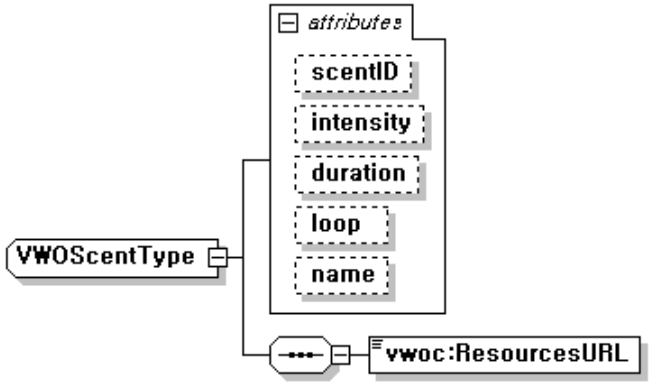
This example shows the description of the sound information associated to an object with the following semantics. The sound resource whose name is “BigAlarm” is saved at “http://sounddb.com/alarmsound_0001.wav” and the value of soundID, its identifier is “SoundID3” The length of the sound is 30 seconds. The sound shall be played with the volume of intensity = “50 %” repeatedly.

```
<vwoc:Sound loop="0" soundID="SoundID3" duration="30" intensity="0.5"
name="BigAlarm">
    <vwoc:ResourcesURL>http://sounddb.com/alarmsound_0001.wav</vwoc:ResourcesURL>
</vwoc:Sound>
```

4.3.12 VWOScentType

4.3.12.1 Syntax

Diagram



source

```
<!-- ################################################ -->
<!--  VWO Scent Type                                  -->
<!-- ################################################ -->
<complexType name="VWOScentType">
      <sequence>
            <element name="ResourcesURL" type="anyURI"/>
      </sequence>
      <attribute name="scentID" type="ID" use="optional"/>
      <attribute name="intensity" type="float" use="optional"/>
      <attribute name="duration" type="unsignedInt" use="optional"/>
      <attribute name="loop" type="unsignedInt" use="optional"/>
      <attribute name="name" type="string" use="optional"/>
</complexType>
```

4.3.12.2 Semantics

Name	Definition
VWOScentType	A type that contains the descriptions of a scent effect associated to the virtual world object.
ScentResources URL	Element that contains a link to a scent file.
scentID	A unique identifier of the object scent.
intensity	The strength of the scent
duration	The length of time that the scent lasts.
loop	A playing option to describe the number of repetition (default value: 1, 0: indefinite repetition, 1:once, 2: twice, …, n: n times)
name	The name of the scent.

4.3.12.3 Examples

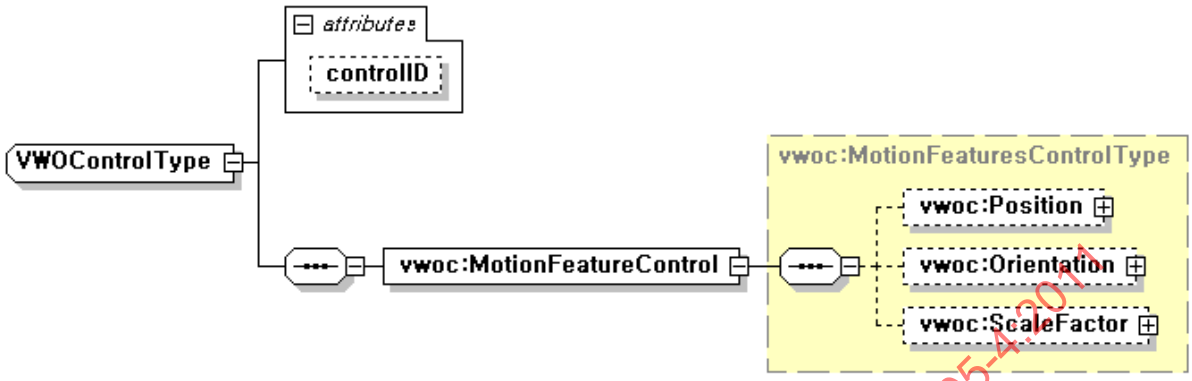
This example shows the description of the scent information associated to the object. The scent resource whose name is “rose” is saved at “http://scentdb.com/flower_0001.sct” and the value of scentID, its identifier is “ScentID5” The intensity shall be 20 % with duration of 20 seconds.

```
<vwoc:Scent duration="20" intensity="0.2" name="rose" scentID="ScentID5">
   <vwoc:ResourcesURL>http://scentdb.com/flower_0001.sct</vwoc:ResourcesURL>
</vwoc:Scent>
```

4.3.13 VWOControlType

4.3.13.1 Syntax

Diagram



source

```
<!-- ################################################ -->
<!--  VWO Control Type                                -->
<!-- ################################################ -->
<complexType name="VWOControlType">
      <sequence>
            <element name="MotionFeatureControl" type="vwoc:MotionFeaturesControlType"/>
      </sequence>
      <attribute name="controlID" type="ID" use="optional"/>
</complexType>
<!-- ################################################ -->
<!--  Motion Features Control Type                    -->
<!-- ################################################ -->
<complexType name="MotionFeaturesControlType">
      <sequence>
            <element name="Position" type="mpegvct:Float3DVectorType" minOccurs="0"/>
            <element name="Orientation" type="mpegvct:Float3DVectorType" minOccurs="0"/>
            <element name="ScaleFactor" type="mpegvct:Float3DVectorType" minOccurs="0"/>
      </sequence>
</complexType>
```

4.3.13.2 Semantics

Name	Definition
VWOControlType	A type that contains the descriptions of a control associated to the virtual world object.
MotionFeatureControl	Set of elements that control position, orientation and scale of the virtual object.
controlID	A unique identifier of the control.

Element	Information
MotionFeatureControlType	A type that provides three types of controls such as position control, orientation control, and scaling control.
Position	The position of the object in the scene with 3D floating point vector (x, y, z).
Orientation	The orientation of the object in the scene with 3D floating point vector as an Euler angle (yaw, pitch, roll).
ScaleFactor	The scale of the object in the scene expressed as 3D floating point vector (Sx, Sy, Sz).

NOTE 1 If two controllers are associated to the same object but on different parts of the object and if these parts exist hierarchical structures (parent and children relationship) then the controllers does perform the relative motion of the children. If the controllers are associated with the same part, the controller does the scaling or similar effects for the entire object.

NOTE 2 The reference coordinate system of this part is the right handed coordinate system.

4.3.13.3 Examples

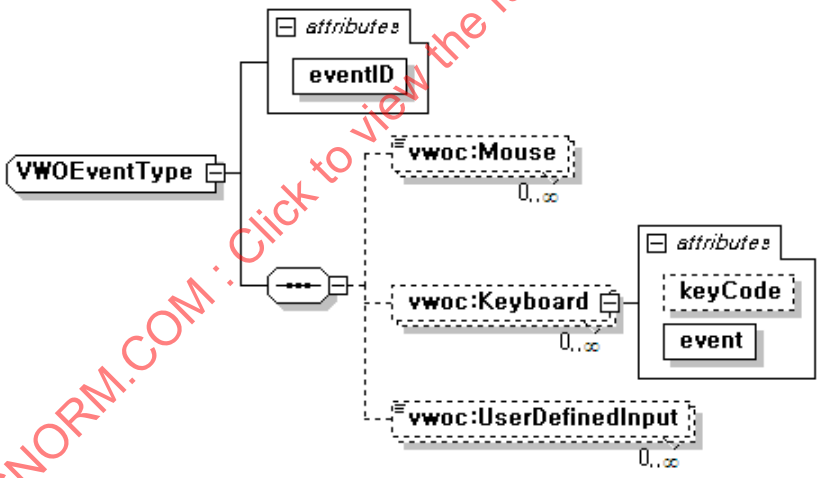
This example shows the description of object control information with the following semantics. The motion feature control of changing a position is given and its value of controlID, its identifier is “CtrlID7” The object shall be positioned at X=”122.0”, Y=”150.0” and Z=”40.0”.

```
<vwoc:Control controlID="CtrlID7">
    <vwoc:MotionFeatureControl>
        <vwoc:Position>
            <mpegvct:X>122.0</mpegvct:X>
            <mpegvct:Y>150.0</mpegvct:Y>
            <mpegvct:Z>40.0</mpegvct:Z>
        </vwoc:Position>
    </vwoc:MotionFeatureControl>
</vwoc:Control>
```

4.3.14 VWOEventType

4.3.14.1 Syntax

Diagram



Source

```
<!-- ################################################ -->
<!--  VWO Event Type                                  -->
<!-- ################################################ -->
<complexType name="VWOEventType">
      <sequence>
            <element name="Mouse" type="mpeg7:termReferenceType" minOccurs="0"
maxOccurs="unbounded"/>
            <element name="Keyboard" minOccurs="0" maxOccurs="unbounded">
                  <complexType>
                        <attribute name="keyCode" type="mpeg7:unsigned8" use="optional"/>
                        <attribute name="event" use="required">
                              <simpleType>
                                    <restriction base="string">
                                          <enumeration value="pressed"/>
                                          <enumeration value="clicked"/>
                                          <enumeration value="released"/>
```

```
                                    </restriction>
                                </simpleType>
                            </attribute>
                        </complexType>
                    </element>
                    <element name="UserDefinedInput" type="string" minOccurs="0" maxOccurs="unbounded"/>
                </sequence>
                <attribute name="eventID" type="ID" use="required"/>
            </complexType>
```

4.3.14.2 Semantics

Name	Definition
VWOEventType	A type that contains the descriptions of an input event associated to the virtual world object.
Mouse	Describes a mouse event as a reference to a classification scheme (CS) term. A CS that may be used for this purpose is the `MouseEventCS` defined in A.2.1.1 in this part.
Keyboard	Describes a keyboard event defined by a key code and its related event.
keyCode	Describes the corresponding key code (0-255) of each key.
event	Describes the keyboard event (pressed, clicked, or released).
UserDefinedInput	Describes an input event defined by user.
eventID	A unique identifier of the event.

4.3.14.3 Examples

EXAMPLE 1 This example shows the description of an input event with the following semantics. The mouse as an input device produces new input value, “click.” For identifying this input, the value of eventID is “EventID1.”

```
<vwoc:EventList>
    <vwoc:Event eventID="EventID1">
        <vwoc:Mouse>urn:mpeg:mpeg-v:01-VWOC-MouseEventCS-NS:Click</vwoc:Mouse>
    </vwoc:Event>
</vwoc:EventList>
```

EXAMPLE 2 This example shows the description of an input event with the following semantics. The Keyboard as an input device produces a new input value which is pressing the key code of “65”. For identifying this input, the value of eventID is “EventID2.”

```
<vwoc:EventList>
    <vwoc:Event eventID="EventID2">
        <vwoc:Keyboard keyCode="65" event="pressed"/>
    </vwoc:Event>
</vwoc:EventList>
```

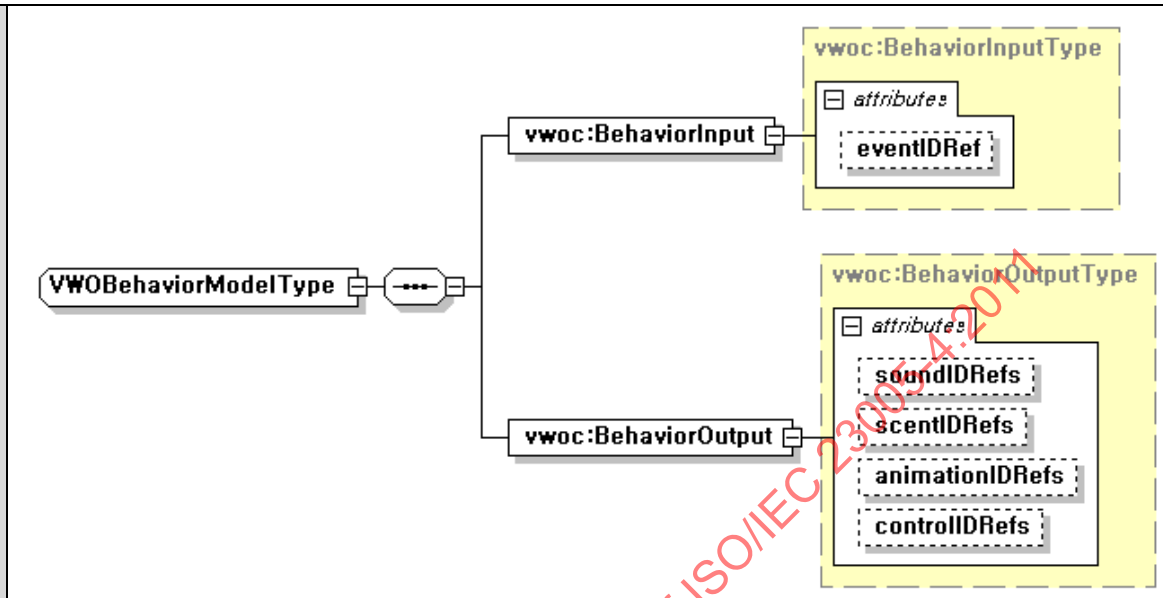
EXAMPLE 3 This example shows the description of an input event with the following semantics. The Keyboard produces a new input event of pressing the two keys “shift” + “a”. One of the keyboard events is the pressing event, “pressed”, of the “shift” key whose code is “16”, and the other one is the pressing event, “pressed”, of the “a” key whose code is “65”. For identifying this input, the value of eventID is “EventID3.”

```
<vwoc:EventList>
    <vwoc:Event eventID="EventID3">
        <vwoc:Keyboard keyCode="16" event="pressed"/>
        <vwoc:Keyboard keyCode="65" event="pressed"/>
    </vwoc:Event>
</vwoc:EventList>
```

4.3.15 VWOBehaviourModelType

4.3.15.1 Syntax

Diagram



Source

```
<!-- ################################################ -->
<!--  VWO Behavior Model Type                         -->
<!-- ################################################ -->
<complexType name="VWOBehaviorModelType">
      <sequence>
            <element name="BehaviorInput" type="vwoc:BehaviorInputType"/>
            <element name="BehaviorOutput" type="vwoc:BehaviorOutputType"/>
      </sequence>
</complexType>
<!-- ################################################ -->
<!--  Behavior Input Type                             -->
<!-- ################################################ -->
<complexType name="BehaviorInputType">
      <attribute name="eventIDRef" type="IDREF"/>
</complexType>
<!-- ################################################ -->
<!--  Behavior Output Type                            -->
<!-- ################################################ -->
<complexType name="BehaviorOutputType">
      <attribute name="soundIDRefs" type="IDREFS" use="optional"/>
      <attribute name="scentIDRefs" type="IDREFS" use="optional"/>
      <attribute name="animationIDRefs" type="IDREFS" use="optional"/>
      <attribute name="controlIDRefs" type="IDREFS" use="optional"/>
</complexType>
```


4.3.15.2 Semantics

Name	Description
VWOBehaviorModelType	A type that describes a container of an input event and the associated output object behaviors.
BehaviorInput	An input event to make an object behavior.
BehaviorInputType	Refers to an input event ID Element: eventIDRef — Information: Input event ID
BehaviorOutput	Object behavior output according to an input event

BehaviorOutputType	Refers to a list of object behavioral outputs.

Element	Information
soundIDRefs	It refers soundIDs to provide sound effects of the object.
scentIDRefs	It refers scentIDs to provide scent effects of the object.
animationIDRefs	It refers animationIDs to provide animation clips of the object.
controlIDRefs	It refers controlIDs to provide controls of the object.

4.3.15.3 Examples

This example shows the description of a VWO behavior model with the following semantics. If eventID =”EventID1” is given as BehaviorInput, then BehaviorOutput shall be executed related to soundID=”SoID5” and animationID=”AniID4”

```
<vwoc:BehaviorModel>
    <vwoc:BehaviorInput eventIDRef="EventID1"/>
    <vwoc:BehaviorOutput animationIDRefs="AniID4" soundIDRefs="SoID5"/>
</vwoc:BehaviorModel>
```

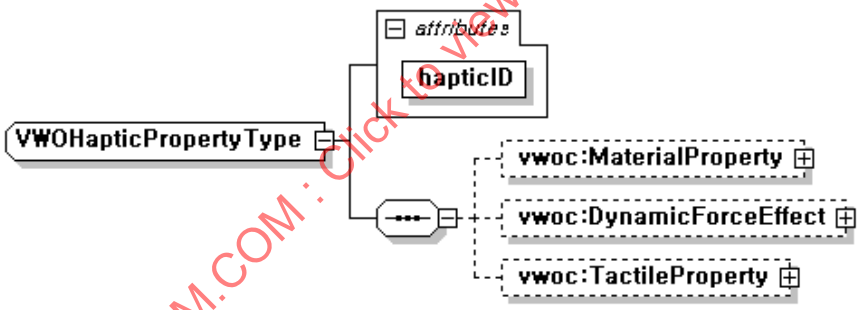
4.4 Virtual world object common data types

This Subclause specifies syntax and semantics of the common datatypes for avatar and virtual object metadata. To be specific, basic data types which are used as basic building blocks, such as haptic properties, animation description, and other simple data types.

4.4.1 VWOHapticPropertyType

4.4.1.1 Syntax

Diagram



Source

```
<!-- ################################################ -->
<!--  VWO Haptic Property Type                        -->
<!-- ################################################ -->
<complexType name="VWOHapticPropertyType">
    <sequence>
        <element name="MaterialProperty" type="vwoc:MaterialPropertyType" minOccurs="0"/>
        <element name="DynamicForceEffect" type="vwoc:DynamicForceEffectType" minOccurs="0"/>
        <element name="TactileProperty" type="vwoc:TactileType" minOccurs="0"/>
    </sequence>
    <attribute name="hapticID" type="ID" use="required"/>
</complexType>
```

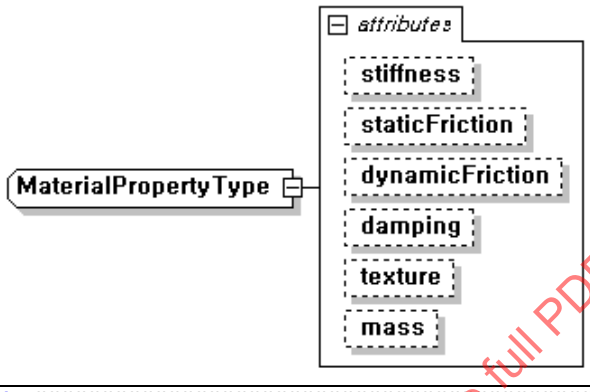
4.4.1.2 Semantics

Name	Description
VWOHapticPropertyType	A type that contains the descriptions of a haptic property associated to the virtual world object.
MaterialProperty	This type contains parameters characterizing material properties.
DynamicForceEffect	This type contains parameters characterizing force effects.
TactileProperty	This type contains parameters characterizing tactile properties.
hapticID	A unique identifier of the haptic property.

4.4.1.3 MaterialPropertyType

4.4.1.3.1 Syntax

Diagram



Source

```
<!-- ################################################ -->
<!--  Material Property Type                          -->
<!-- ################################################ -->
<complexType name="MaterialPropertyType">
      <attribute name="stiffness" type="float" use="optional"/>
      <attribute name="staticFriction" type="float" use="optional"/>
      <attribute name="dynamicFriction" type="float" use="optional"/>
      <attribute name="damping" type="float" use="optional"/>
      <attribute name="texture" type="anyURI" use="optional"/>
      <attribute name="mass" type="float" use="optional"/>
</complexType>
```


4.4.1.3.2 Semantics

Name	Description
MaterialPropertyType	A type that contains the descriptions of a material property associated to the virtual world object.
stiffness	The stiffness of the virtual world object (in N/mm).
staticFriction	The static friction of the virtual world object.
dynamicFriction	The dynamic friction of the virtual world object.
damping	The damping of the virtual world object.
texture	Contains a link to haptic texture file (e.g. bump image)
mass	The mass of the virtual world object.

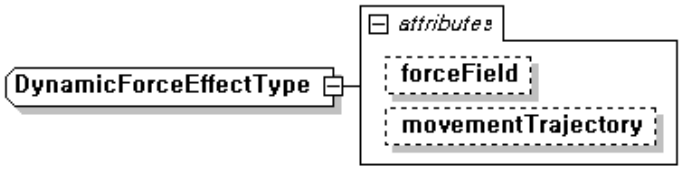
4.4.1.3.3 Examples

This example shows the material properties of a virtual world object which has 0.5 N/mm of stiffness, 0.3 of static coefficient of friction, 0.02 of kinetic coefficient of friction, 0,001 damping coefficient, 0.7 of mass and it's surface haptic texture is loaded from the given URL with the id of MID30.

```
<vwoc:HapticProperty hapticID="MID30">
   <vwoc:MaterialProperty stiffness="0.5" staticFriction="0.3"
dynamicFriction="0.02"
damping="0.001" texture="http://haptic.kr/tactile/texture1.bmp" mass="0.7"/>
</vwoc:HapticProperty>
```

4.4.1.4 DynamicForceEffectType

4.4.1.4.1 Syntax

Diagram	
Source	<!-- ## --> <!-- Dynamic Force Effect Type --> <!-- ## --> <complexType name="DynamicForceEffectType"> <attribute name="forceField" type="anyURI" use="optional"/> <attribute name="movementTrajectory" type="anyURI" use="optional"/> </complexType>

4.4.1.4.2 Semantics

Name	Description
DynamicForceEffectType	A type that contains the descriptions of a dynamic force effect associated to the virtual world object.
forceField	Contains link to force field vector file (sum of force field vectors).
movementTrajectory	Contains link to force trajectory file (e.g. .dat file including a sequence of motion data).

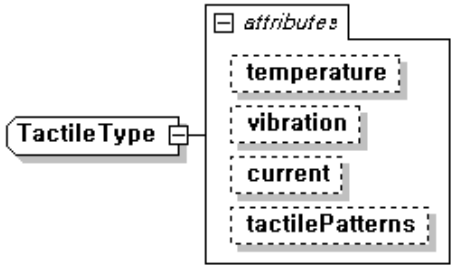
4.4.1.4.3 Examples

This example shows the dynamic force effect of an avatar. The force field characteristic of the avatar with its id of FFID30 is determined by the designed force field file from the URL.

```
<vwoc:HapticProperty hapticID="FFID30">
  <vwoc:DynamicForceEffect forceField="http://haptic.kr/avatar/forcefield.dat"/>
</vwoc:HapticProperty>
```

4.4.1.5 TactileType

4.4.1.5.1 Syntax

Diagram	
Source	<!-- ## --> <!-- Tactile Type --> <!-- ## --> <complexType name="TactileType"> <attribute name="temperature" type="float" use="optional"/> <attribute name="vibration" type="float" use="optional"/> <attribute name="current" type="float" use="optional"/> <attribute name="tactilePatterns" type="anyURI" use="optional"/> </complexType>

4.4.1.5.2 Semantics

Name	Description
TactileType	A type that contains the descriptions of a tactile property associated to the virtual world object.
temperature	The temperature of the virtual world object (in degree celcius).
vibration	The vibration of the virtual world object.
current	The electric current of the virtual world object (in mA).
tactilePatterns	Contains link to tactile pattern file (e.g. grayscale video (.avi, h.264, or .dat file.)

4.4.1.5.3 Examples

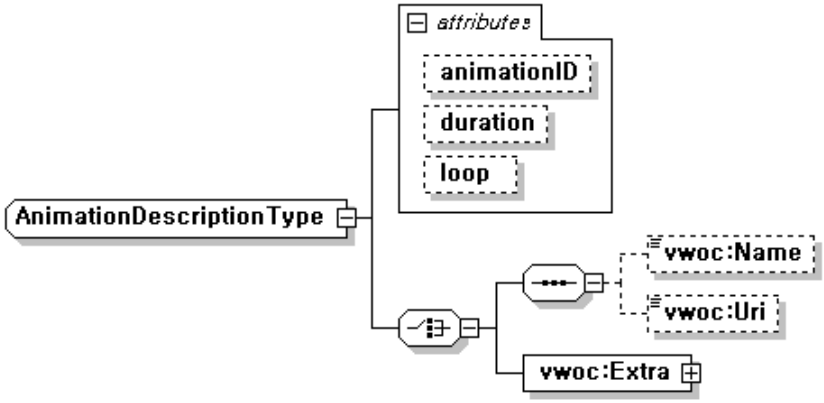
This example shows the tactile properties, with its id of DFEID30, which has 15 degree of temperature and a tactile effect based on the tactile information from the following URL (http://www.haptic.kr/avatar/tactile1.avi).

```
<vwoc:HapticProperty hapticID="DFEID30">
   <vwoc:TactileProperty temperature="15"
tactilePatterns="http://www.haptic.kr/avatar/tactile1.avi"/>
</vwoc:HapticProperty>
```

4.4.2 AnimationDescriptionType

4.4.2.1 Syntax

Diagram



Source

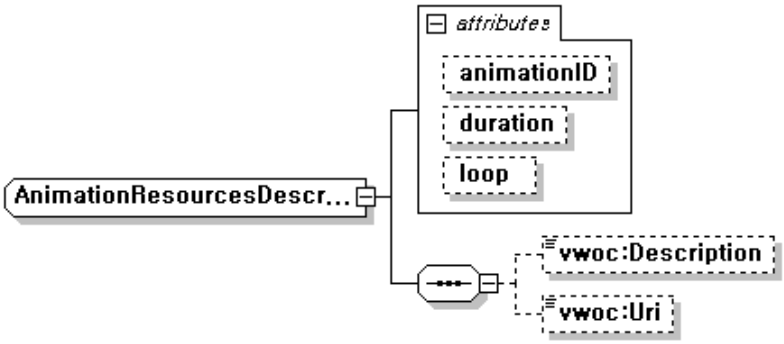
```
<!-- ################################################ -->
<!--  Animation Description Type                      -->
<!-- ################################################ -->
<complexType name="AnimationDescriptionType">
    <choice>
        <sequence>
            <element name="Name" type="mpeg7:termReferenceType" minOccurs="0"/>
            <element name="Uri" type="anyURI" minOccurs="0"/>
        </sequence>
        <element name="Extra" type="vwoc:Extra Type"/>
    </choice>
    <attribute name="animationID" type="ID" use="optional"/>
    <attribute name="duration" type="unsignedInt" use="optional"/>
    <attribute name="loop" type="unsignedInt" use="optional"/>
</complexType>
```

4.4.2.2 Semantics

Name	description
AnimationDescription Type	A type that contains descriptions and a link to the animation file.
Name	Describes a type of the animation as a reference to classification schemes (CSs) term. The CSs that may be used for this purpose is defined in A.2.3 and A.2.4 in this part.
Uri	Contains a link to an animation file, usually MP4 file.
Extra	Describes an animation in the form of any proprietary but well-formed XML metadata.
animationID	A unique identifier of the animation.
duration	The length of time that the animation lasts.
loop	A playing option to describe the number of repetition. (default value: 1, 0:indefinite repetition, 1:once, 2: twice, …, n: n times)

4.4.3 AnimationResourcesDescriptionType

4.4.3.1 Syntax

Diagram	
Source	<!-- ## --> <!-- Animation Resources Description Type --> <!-- ## --> <complexType name="AnimationResourcesDescriptionType"> <sequence> <element name="Description" type="string" minOccurs="0"/> <element name="Uri" type="anyURI" minOccurs="0"/> </sequence> <attribute name="animationID" type="ID" use="optional"/> <attribute name="duration" type="unsignedInt" use="optional"/> <attribute name="loop" type="unsignedInt" use="optional"/> </complexType>

4.4.3.2 Semantics

Name	Description
AnimationResourcesDescriptionType	A type that contains a link to an animation file and its description.
Description	Contains the description of the animation resource.
Uri	Contains a link to an animation file, usually MP4 file.
animationID	A unique identifier of the animation.
duration	The length of time that the animation lasts.
loop	A playing option to describe the number of repetition. (default value: 1, 0: indefinite repetition, 1: once, 2: twice, …, n: n times)

4.4.3.3 PointType

4.4.3.3.1 Syntax

Diagram	-
Source	<!-- ## --> <!-- Point Type --> <!-- ## --> <complexType name="PointType" abstract="true"/> <!-- ## --> <!-- Logical Point Type --> <!-- ## --> <complexType name="LogicalPointType"> <complexContent> <extension base="vwoc:PointType">

```
                    <attribute name="name" type="string" use="optional"/>
                    <attribute name="sensorID" type="anyURI" use="optional"/>
                </extension>
            </complexContent>
        </complexType>
        <!-- ################################################ -->
        <!--  Physical 3D Point Type                          -->
        <!-- ################################################ -->
        <complexType name="Physical3DPointType">
            <complexContent>
                <extension base="vwoc:PointType">
                    <attribute name="x" type="float" use="required"/>
                    <attribute name="y" type="float" use=" required "/>
                    <attribute name="z" type="float" use=" required "/>
                </extension>
            </complexContent>
        </complexType>
```

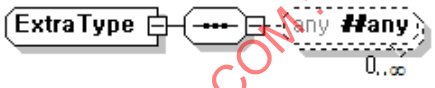
4.4.3.3.2 Semantics

Name	Description
PointType	An astract type providing root for two different point types, which are `LogicalPointType` and `Physical3DPointType` for specifying a feature point for face feature control.
LogicalPointType	A type providing the name of the feature point
name	The name of the feature point
sensorID	The sensor ID corresponding to the feature point
Physical3DPointType	A type providing a three dimensional point vector value.
x	The point value on x-axis in 3 dimensional space
y	The point value on y-axis in 3 dimensional space
z	The point value on z-axis in 3 dimensional space

4.4.3.4 ExtraType

4.4.3.4.1 Syntax

Diagram



Source

```
<!-- ################################################ -->
<!--  Extra Type                                      -->
<!-- ################################################ -->
<complexType name="ExtraType">
    <annotation>
        <appinfo>enable-xmlns</appinfo>
    </annotation>
    <sequence>
        <any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </sequence>
</complexType>
```

4.4.3.4.2 Semantics

Name	Description
ExtraType	A type that can contain any well-formed XML data

Note: Element defined as type <ExtraType> allows extending the MPEG-V schema with proprietary but well defined or at least well formatted data.

4.4.4 Common simple data types

4.4.4.1 IndicateOfLHType

4.4.4.1.1 Syntax

Source

```
<!-- ################################################ -->
<!--  indicate Of LH Type                             -->
<!-- ################################################ -->
<simpleType name="indicateOfLHType">
    <restriction base="string">
        <enumeration value="low"/>
        <enumeration value="high"/>
    </restriction>
</simpleType>
```

4.4.4.1.2 Semantics

Name	Description
indicateOfLHType	A type of which the value is either low or high.

4.4.4.2 IndicateOfLMHType

4.4.4.2.1 Syntax

Source

```
<!-- ################################################ -->
<!--  indicate Of LMH Type                            -->
<!-- ################################################ -->
<simpleType name="indicateOfLMHType">
    <restriction base="string">
        <enumeration value="low"/>
        <enumeration value="medium"/>
        <enumeration value="high"/>
    </restriction>
</simpleType>
```

4.4.4.2.2 Semantics

Name	Description
indicateOfLMHType	A type of which the value is among low, medium or high.

4.4.4.3 IndicateOfSMBType

4.4.4.3.1 Syntax

Source

```
<!-- ################################################ -->
<!--  indicate Of SMB Type                            -->
<!-- ################################################ -->
<simpleType name="indicateOfSMBType">
    <restriction base="string">
        <enumeration value="small"/>
        <enumeration value="medium"/>
        <enumeration value="big"/>
    </restriction>
</simpleType>
```

4.4.4.3.2 Semantics

Name	Description
indicateOfSMBType	A type of which the value is among small, medium or big.

4.4.4.4 IndicateOfSMLType

4.4.4.4.1 Syntax

Source

```
<!-- ################################################ -->
<!--  indicate Of SML Type                            -->
<!-- ################################################ -->
<simpleType name="indicateOfSMLType">
    <restriction base="string">
        <enumeration value="short"/>
        <enumeration value="medium"/>
        <enumeration value="long"/>
    </restriction>
</simpleType>
```

4.4.4.4.2 Semantics

Name	Description
indicateOfSMLType	A type of which the value is among short, medium or long.

4.4.4.5 IndicateOfDMUType

4.4.4.5.1 Syntax

Source

```
<!-- ################################################ -->
<!--  indicate Of DMU Type                            -->
<!-- ################################################ -->
<simpleType name="indicateOfDMUType">
    <restriction base="string">
        <enumeration value="down"/>
        <enumeration value="medium"/>
        <enumeration value="up"/>
    </restriction>
</simpleType>
```

4.4.4.5.2 Semantics

Name	Description
indicateOfDMUType	A type of which the value is among down, medium or up.

4.4.4.6 IndicateOfDUType

4.4.4.6.1 Syntax

Source	<!-- ## --> <!-- indicate Of DMU Type --> <!-- ## --> <simpleType name="indicateOfDUType"> <restriction base="string"> <enumeration value="down"/> <enumeration value="up"/> </restriction> </simpleType>

4.4.4.6.2 Semantics

Name	Description
indicateOfDUType	A type of which the value is either down or up.

4.4.4.7 IndicateOfPMNType

4.4.4.7.1 Syntax

Source	<!-- ## --> <!-- indicate Of PMN Type --> <!-- ## --> <simpleType name="indicateOfPMNType"> <restriction base="string"> <enumeration value="pointed"/> <enumeration value="middle"/> <enumeration value="notpointed"/> </restriction> </simpleType>

4.4.4.7.2 Semantics

Name	Description
indicateOfPMNType	A type of which the value is among pointed, middle or not pointed.

4.4.4.8 IndicateOfRCType

4.4.4.8.1 Syntax

Source	<!-- ## --> <!-- indicate Of RC Type --> <!-- ## --> <simpleType name="indicateOfRCType"> <restriction base="string"> <enumeration value="round"/> <enumeration value="cleft"/> </restriction> </simpleType>

4.4.4.8.2 Semantics

Name	Description
indicateOfRCType	A type of which the value is either round or cleft.

4.4.4.9 IndicateOfLRType

4.4.4.9.1 Syntax

Source

```
<!-- ################################################ -->
<!--  indicate Of LR Type                             -->
<!-- ################################################ -->
<simpleType name="indicateOfLRType">
    <restriction base="string">
        <enumeration value="left"/>
        <enumeration value="right"/>
    </restriction>
</simpleType>
```

4.4.4.9.2 Semantics

Name	Description
indicateOfLRType	A type of which the value is either left or right.

4.4.4.10 IndicateOfLMRType

4.4.4.10.1 Syntax

Source

```
<!-- ################################################ -->
<!--  indicate Of LMR Type                            -->
<!-- ################################################ -->
<simpleType name="indicateOfLMRType">
    <restriction base="string">
        <enumeration value="left"/>
        <enumeration value="middle"/>
        <enumeration value="right"/>
    </restriction>
</simpleType>
```

4.4.4.10.2 Semantics

Name	Description
indicateOfLMRType	A type of which the value is amoung left, middle or right.

4.4.4.11 measureUnitLMHType

4.4.4.11.1 Syntax

Source

```
<!-- ################################################ -->
<!--  measure Unit LMH Type                           -->
<!-- ################################################ -->
<simpleType name="measureUnitLMHType">
    <union memberTypes="vwoc:indicateOfLMHType float"/>
</simpleType>
```

4.4.4.11.2 Semantics

Name	Description
measureUnitLMHType	A type which may be either indicateOfLMHType or float.

4.4.4.12 measureUnitSMBType

4.4.4.12.1 Syntax

Source

```
<!-- ################################################ -->
<!--  measure Unit SMB Type                           -->
<!-- ################################################ -->
<simpleType name="measureUnitSMBType">
    <union memberTypes="vwoc:indicateOfSMBType float"/>
</simpleType>
```

4.4.4.12.2 Semantics

Name	Description
measureUnitSMBType	A type which may be either indicateOfSMBType or float.

4.4.4.13 levelOf5Type

4.4.4.13.1 Syntax

Source

```
<!-- ################################################ -->
<!--  level Of 5 Type                                 -->
<!-- ################################################ -->
<simpleType name="levelOf5Type">
    <restriction base="integer">
        <minInclusive value="1"/>
        <maxInclusive value="5"/>
    </restriction>
</simpleType>
```

4.4.4.13.2 Semantics

Name	Description
levelOf5Type	A type of which the integer value is from one to five.

4.4.4.14 angleType

4.4.4.14.1 Syntax

Source

```
<!-- ################################################ -->
<!-- angle Type                                       -->
<!-- ################################################ -->
<simpleType name="angleType">
    <restriction base="float">
        <minInclusive value="0"/>
        <maxInclusive value="360"/>
    </restriction>
</simpleType>
```

4.4.4.14.2 Semantics

Name	Description
angleType	A type of which the floating point value is from 0 degree to 360 degree.

4.4.4.15 percentageType

4.4.4.15.1 Syntax

Source

```
<!-- ################################################ -->
<!--  percentage Type                                 -->
<!-- ################################################ -->
<simpleType name="percentageType">
    <restriction base="float">
        <minInclusive value="0"/>
        <maxInclusive value="100"/>
    </restriction>
</simpleType>
```

4.4.4.15.2 Semantics

Name	Description
percentageType	A type of which the floating point value is from 0 percent to 100 percent.

4.4.4.16 unlimitedPertageType

4.4.4.16.1 Syntax

Source

```
<!-- ################################################ -->
<!--  unlimited percentage Type                       -->
<!-- ################################################ -->
<simpleType name="unlimitedPercentageType">
    <restriction base="float">
        <minInclusive value="0"/>
    </restriction>
</simpleType>
```

4.4.4.16.2 Semantics

Name	Description
unlimitedPercentageType	A type of which the floating point value is from 0 percent.

5 Avatar metadata

5.1 Introduction

Avatar metadata as a (visual) representation of the user inside the environment serves the following purposes:

- make visible the presence of a real user into the VE,
- characterize the user within the VE,
- interact with the VE.

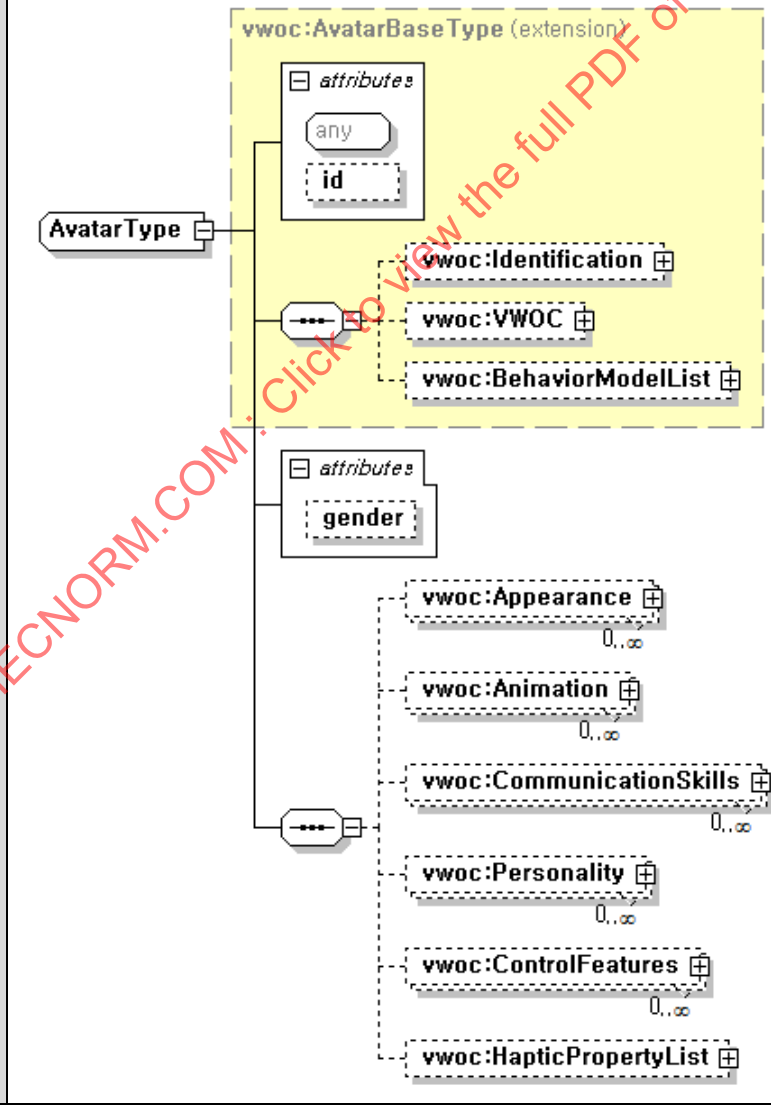
The "Avatar" element is composed of following type of data with the extension of the base type of avatar.

- **Appearance**: contains the high level description of the appearance and may refer a media containing the exact geometry and texture,
- **Animation**: contains the description of a set of animation sequences that the avatar is able to perform and may refer to several medias containing the exact (geometric transformations) animation parameters,
- **CommunicationSkills**: contains a set of descriptors providing information on the different modalities an avatar is able to communicate,
- **Personality**: contains a set of descriptors defining the personality of the avatar,
- **ControlFeatures**: contains a set of descriptors defining possible place-holders for sensors on body skeleton and face feature points.
- **HapticPropertyList**: contains a list of high level descriptors of the haptic properties.
- **gender**: describes the gender of the avatar.

5.2 AvatarType

5.2.1 Syntax

Diagram



Source

```
<!-- ################################################ -->
<!--  Avatar Type                                     -->
<!-- ################################################ -->
<complexType name="AvatarType">
      <complexContent>
            <extension base="vwoc:AvatarBaseType">
                  <sequence>
                        <element name="Appearance" type="vwoc:AvatarAppearanceType" minOccurs="0"
maxOccurs="unbounded"/>
                        <element name="Animation" type="vwoc:AvatarAnimationType" minOccurs="0"
maxOccurs="unbounded"/>
                        <element name="CommunicationSkills" type="vwoc:AvatarCommunicationSkillsType"
minOccurs="0" maxOccurs="unbounded"/>
                        <element name="Personality" type="vwoc:AvatarPersonalityType" minOccurs="0"
maxOccurs="unbounded"/>
                        <element name="ControlFeatures" type="vwoc:AvatarControlFeaturesType"
minOccurs="0" maxOccurs="unbounded"/>
                        <element name="HapticPropertyList" type="vwoc:VWOHapticPropertyListType"
minOccurs="0"/>
                  </sequence>
                  <attribute name="gender" type="string" use="optional"/>
            </extension>
      </complexContent>
</complexType>
```

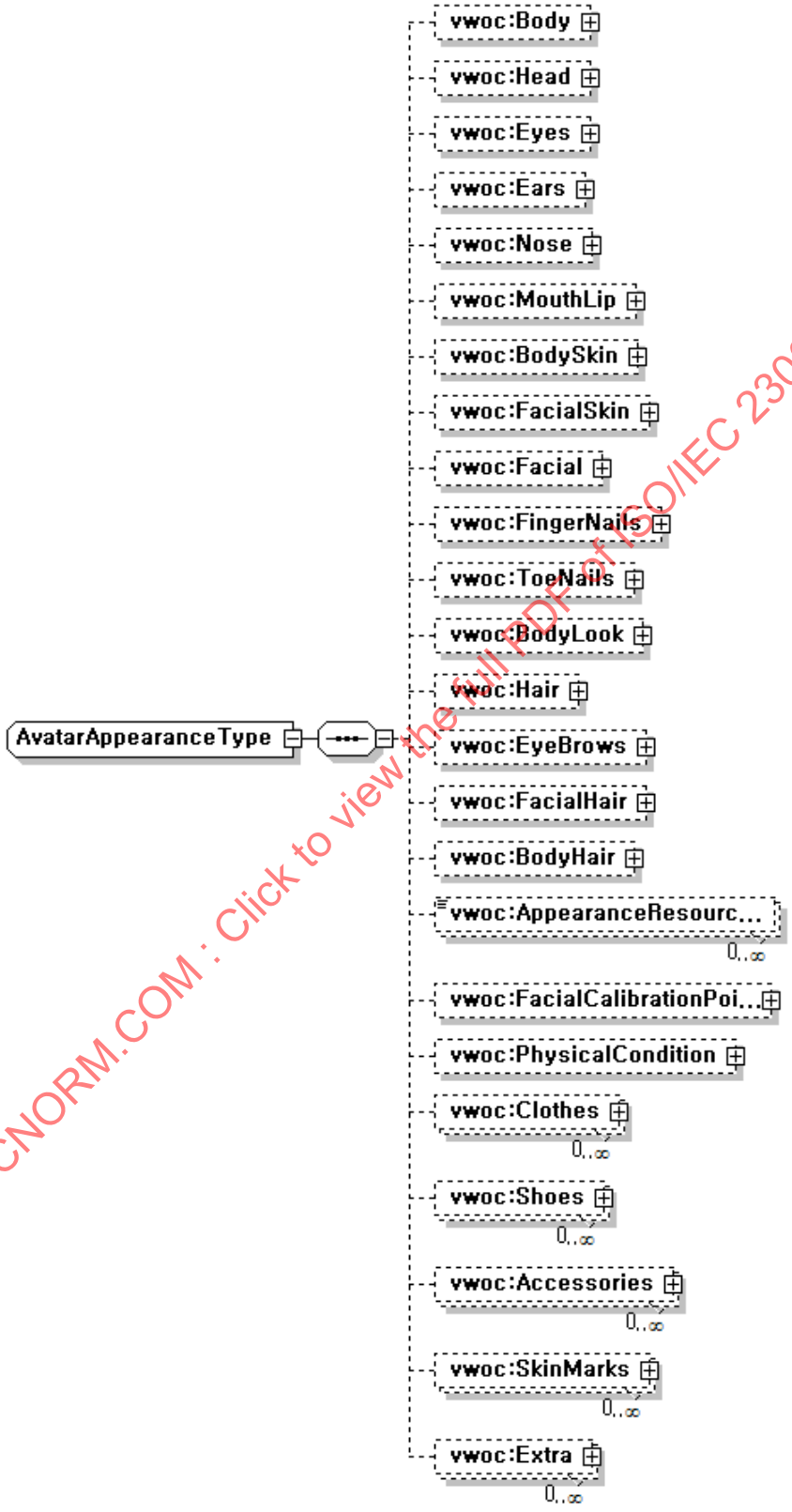
5.2.2 Semantics

Name	Description
AvatarType	A type that represents the user inside the virtual world environment.
Appearance	Contains the high level description of the appearance of an avatar,
Animation	Contains the description of a set of animation sequences that the avatar is able to perform.
CommunicationSkills	Contains a set of descriptors providing information on the different modalities an avatar is able to communicate.
Personality	Contains a set of descriptors defining the personality of the avatar.
ControlFeatures	Contains a set of descriptors defining possible place-holders for sensors on body skeleton and face feature points.
HapticPropertyList	Contains a list of high level descriptors of the haptic properties.
gender	Describes the gender of the avatar.

5.2.3 AvatarAppearanceType

5.2.3.1 Syntax

Diagram



Source

```
<!-- ################################################ -->
<!--  Avatar Appearance Type                          -->
<!-- ################################################ -->
<complexType name="AvatarAppearanceType">
    <sequence>
        <element name="Body" type="vwoc:BodyType" minOccurs="0"/>
        <element name="Head" type="vwoc:HeadType" minOccurs="0"/>
        <element name="Eyes" type="vwoc:EyesType" minOccurs="0"/>
        <element name="Ears" type="vwoc:EarsType" minOccurs="0"/>
        <element name="Nose" type="vwoc:NoseType" minOccurs="0"/>
        <element name="MouthLip" type="vwoc:MouthType" minOccurs="0"/>
        <element name="BodySkin" type="vwoc:SkinType" minOccurs="0"/>
        <element name="FacialSkin" type="vwoc:SkinType" minOccurs="0"/>
        <element name="Facial" type="vwoc:FacialType" minOccurs="0"/>
        <element name="FingerNails" type="vwoc:NailType" minOccurs="0"/>
        <element name="ToeNails" type="vwoc:NailType" minOccurs="0"/>

        <element name="BodyLook" type="vwoc:BodyLookType" minOccurs="0"/>
        <element name="Hair" type="vwoc:HairType" minOccurs="0"/>
        <element name="EyeBrows" type="vwoc:EyebrowsType" minOccurs="0"/>
        <element name="FacialHair" type="vwoc:FacialHairType" minOccurs="0"/>
        <element name="BodyHair" type="vwoc:BodyHairType" minOccurs="0"/>
        <element name="AppearanceResources" type="anyURI" minOccurs="0" maxOccurs="unbounded"/>
        <element name="FacialCalibrationPoints" type="vwoc:FacialCalibrationPointsType" minOccurs="0"/>
        <element name="PhysicalCondition" type="vwoc:PhysicalConditionType" minOccurs="0"/>
        <element name="Clothes" type="vwoc:VirtualObjectType" minOccurs="0"
maxOccurs="unbounded"/>
        <element name="Shoes" type="vwoc:VirtualObjectType" minOccurs="0" maxOccurs="unbounded"/>
        <element name="Accessories" type="vwoc:VirtualObjectType" minOccurs="0"
maxOccurs="unbounded"/>
        <element name="SkinMarks " type="vwoc:VirtualObjectType" minOccurs="0"
maxOccurs="unbounded"/>
        <element name="Extra" type="vwoc:ExtraType" minOccurs="0" maxOccurs="unbounded"/>
    </sequence>
</complexType>
<!-- ################################################ -->
<!--  Body Type                                       -->
<!-- ################################################ -->
<complexType name="BodyType">
    <sequence>
        <element name="BodyHeight" type="float" minOccurs="0"/>
        <element name="BodyThickness" type="float" minOccurs="0"/>
        <element name="BodyFat" type="vwoc:measureUnitLMHType" minOccurs="0"/>
        <element name="TorsoMuscles" type="vwoc:measureUnitLMHType" minOccurs="0"/>
        <element name="NeckThikness" type="float" minOccurs="0"/>
        <element name="NeckLength" type="float" minOccurs="0"/>
        <element name="Shoulders" type="float" minOccurs="0"/>
        <element name="Pectorials" type="float" minOccurs="0"/>
        <element name="ArmLength" type="float" minOccurs="0"/>
        <element name="HeadSize" type="float" minOccurs="0"/>
        <element name="TorsoLength" type="float" minOccurs="0"/>
        <element name="LoveHandles" type="float" minOccurs="0"/>
        <element name="BellySize" type="float" minOccurs="0"/>
        <element name="LegMuscles" type="float" minOccurs="0"/>
        <element name="LegLength" type="float" minOccurs="0"/>
        <element name="HipWidth" type="float" minOccurs="0"/>
        <element name="HipLength" type="float" minOccurs="0"/>
        <element name="ButtSize" type="float" minOccurs="0"/>
        <element name="Package" type="vwoc:indicateOfSMBType" minOccurs="0"/>
        <element name="SaddleBags" type="vwoc:indicateOfSMBType" minOccurs="0"/>
        <element name="KneeAngle" type="vwoc:angleType" minOccurs="0"/>
        <element name="FootSize" type="float" minOccurs="0"/>
        <element name="Extra" type="vwoc:ExtraType" minOccurs="0" maxOccurs="unbounded"/>
    </sequence>
    <attribute name="hapticIDRef" type="IDREF" use="optional"/>
</complexType>
<!-- ################################################ -->
```

```
<!--  Head Type                                                  -->
<!-- ########################################################## -->
<complexType name="HeadType">
    <sequence>
        <element name="HeadSize" type="vwoc:measureUnitSMBType" minOccurs="0"/>
        <element name="HeadStretch" type="vwoc:unlimitedPercentageType" minOccurs="0"/>
        <element name="HeadShape" minOccurs="0">
            <simpleType>
                <restriction base="string">
                    <enumeration value="square"/>
                    <enumeration value="round"/>
                    <enumeration value="oval"/>
                    <enumeration value="long"/>
                </restriction>
            </simpleType>
        </element>
        <element name="EggHead" type="boolean" minOccurs="0"/>
        <element name="HeadLength" type="float" minOccurs="0"/>
        <element name="FaceShear" type="float" minOccurs="0"/>
        <element name="ForeheadSize" type="float" minOccurs="0"/>
        <element name="ForeheadAngle" type="vwoc:angleType" minOccurs="0"/>
        <element name="BrowSize" type="float" minOccurs="0"/>
        <element name="FaceSkin" minOccurs="0">
            <simpleType>
                <restriction base="string">
                    <enumeration value="dry"/>
                    <enumeration value="normal"/>
                    <enumeration value="greassy"/>
                </restriction>
            </simpleType>
        </element>
        <element name="Cheeks" type="vwoc:measureUnitSMBType" minOccurs="0"/>
        <element name="CheeksDepth" type="float" minOccurs="0"/>
        <element name="CheeksShape" minOccurs="0">
            <simpleType>
                <restriction base="string">
                    <enumeration value="chubby"/>
                    <enumeration value="high"/>
                    <enumeration value="bone"/>
                </restriction>
            </simpleType>
        </element>
        <element name="UpperCheeks" type="vwoc:measureUnitSMBType" minOccurs="0"/>
        <element name="LowerCheeks" type="vwoc:measureUnitSMBType" minOccurs="0"/>
        <element name="CheekBones" type="vwoc:indicateOfDMUType" minOccurs="0"/>
        <element name="Extra" type="vwoc:ExtraType" minOccurs="0" maxOccurs="unbounded"/>
</sequence>
    <attribute name="hapticIDRef" type="IDREF" use="optional"/>
</complexType>
<!-- ########################################################## -->
<!--  Eyes Type                                                  -->
<!-- ########################################################## -->
<complexType name="EyesType">
    <sequence>
        <element name="EyeSize" type="float" minOccurs="0"/>
        <element name="EyeOpening" type="vwoc:unlimitedPercentageType" minOccurs="0"/>
        <element name="EyeSpacing" type="float" minOccurs="0"/>
        <element name="OuterEyeCorner" type="vwoc:indicateOfDMUType" minOccurs="0"/>
        <element name="InnerEyeCorner" type="vwoc:indicateOfDMUType" minOccurs="0"/>
        <element name="EyeDepth" type="float" minOccurs="0"/>
        <element name="UpperEyelidFold" type="float" minOccurs="0"/>
        <element name="EyeBags" type="float" minOccurs="0"/>
        <element name="PuffyEyeLids" type="vwoc:indicateOfSMBType" minOccurs="0"/>
        <element name="EyelashLength" type="float" minOccurs="0"/>
        <element name="EyePop" type="float" minOccurs="0"/>
        <element name="EyeColor" type="mpegvct:colorType" minOccurs="0"/>
        <element name="EyeLightness" type="vwoc:percentageType" minOccurs="0"/>
```

```
            <element name="Extra" type="vwoc:ExtraType" minOccurs="0" maxOccurs="unbounded"/>
        </sequence>
        <attribute name="hapticIDRef" type="IDREF" use="optional"/>
</complexType>
<!-- ################################################ -->
<!--  Ears Type                                       -->
<!-- ################################################ -->
<complexType name="EarsType">
        <sequence>
            <element name="EarSize" type="float" minOccurs="0"/>
            <element name="EarPosition" type="vwoc:indicateOfDMUType" minOccurs="0"/>
            <element name="EarAngle" minOccurs="0">
                <simpleType>
                    <restriction base="vwoc:angleType">
                        <maxInclusive value="180"/>
                    </restriction>
                </simpleType>
            </element>
            <element name="AttachedEarlobes" type="float" minOccurs="0"/>
            <element name="EarTips" type="vwoc:indicateOfPMNType" minOccurs="0"/>
            <element name="Extra" type="vwoc:ExtraType" minOccurs="0" maxOccurs="unbounded"/>
        </sequence>
        <attribute name="hapticIDRef" type="IDREF" use="optional"/>
</complexType>
<!-- ################################################ -->
<!--  Nose Type                                       -->
<!-- ################################################ -->
<complexType name="NoseType">
        <sequence>
            <element name="NoseSize" type="float" minOccurs="0"/>
            <element name="NoseWidth" type="float" minOccurs="0"/>
            <element name="NostrillWidth" type="float" minOccurs="0"/>
            <element name="NostrillDivision" type="float" minOccurs="0"/>
            <element name="NoseThickness" type="float" minOccurs="0"/>
            <element name="UpperBridge" type="float" minOccurs="0"/>
            <element name="LowerBridge" type="float" minOccurs="0"/>
            <element name="BridgeWidth" type="float" minOccurs="0"/>
            <element name="NoseTipAngle" type="vwoc:indicateOfDUType" minOccurs="0"/>
            <element name="NoseTipShape" minOccurs="0">
                <simpleType>
                    <restriction base="string">
                        <enumeration value="pointy"/>
                        <enumeration value="bulbous"/>
                    </restriction>
                </simpleType>
            </element>
            <element name="CrookedNose" type="vwoc:indicateOfLRType" minOccurs="0"/>
            <element name="Extra" type="vwoc:ExtraType" minOccurs="0" maxOccurs="unbounded"/>
        </sequence>
        <attribute name="hapticIDRef" type="IDREF" use="optional"/>
</complexType>
<!-- ################################################ -->
<!--  MouthLip Type                                   -->
<!-- ################################################ -->
<complexType name="MouthLipType">
        <sequence>
            <element name="LipWidth" type="float" minOccurs="0"/>
            <element name="LipFullness" type="float" minOccurs="0"/>
            <element name="LipThickness" type="float" minOccurs="0"/>
            <element name="LipRatio" type="float" minOccurs="0"/>
            <element name="MouthSize" type="float" minOccurs="0"/>
            <element name="MouthPosition" type="float" minOccurs="0"/>
            <element name="MouthCorner" type="vwoc:indicateOfDMUType" minOccurs="0"/>
            <element name="LipCleftDepth" type="float" minOccurs="0"/>
            <element name="LipCleft" type="float" minOccurs="0"/>
            <element name="ShiftMouth" type="vwoc:indicateOfLMRType" minOccurs="0"/>
            <element name="ChinAngle" minOccurs="0">
```

```
                <simpleType>
                    <restriction base="string">
                        <enumeration value="inner"/>
                        <enumeration value="outer"/>
                    </restriction>
                </simpleType>
            </element>
            <element name="JawShape" type="vwoc:indicateOfPMNType" minOccurs="0"/>
            <element name="ChinDepth" type="float" minOccurs="0"/>
            <element name="JawAngle" type="float" minOccurs="0"/>
            <element name="JawJut" minOccurs="0">
                <simpleType>
                    <restriction base="string">
                        <enumeration value="inside"/>
                        <enumeration value="outside"/>
                    </restriction>
                </simpleType>
            </element>
            <element name="Jowls" type="float" minOccurs="0"/>
            <element name="ChinCleft" type="vwoc:indicateOfRCType" minOccurs="0"/>
            <element name="UpperChinCleft" type="vwoc:indicateOfRCType" minOccurs="0"/>
            <element name="ChinNeck" type="float" minOccurs="0"/>
            <element name="Extra" type="vwoc:ExtraType" minOccurs="0" maxOccurs="unbounded"/>
        </sequence>
        <attribute name="hapticIDRef" type="IDREF" use="optional"/>
    </complexType>
    <!-- ################################################ -->
    <!--  Skin Type                                       -->
    <!-- ################################################ -->
    <complexType name="SkinType">
        <sequence>
            <element name="SkinPigment" type="mpegvct:colorType" minOccurs="0"/>
            <element name="SkinRuddiness" type="vwoc:percentageType" minOccurs="0"/>
            <element name="SkinRainbowColor" type="mpegvct:colorType" minOccurs="0"/>
            <element name="Extra" type="vwoc:ExtraType" minOccurs="0" maxOccurs="unbounded"/>
        </sequence>
        <attribute name="hapticIDRef" type="IDREF" use="optional"/>
    </complexType>
    <!-- ################################################ -->
    <!--  Facial Type                                     -->
    <!-- ################################################ -->
    <complexType name="FacialType">
        <sequence>
            <element name="FacialDefinition" type="vwoc:levelOf5Type" minOccurs="0"/>
            <element name="Freckles" type="vwoc:levelOf5Type" minOccurs="0"/>
            <element name="Wrinkles" type="boolean" minOccurs="0"/>
            <element name="RosyComplexion" type="boolean" minOccurs="0"/>
            <element name="LipPinkness" type="vwoc:levelOf5Type" minOccurs="0"/>
            <element name="Lipstick" type="boolean" minOccurs="0"/>
            <element name="LipstickColor" type="mpegvct:colorType" minOccurs="0"/>
            <element name="LipGloss" type="vwoc:levelOf5Type" minOccurs="0"/>
            <element name="Blush" type="boolean" minOccurs="0"/>
            <element name="BlushColor" type="mpegvct:colorType" minOccurs="0"/>
            <element name="BlushOpacity" type="vwoc:percentageType" minOccurs="0"/>
            <element name="InnerShadow" type="boolean" minOccurs="0"/>
            <element name="InnerShadowColor" type="mpegvct:colorType" minOccurs="0"/>
            <element name="InnerShadowOpacity" type="vwoc:percentageType" minOccurs="0"/>
            <element name="OuterShadow" type="boolean" minOccurs="0"/>
            <element name="OuterShadowOpacity" type="vwoc:percentageType" minOccurs="0"/>
            <element name="EyeLiner" type="boolean" minOccurs="0"/>
            <element name="EyeLinerColor" type="mpegvct:colorType" minOccurs="0"/>
            <element name="Extra" type="vwoc:ExtraType" minOccurs="0" maxOccurs="unbounded"/>
        </sequence>
        <attribute name="hapticIDRef" type="IDREF" use="optional"/>
    </complexType>
    <!-- ################################################ -->
    <!--  Nail Type                                       -->
```

```
<!-- ################################################ -->
<complexType name="NailType">
    <sequence>
        <element name="NailPolish" type="boolean" minOccurs="0"/>
        <element name="NailPolishColor" type="mpegvct:colorType" minOccurs="0"/>
        <element name="Extra" type="vwoc:ExtraType" minOccurs="0" maxOccurs="unbounded"/>
    </sequence>
    <attribute name="hapticIDRef" type="IDREF" use="optional"/>
</complexType>
<!-- ################################################ -->
<!--  Body Look Type                                  -->
<!-- ################################################ -->
<complexType name="BodyLookType">
    <sequence>
        <element name="BodyDefinition" type="vwoc:indicateOfSMLType" minOccurs="0"/>
        <element name="BodyFreckles" type="vwoc:levelOf5Type" minOccurs="0"/>
        <element name="Extra" type="vwoc:ExtraType" minOccurs="0" maxOccurs="unbounded"/>
    </sequence>
</complexType>
<!-- ################################################ -->
<!--  Hair Type                                       -->
<!-- ################################################ -->
<complexType name="HairType">
    <sequence>
        <element name="HairSize" type="vwoc:indicateOfSMLType" minOccurs="0"/>
        <element name="HairStyle" type="mpeg7:termReferenceType" minOccurs="0"/>
        <element name="HairColor" type="mpegvct:colorType" minOccurs="0"/>
        <element name="WhiteHair" type="vwoc:percentageType" minOccurs="0"/>
        <element name="RainbowColor" type="mpegvct:colorType" minOccurs="0"/>
        <element name="BlondeHair" type="vwoc:percentageType" minOccurs="0"/>
        <element name="RedHair" type="vwoc:percentageType" minOccurs="0"/>
        <element name="HairVolume" type="vwoc:indicateOfSMBType" minOccurs="0"/>
        <element name="HairFront" type="vwoc:indicateOfSMLType" minOccurs="0"/>
        <element name="HairSides" type="vwoc:indicateOfSMLType" minOccurs="0"/>
        <element name="HairBack" type="vwoc:indicateOfSMLType" minOccurs="0"/>
        <element name="BigHairFront" type="vwoc:indicateOfSMLType" minOccurs="0"/>
        <element name="BigHairTop" type="vwoc:indicateOfSMLType" minOccurs="0"/>
        <element name="BigHairBack" type="vwoc:indicateOfSMLType" minOccurs="0"/>
        <element name="FrontFringe" type="vwoc:indicateOfSMLType" minOccurs="0"/>
        <element name="SideFringe" type="vwoc:indicateOfSMLType" minOccurs="0"/>
        <element name="BackFringe" type="vwoc:indicateOfSMLType" minOccurs="0"/>
        <element name="FullHairSides" type="vwoc:indicateOfSMLType" minOccurs="0"/>
        <element name="HairSweep" type="vwoc:indicateOfSMLType" minOccurs="0"/>
        <element name="ShearFront" type="vwoc:indicateOfLMRType" minOccurs="0"/>
        <element name="ShearBack" type="vwoc:indicateOfSMLType" minOccurs="0"/>
        <element name="TuperFront" type="vwoc:indicateOfSMLType" minOccurs="0"/>
        <element name="TuperBack" type="vwoc:indicateOfSMLType" minOccurs="0"/>
        <element name="RumpledHair" minOccurs="0">
            <simpleType>
                <restriction base="string">
                    <enumeration value="low"/>
                    <enumeration value="moderate"/>
                    <enumeration value="high"/>
                </restriction>
            </simpleType>
        </element>
        <element name="PigTails" type="vwoc:indicateOfSMLType" minOccurs="0"/>
        <element name="PonyTail" type="vwoc:indicateOfSMLType" minOccurs="0"/>
        <element name="SprikedHair" type="vwoc:indicateOfSMLType" minOccurs="0"/>
        <element name="HairTilt" type="float" minOccurs="0"/>
        <element name="HairMiddlePart" type="vwoc:indicateOfLHType" minOccurs="0"/>
        <element name="HairRightPart" type="vwoc:indicateOfLHType" minOccurs="0"/>
        <element name="HairLeftPart" type="vwoc:indicateOfLHType" minOccurs="0"/>
        <element name="HairPartsBangs" type="vwoc:indicateOfLHType" minOccurs="0"/>
        <element name="Extra" type="vwoc:ExtraType" minOccurs="0" maxOccurs="unbounded"/>
    </sequence>
    <attribute name="hapticIDRef" type="IDREF" use="optional"/>
```

```
</complexType>
<!-- ################################################ -->
<!--  Eye Brows Type                                  -->
<!-- ################################################ -->
<complexType name="EyebrowsType">
      <sequence>
            <element name="EyebrowSize" type="vwoc:indicateOfSMLType" minOccurs="0"/>
            <element name="EyebrowDensity" minOccurs="0">
                  <simpleType>
                        <restriction base="string">
                              <enumeration value="low"/>
                              <enumeration value="moderate"/>
                              <enumeration value="high"/>
                        </restriction>
                  </simpleType>
            </element>
            <element name="EyebrowHeight" type="vwoc:measureUnitLMHType" minOccurs="0"/>
            <element name="EyebrowArc" minOccurs="0">
                  <simpleType>
                        <restriction base="string">
                              <enumeration value="flat"/>
                              <enumeration value="middle"/>
                              <enumeration value="arched"/>
                        </restriction>
                  </simpleType>
            </element>
            <element name="EyebrowPoints" type="vwoc:indicateOfDMUType" minOccurs="0"/>
            <element name="Extra" type="vwoc:ExtraType" minOccurs="0" maxOccurs="unbounded"/>
      </sequence>
      <attribute name="hapticIDRef" type="IDREF" use="optional"/>
</complexType>
<!-- ################################################ -->
<!--  Facial Hair Type                                -->
<!-- ################################################ -->
<complexType name="FacialHairType">
      <sequence>
            <element name="FacialHairThickness" type="vwoc:measureUnitLMHType" minOccurs="0"/>
            <element name="FacialSideburns" type="mpegvct:colorType" minOccurs="0"/>
            <element name="FacialMustache" type="boolean" minOccurs="0"/>
            <element name="FacialChinCurtains" type="boolean" minOccurs="0"/>
            <element name="FacialsoulPatch" type="boolean" minOccurs="0"/>
            <element name="Extra" type="vwoc:ExtraType" minOccurs="0" maxOccurs="unbounded"/>
      </sequence>
      <attribute name="hapticIDRef" type="IDREF" use="optional"/>
</complexType>
<!-- ################################################ -->
<!--  Body Hair Type                                  -->
<!-- ################################################ -->
<complexType name="BodyHairType">
      <sequence>
        <element name="HairColor" type="mpegvct:colorType" minOccurs="0"/>
        <element name="HairThickness" type="vwoc:measureUnitLMHType" minOccurs="0"/>
        <element name="Extra" type="vwoc:ExtraType" minOccurs="0" maxOccurs="unbounded"/>
      </sequence>
   </complexType>
<!-- ################################################ -->
<!--  Facial Calibration Points Type                  -->
<!-- ################################################ -->
<complexType name="FacialCalibrationPointsType">
      <sequence>
            <element name="Sellion" type="vwoc:PointType" minOccurs="0"/>
            <element name="RInfraorbitale" type="vwoc:PointType" minOccurs="0"/>
            <element name="LInfraorbitale" type="vwoc:PointType" minOccurs="0"/>
            <element name="Supramenton" type="vwoc:PointType" minOccurs="0"/>
            <element name="RTragion" type="vwoc:PointType" minOccurs="0"/>
            <element name="RGonion" type="vwoc:PointType" minOccurs="0"/>
            <element name="LTragion" type="vwoc:PointType" minOccurs="0"/>
```

```
            <element name="LGonion" type="vwoc:PointType" minOccurs="0"/>
            <element name="Extra" type="vwoc:ExtraType" minOccurs="0" maxOccurs="unbounded"/>
        </sequence>
    </complexType>
    <!-- ################################################ -->
    <!--  Physical Condition Type                         -->
    <!-- ################################################ -->
    <complexType name="PhysicalConditionType">
        <sequence>
            <element name="BodyStrength" type="vwoc:unlimitedPercentageType" minOccurs="0"/>
            <element name="BodyFlexibility" type="vwoc:indicateOfLMHType" minOccurs="0"/>
            <element name="Extra" type="vwoc:ExtraType" minOccurs="0" maxOccurs="unbounded"/>
        </sequence>
    </complexType>
```

5.2.3.2 Semantics

Name	Description
Avatar Appearance Type	A type that contains the high level description of the avatar appearance and may refer a media containing the exact geometry and texture.
Body	Set of descriptions for body of the avatar.

Name	Description
BodyType	A type that describes avatar body.
BodyHeight	Full height of the character (always in meter)
BodyThickness	This indicates the weight of the bounding box of the avatar (always in meter)
BodyFat	This should be one of Low, Medium, High and indicates the fatness of the body
TorsoMuscles	This should be one of Low, Medium, High and indicates the average muscularity of the avatar's body
NeckThikness	The diameter of the neck (always in meter)
NeckLength	The height of the neck (always in meter)
Shoulders	The width of the shoulders (always in meter)
Pectorials	The size of the pectoral muscles (always in meter)
ArmLength	Length of complete arm (always in meter)
HandSize	Size of the whole hand including fingers (always in meter)
TorsoLength	The length of torso(between pectorals and legs) (always in meter)
LoveHandles	Size of the love handles (always in meter)
BellySize	Diameter of the belly (always in meter)
LegMucles	Size of all leg muscles (always in meter)
LegLength	Length of complete leg (always in meter)
HipWidth	The width of the hip area (always in meter)
HipLength	The vertical size of the hip area (always in meter)
ButtSize	Diameter of the butt's avatar (always in meter)
Package	Size of the package (small, medium, big)
SaddleBags	Volume of saddle bags (small, medium, big)
KneeAngle	The angle between the upper end lower leg, normally 0 when they are aligned (in degrees, from 0 to 360)
FootSize	Size of the whole foot including toes (always in meter)
Extra	Describes any other descriptions of body.
hapticIDRef	Identifier that refers to the haptic properties of the body.

<table>
<tr><td>Head</td><td>Set of descriptions for head of the avatar.
<table>
<tr><th>Name</th><th>Description</th></tr>
<tr><td>HeadType</td><td>A type that describes avatar head.</td></tr>
<tr><td>HeadSize</td><td>Size of the entire head (small, medium, big)</td></tr>
<tr><td>HeadStrech</td><td>Vertical stretch of the head in %</td></tr>
<tr><td>HeadShape</td><td>This can be one of "square", "round", “oval”, or "long”</td></tr>
<tr><td>EggHead</td><td>Head is larger on the top than on the bottom or vice versa. This can be "yes" or "not"</td></tr>
<tr><td>HeadLength</td><td>The distance between the face and the back of the head, flat head or long head, measured in meters</td></tr>
<tr><td>FaceShear</td><td>Changes the height difference between the two sides of the face (always in meter)</td></tr>
<tr><td>ForeheadSize</td><td>The height of the forehead measured in meters</td></tr>
<tr><td>ForeheadAngle</td><td>The angle of the forehead measured in degrees</td></tr>
<tr><td>BrowSize</td><td>Measures how much the eyebrows are extruded from the face (in meter)</td></tr>
<tr><td>FaceSkin</td><td>Describe the type of face skin (dry, normal, greasy)</td></tr>
<tr><td>Cheeks</td><td>The size of the complete cheeks (small, medium, big)</td></tr>
<tr><td>CheeksDepth</td><td>The depth of the complete cheeks (always in meter)</td></tr>
<tr><td>CheeksShape</td><td>Different cheeks shapes (one of the following values: chubby, high, bone)</td></tr>
<tr><td>UpperCheeks</td><td>The volume of the upper cheeks (small, medium, big)</td></tr>
<tr><td>LowerCheeks</td><td>The volume of the lower cheeks (small, medium, big)</td></tr>
<tr><td>CheekBones</td><td>The vertical position of the cheek bones (down, medium, up)</td></tr>
<tr><td>Extra</td><td>Describes any other descriptions of head.</td></tr>
<tr><td>hapticIDRef</td><td>Identifier that refers to the haptic properties of the head.</td></tr>
</table></td></tr>
<tr><td>Eyes</td><td>Set of descriptions for eyes of the avatar.
<table>
<tr><th>Name</th><th>Description</th></tr>
<tr><td>EyesType</td><td>A type that describes avatar eyes.</td></tr>
<tr><td>EyeSize</td><td>The size of the entire eyes (always in meter)</td></tr>
<tr><td>EyeOpening</td><td>How much the eyelids are opened (always in meter)</td></tr>
<tr><td>EyeSpacing</td><td>Distance between the eyes (always in meter)</td></tr>
<tr><td>OuterEyeCorner</td><td>Vertical position of the outer eye corner (down, middle, up)</td></tr>
<tr><td>InnerEyeCorner</td><td>Vertical position of the inner eye corner (down, middle, up)</td></tr>
<tr><td>EyeDepth</td><td>How much the eyes are inside the head (always in meter)</td></tr>
<tr><td>UpperEyelidFold</td><td>How much the upper eyelid covers the eye (always in meter)</td></tr>
<tr><td>EyeBags</td><td>The size of the eye bags (always in meter)</td></tr>
<tr><td>PuffyEyelids</td><td>The volume of the eye bags (small, medium, big)</td></tr>
<tr><td>EyelashLength</td><td>The length of the eyelashes (always in meter)</td></tr>
<tr><td>EyePop</td><td>The size difference between the left and right eye (always in meter)</td></tr>
<tr><td>EyeColor</td><td>The color type defined in ISO/IEC 23005-6 shall be used for eye colour.</td></tr>
<tr><td>EyeLightness</td><td>The reflectivity of the eye in %</td></tr>
<tr><td>Extra</td><td>Describes any other descriptions of eyes.</td></tr>
<tr><td>hapticIDRef</td><td>Identifier that refers to the haptic properties of the eyes.</td></tr>
</table></td></tr>
<tr><td>Ears</td><td>Set of descriptions for ears of the avatar.
<table>
<tr><th>Name</th><th>Description</th></tr>
<tr><td>EarsType</td><td>A type that describes avatar ears.</td></tr>
<tr><td>EarSize</td><td>Size of the entire ear (always in meter)</td></tr>
<tr><td>EarPosition</td><td>Vertical ear position on the head (down, middle, up)</td></tr>
<tr><td>EarAngle</td><td>The angle between the ear and the head in degrees</td></tr>
<tr><td>AttachedEarlobes</td><td>The size of the earlobes (always in meter)</td></tr>
<tr><td>EarTips</td><td>How much the ear tips are pointed (pointed, medium, not</td></tr>
</table></td></tr>
</table>

		pointed)
	Extra	Describes any other descriptions of ears.
	hapticIDRef	Identifier that refers to the haptic properties of the ears.

Nose — Set of descriptions for nose of the avatar.

Name	Description
NoseType	A type that describes avatar nose.
NoseSize	The height of the nose from its bottom (always in meter)
NoseWidth	The width of the complete nose (always in meter)
NostrillWidth	Width of only the nostrils (always in meter)
NostrillDivision	The size of the nostril division (always in meter)
NoseThickness	The size of the tip of the nose (always in meter)
UpperBridge	The height of the upper part of the nose (always in meter)
LowerBridge	The height of the lower part of the nose (always in meter)
BridgeWidth	The width of the upper part of the nose (always in meter)
NoseTipAngle	The angle of the nose tip, "up" or "down"
NoseTipShape	The shape of the nose tip, "pointy" or "bulbous"
CrookedNose	Displacement of the nose on the left or right side
Extra	Describes any other descriptions of nose.
hapticIDRef	Identifier that refers to the haptic properties of the nose.

MouthLip — Set of descriptions for mouth and lips of the avatar.

Name	Description
MouthLipType	A type that describes avatar eyes.
LipWidth	The width of the lips (m)
LipFullness	The fullness of the lip (m)
LipThickness	The thickness of the lip (m)
LipRatio	Difference between the upper and lower lip (m)
MouthSize	The size of the complete mouth (m)
MouthPosition	Vertical position of the mouth on the face (m)
MouthCorner	Vertical position of the mouth corner (down, middle, up)
LipCleftDepth	The height of the lip cleft (m)
LipCleft	The width of the lip cleft (m)
ShiftMouth	Horizontal position of mouth on the face (left, middle, right)
ChinAngle	The curvature of the chin, outer or inner
JawShape	Pointy to Square jaw (pointed, middle, not pointed)
ChinDepth	Vertical height of the chin (m)
JawAngle	The height of the jaw (m)
JawJut	Position of the jaw inside or out of the face (inside , outside)
Jowls	The size of the jowls (m)
ChinCleft	The shape of the chin cleft, "round" or "cleft"
UpperChinCleft	The shape of the upper chin cleft, "round" or "cleft"
ChinNeck	The size of the chin neck (m)
Extra	Describes any other descriptions of mouthlip.
hapticIDRef	Identifier that refers to the haptic properties of the mouth and lips.

BodySkin, — Set of descriptions for body skin of the avatar.

Name	Description
SkinType	A type that describes avatar skin.
SkinPigment	Body skin pigment (very light, light, average, olive, brown, black)
SkinRuddiness	Body skin ruddiness (few, medium, lot)

	SkinRainbowColor	The color type defined in ISO/IEC 23005-6 shall be used for body skin rainbow colour.
	Extra	Describes any other descriptions of body skin.
	hapticIDRef	Identifier that refers to the haptic properties of the body skin.
FacialSkin	Set of descriptions for facial skin of the avatar.	
	Name	Description
	SkinType	A type that describes avatar skin.
	SkinPigment	Facial skin pigment (very light, light, average, olive, brown, black)
	SkinRuddiness	Facial skin ruddiness (few, medium, lot)
	SkinRainbowColor	The color type defined in ISO/IEC 23005-6 shall be used for facial skin rainbow colour.
	Extra	Describes any other descriptions of facial skin.
	hapticIDRef	Identifier that refers to the haptic properties of the skin.
Facial	Set of descriptions for face of the avatar.	
	Name	Description
	FacialType	A type that describes avatar face.
	FacialDefinition	Level of brightness of the face from 1-lighted to 5 dark
	Freckles	Freckles (5 levels, 1=smallest, 5= biggest)
	Wrinkles	Wrinkles (yes or no)
	RosyComplexion	Rosy Complexion (yes or no)
	LipPinkness	Lip Pinkness (5 levels, 1=smallest, 5= biggest)
	Lipstick	Lipstick (yes or no)
	LipstickColor	The color type defined in ISO/IEC 23005-6 shall be used for lipstick colour.
	Lipgloss	Lipgloss (5 levels, 1=smallest, 5= biggest)
	Blush	Blush (yes or no)
	BlushColor	The color type defined in ISO/IEC 23005-6 shall be used for blush colour.
	BlushOpacity	Blush Opacity (%)
	InnerShadow	Inner Shadow (yes or no)
	InnerShadowColor	The color type defined in ISO/IEC 23005-6 shall be used for inner shadow colour.
	InnerShadowOpacity	Inner Shadow Opacity (%)
	OuterShadow	Outer Shadow (yes or no)
	OuterShadowOpacity	Outer Shadow Opacity (%)
	Eyeliner	Eyeliner (yes or no)
	EyelinerColor	The color type defined in ISO/IEC 23005-6 shall be used for eyeliner colour.
	Extra	Describes any other descriptions of face.
	hapticIDRef	Identifier that refers to the haptic properties of the face.
FingerNails,	Set of descriptions for finger nails of the avatar.	
	Name	Description
	NailType	A type that describes avatar nail.
	NailPolish	Finger nail polish (yes or no)
	NailPolishColor	The color type defined in ISO/IEC 23005-6 shall be used for finger nail polish colour.
	Extra	Describes any other descriptions of finger nails.
	hapticIDRef	Identifier that refers to the haptic properties of the nails.
ToeNails	Set of descriptions for toe nails of the avatar.	
	Name	Description
	NailType	A type that describes avatar nail.
	NailPolish	Toe nail polish (yes or no)

	NailPolishColor	The color type defined in ISO/IEC 23005-6 shall be used for toe nail polish colour.
	Extra	Describes any other descriptions of toe nails.
	hapticIDRef	Identifier that refers to the haptic properties of the nails.
BodyLook	Set of descriptions for body look of the avatar.	
	Name	Description
	BodyLookType	A type that describes avatar body look.
	BodyDefinition	Body definition (small, medium, large)
	BodyFreckles	Body Freckles (5 levels, 1=smallest, 5= biggest)
	Extra	Describes any other descriptions of bodylook.
Hair	Set of elements for general avatar hair description. Containing elements:	
	Name	Description
	HairType	A type that describes avatar hair.
	HairSize	The length of the hair (can be one of short, medium or long)
	HairStyle	The style of the hair as a reference to a classification scheme (CS) term. A CS that may be used for this purpose is the `HairStyleCS` defined in A.2.2 in this part.
	HairColor	The color type defined in ISO/IEC 23005-6 shall be used for hair colour.
	WhiteHair	Amount of white hair (%)
	RainbowColor	The color type defined in ISO/IEC 23005-6 shall be used for rainbow hair colour.
	BlondeHair	How much blond is the hair (%)
	RedHair	How much red is the hair (%)
	HairVolume	The volume of the complete hair (small, medium or big)
	HairFront	How much the hair goes toward front (short, medium or long)
	HairSides	The height of the sides of the hair (short, medium or long)
	HairBack	How long is the hair at the back (short, medium or long)
	BigHairFront	How high is the hair at the front of the skull (short, medium or long)
	BigHairTop	How high is the hair at the top of the skull (short, medium or long)
	BigHairBack	How high is the hair at the back of the skull (short, medium or long)
	FrontFringe	The length of the front fringe of the hair (short, medium or long)
	SideFringe	The length of the side fringe of the hair (short, medium or long)
	BackFringe	The length of the back fringe of the hair (short, medium or long)
	FullHairSides	The width of the hair (short, medium or long)
	HairSweep	How much the hair is turned towards the front (left, middle, right)
	ShearFront	How much the hair extends towards front (short, medium or long)
	ShearBack	How much the hair extends towards back (short, medium or long)
	TuperFront	The width of the hair at the front (short, medium or long)
	TuperBack	The width of the hair on the back (short, medium or long)
	Rumpledhair	How much the hair is rumpled (low, moderate or high)
	Pigtails	The length of the pigtails (short, medium or long)
	Ponytail	The length of the ponytail (short, medium or long)
	SpikedHair	The length of the spikes in the hair (short, medium or long)
	HairTilt	The vertical position of the hair from the top of the head (m)
	HairMiddlePart	How much the hair is parted at the middle front (low, high)
	HairRightPart	How much the hair is parted at the right side (low, high)
	HairLeftPart	How much the hair is parted at the left side (low, high)
	HairPartBangs	How much the hair is parted at the middle (low, high)

<table>
<tr><td></td><td>
<table>
<tr><td>Extra</td><td>Describes any other descriptions of hair.</td></tr>
<tr><td>hapticIDRef</td><td>Identifier that refers to the haptic properties of the hair.</td></tr>
</table>
</td></tr>
<tr><td>Eyebrows</td><td>Set of descriptions for eyebrows.of the avatar.
<table>
<tr><th>Name</th><th>Description</th></tr>
<tr><td>EyebrowsType</td><td>A type that describes avatar eyebrows.</td></tr>
<tr><td>EyebrowSize</td><td>The length of the eyebrow (short, medium, long)</td></tr>
<tr><td>EyebrowDensity</td><td>The density (low, moderate, high)</td></tr>
<tr><td>EyebrowHeight</td><td>The vertical eyebrow position on the face (low, middle, high)</td></tr>
<tr><td>EyebrowArc</td><td>The curvature of the Eyebrow. It can be low (flat), middle or high (arced)</td></tr>
<tr><td>EyebrowPoints</td><td>The direction of the eyebrows, towards up or down (down, middle, up)</td></tr>
<tr><td>Extra</td><td>Describes any other descriptions of eyebrows.</td></tr>
<tr><td>hapticIDRef</td><td>Identifier that refers to the haptic properties of the eyebrows.</td></tr>
</table>
</td></tr>
<tr><td>FacialHair</td><td>Set of descriptions for facial hair of the avatar.
<table>
<tr><th>Name</th><th>Description</th></tr>
<tr><td>FacialHairType</td><td>A type that describes avatar facial hair.</td></tr>
<tr><td>FacialHairThickness</td><td>The thick of the facial hair (low, middle, high)</td></tr>
<tr><td>FacialSideBurns</td><td>The color type defined in ISO/IEC 23005-6 shall be used for the color of the facial side.</td></tr>
<tr><td>FacialMoustache</td><td>The facial moustache (yes or no)</td></tr>
<tr><td>FacialchinCurtains</td><td>Facial chin curtains (yes or no)</td></tr>
<tr><td>FacialSoulPatch</td><td>Facial soul patch (yes or no)</td></tr>
<tr><td>Extra</td><td>Describes any other descriptions of facial hair.</td></tr>
<tr><td>hapticIDRef</td><td>Identifier that refers to the haptic properties of the facial hair.</td></tr>
</table>
</td></tr>
<tr><td>BodyHair</td><td>Set of descriptions for body hair of the avatar.
<table>
<tr><th>Name</th><th>Description</th></tr>
<tr><td>BodyHairType</td><td>A type that describes avatar body hair.</td></tr>
<tr><td>HairColor</td><td>The color type defined in ISO/IEC 23005-6 shall be used for avatar body hair.</td></tr>
<tr><td>HairThickness</td><td>The thick of the body hair (low, middle, high)</td></tr>
<tr><td>Extra</td><td>Describes any other descriptions of body hair.</td></tr>
</table>
</td></tr>
<tr><td>Facial Calibration Points</td><td>Set of elements that are calibration points for the face feature control.
<table>
<tr><th>Name</th><th>Description</th></tr>
<tr><td>FacialCalibrationPointsType</td><td>A type that describes calibration points for face feature control.</td></tr>
<tr><td>Sellion</td><td>3D position (meter), point 1 in the figure at the bottom</td></tr>
<tr><td>RInfraorbitale</td><td>3D position (meter), point 2 in the figure at the bottom</td></tr>
<tr><td>LInfraorbitale</td><td>3D position (meter), point 3 in the figure at the bottom</td></tr>
<tr><td>Supramenton</td><td>3D position (meter), point 4 in the figure at the bottom</td></tr>
<tr><td>RTragion</td><td>3D position (meter), point 5 in the figure at the bottom</td></tr>
<tr><td>RGonion</td><td>3D position (meter), point 6 in the figure at the bottom</td></tr>
<tr><td>LTragion</td><td>3D position (meter), point 7 in the figure at the bottom</td></tr>
<tr><td>LGonion</td><td>3D position (meter), point 8 in the figure at the bottom</td></tr>
</table>


Note: The calibration points are to be used for mapping a captured face feature points onto an arbitrary face of an avatar.</td></tr>
</table>

<table>
<tr><td>Physical Condition</td><td>This element contains a set of elements for describing the physical condition of the avatar.
<table>
<tr><th>Name</th><th>Description</th></tr>
<tr><td>PhysicalConditionType</td><td>A type that describes the physical condition of the avatar.</td></tr>
<tr><td>BodyStrength</td><td>Avatar body strength (unlimited percentage (%))</td></tr>
<tr><td>BodyFlexibility</td><td>Avatar body flexibility with descriptive scale of low, medium, and high</td></tr>
<tr><td>Extra</td><td>Describes any other descriptions of physical condition.</td></tr>
</table></td></tr>
<tr><td>Clothes</td><td>A list of virtual clothes associated to the avatar. The type of this element is VirtualObjectType.</td></tr>
<tr><td>Shoes</td><td>A list of virtual shoes associated to the avatar. The type of this element is VirtualObjectType.</td></tr>
<tr><td>Accessories</td><td>A list of objects (ring, glasses, …) associated to the avatar. The type of this element is VirtualObjectType.</td></tr>
<tr><td>SkinMarks</td><td>A list of skin marks (birthmarks, scars, tattoos…, …) associated to the avatar. The type of this element is VirtualObjectType.</td></tr>
<tr><td>Appearance Resources</td><td>URL to file with avatar description, usually MP4 file.</td></tr>
<tr><td>Extra</td><td>Describes any other descriptions of avatar appearance.</td></tr>
</table>

5.2.3.3 Examples

This example shows the description of avatar appearance with the following semantics.

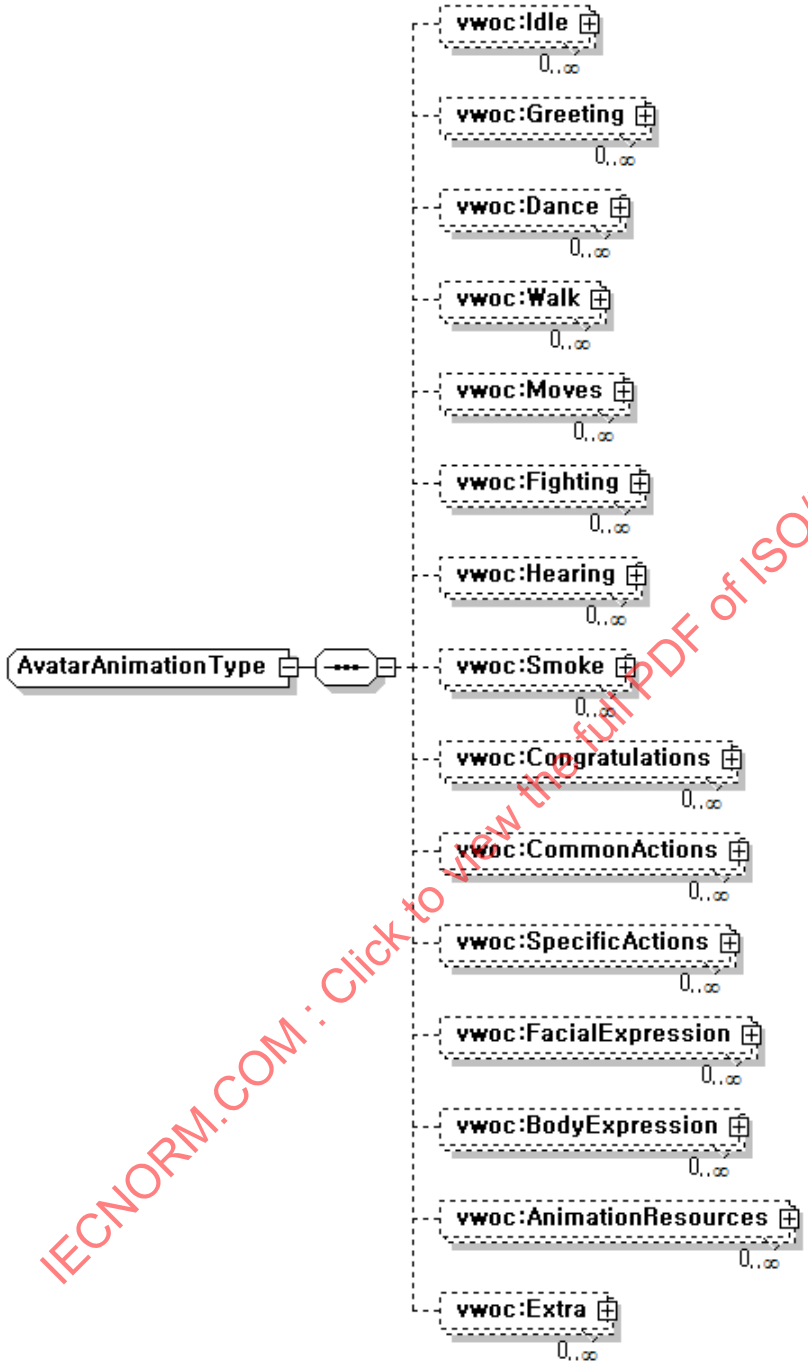
```
<vwoc:Appearance>
    <vwoc:Body>
        <vwoc:BodyHeight>5.2</vwoc:BodyHeight>
        <vwoc:BodyThickness>4.4</vwoc:BodyThickness>
        <vwoc:BodyFat>low</vwoc:BodyFat>
        <vwoc:TorsoMuscles>low</vwoc:TorsoMuscles>
        <vwoc:NeckThikness>2.1</vwoc:NeckThikness>
        <vwoc:NeckLength>1.8</vwoc:NeckLength>
        <vwoc:Package>small</vwoc:Package>
        <vwoc:SaddleBags>medium</vwoc:SaddleBags>
        <vwoc:KneeAngle>300</vwoc:KneeAngle>
        <vwoc:FootSize>3.1</vwoc:FootSize>
    </vwoc:Body>
    <vwoc:Head>
        <vwoc:HeadSize>small</vwoc:HeadSize>
        <vwoc:HeadStretch>1.1</vwoc:HeadStretch>
        <vwoc:HeadShape>square</vwoc:HeadShape>
        <vwoc:EggHead>true</vwoc:EggHead>
    </vwoc:Head>
    <vwoc:Eyes>
        <vwoc:EyeSize>1.1</vwoc:EyeSize>
    </vwoc:Eyes>
    <vwoc:Ears>
        <vwoc:EarSize>2.1</vwoc:EarSize>
    </vwoc:Ears>
    <vwoc:Nose>
        <vwoc:NoseSize>0.8</vwoc:NoseSize>
    </vwoc:Nose>
    <vwoc:FacialSkin>
        <vwoc:SkinRainbowColor>FF:8F:69</vwoc:SkinRainbowColor>
    </vwoc:FacialSkin>
    <vwoc:ToeNails>
        <vwoc:NailPolish>true</vwoc:NailPolish>
        <vwoc:NailPolishColor>CF:8F:69</vwoc:NailPolishColor>
    </vwoc:ToeNails>
    <vwoc:BodyLook>
        <vwoc:BodyDefinition>short</vwoc:BodyDefinition>
```

```
    </vwoc:BodyLook>
    <vwoc:Hair>
       <vwoc:HairSize>short</vwoc:HairSize>
       <vwoc:HairStyle>urn:mpeg:mpeg-v:01-VWOC-HairStyleCS-
NS:Crewcut</vwoc:HairStyle>
    </vwoc:Hair>
    <vwoc:FacialCalibrationPoints>
       <vwoc:Sellion xsi:type="vwoc:Physical3DPointType" x="1.1" y="1.2" "1.2"/>
       <vwoc:RInfraorbitale xsi:type="vwoc:LogicalPointType" name="top"/>
    </vwoc:FacialCalibrationPoints>
    <vwoc:PhysicalCondition>
       <vwoc:BodyFlexibility>low</vwoc:BodyFlexibility>
    </vwoc:PhysicalCondition>
    <vwoc:Clothes id="vo_clothes_001">
       <vwoc:VirtualObjectComponents>
          <vwoc:VirtualObject xsi:type="vwoc:VirtualObjectType"
id="clothe_part_001">
             <vwoc:Appearance>id="virtualObject_001"</vwoc:Appearance>
          </vwoc:VirtualObject>
       </vwoc:VirtualObjectComponents>
    </vwoc:Clothes>
</vwoc:Appearance>
```

5.2.4 AvatarAnimationType

5.2.4.1 Syntax

Diagram



Source

```
<!-- ################################################ -->
<!--  Avatar Animation Type                           -->
<!-- ################################################ -->
<complexType name="AvatarAnimationType">
      <sequence>
            <element name="Idle" type="vwoc:AnimationDescriptionType" minOccurs="0"
maxOccurs="unbounded"/>
            <element name="Greeting" type="vwoc:AnimationDescriptionType" minOccurs="0"
maxOccurs="unbounded"/>
            <element name="Dance" type="vwoc:AnimationDescriptionType" minOccurs="0"
maxOccurs="unbounded"/>
```

```
            <element name="Walk" type="vwoc:AnimationDescriptionType" minOccurs="0"
maxOccurs="unbounded"/>
            <element name="Moves" type="vwoc:AnimationDescriptionType" minOccurs="0"
maxOccurs="unbounded"/>
            <element name="Fighting" type="vwoc:AnimationDescriptionType" minOccurs="0"
maxOccurs="unbounded"/>
            <element name="Hearing" type="vwoc:AnimationDescriptionType" minOccurs="0"
maxOccurs="unbounded"/>
            <element name="Smoke" type="vwoc:AnimationDescriptionType" minOccurs="0"
maxOccurs="unbounded"/>
            <element name="Congratulations" type="vwoc:AnimationDescriptionType" minOccurs="0"
maxOccurs="unbounded"/>
            <element name="CommonActions" type="vwoc:AnimationDescriptionType" minOccurs="0"
maxOccurs="unbounded"/>
            <element name="SpecificActions" type="vwoc:AnimationDescriptionType" minOccurs="0"
maxOccurs="unbounded"/>
            <element name="FacialExpression" type="vwoc:AnimationDescriptionType" minOccurs="0"
maxOccurs="unbounded"/>
            <element name="BodyExpression" type="vwoc:AnimationDescriptionType" minOccurs="0"
maxOccurs="unbounded"/>
            <element name="AnimationResources" type="vwoc:AnimationResourcesDescriptionType"
minOccurs="0" maxOccurs="unbounded"/>
            <element name="Extra" type="vwoc:ExtraType" minOccurs="0" maxOccurs="unbounded"/>
        </sequence>
</complexType>
```

5.2.4.2 Semantics

Name	Description
AvatarAnimationType	A type that contains the description of a set of animation sequences that the avatar is able to perform and may refer to several medias containing the exact (geometric transformations) animation parameters.
Idle	Describes an idle type of animations as a reference to a classification scheme (CS) term. A CS that may be used for this purpose is the `IdleAnimationCS` defined in A.2.3.1 in this part.
Greeting	Describes a greeting type of animations as a reference to a classification scheme (CS) term. A CS that may be used for this purpose is the `GreetingAnimationCS` defined in A.2.3.2 in this part.
Dance	Describes a dance type of animations as a reference to a classification scheme (CS) term. A CS that may be used for this purpose is the `DanceAnimationCS` defined in A.2.3.3 in this part.
Walk	Describes a walk type of animations as a reference to a classification scheme (CS) term. A CS that may be used for this purpose is the `WalkAnimationCS` defined in A.2.3.4 in this part.
Moves	Describes a moves type of animations as a reference to a classification scheme (CS) term. A CS that may be used for this purpose is the `MovesAnimationCS` defined in A.2.3.5 in this part.
Fighting	Describes a hearing type of animations as a reference to a classification scheme (CS) term. A CS that may be used for this purpose is the `FightingAnimationCS` defined in A.2.3.6 in this part.
Hearing	Describes a fighting type of animations as a reference to a classification scheme (CS) term. A CS that may be used for this purpose is the `HearingAnimationCS` defined in A.2.3.7 in this part.
Smoke	Describes a smoke type of animations as a reference to a classification scheme (CS) term. A CS that may be used for this purpose is the `SmokeAnimationCS` defined in A.2.3.8 in this part.
Congratulations	Describes a congratulation type of animations as a reference to a classification scheme (CS) term. A CS that may be used for this purpose is the `CongratulationsAnimationCS` defined in A.2.3.9 in this part.

CommonActions	Describes a common-action type of animations as a reference to a classification scheme (CS) term. A CS that may be used for this purpose is the `CommonActionsAnimationCS` defined in A.2.3.10 in this part.
SpecificActions	Describes a specific-action type of animations as a reference to a classification scheme (CS) term. A CS that may be used for this purpose is the `SpecificActionsAnimationCS` defined in A.2.3.11 in this part.
FacialExpression	Describes a facial-expression type of animations as a reference to a classification scheme (CS) term. A CS that may be used for this purpose is the `FacialExpressionAnimationCS` defined in A.2.3.12 in this part.
BodyExpression	Describes a body-expression type of animations as a reference to a classification scheme (CS) term. A CS that may be used for this purpose is the `BodyExressionAnimationCS` defined in A.2.3.13 in this part.
AnimationResources	Element that contains a link to animation file.
Extra	Describes any other categories of animations.

5.2.4.3 Examples

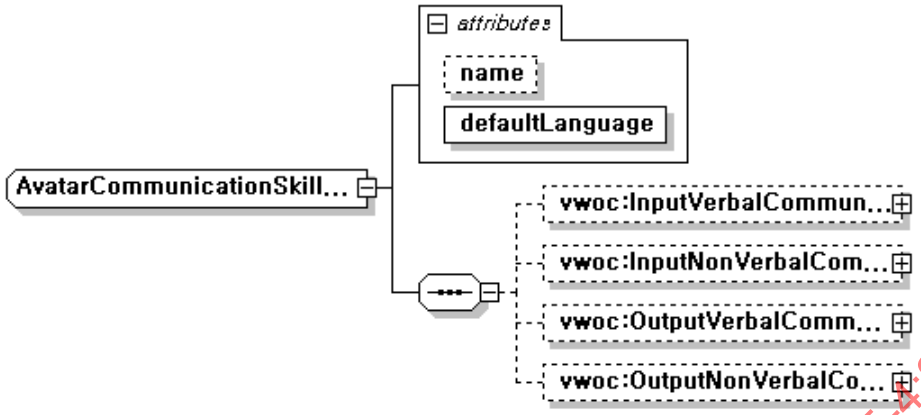
This example shows the description of avatar animation information with the following semantics. Among all animations, idle at default, saluting greeting, bow, dance, and salsa dance are given. The animation resources are saved at "http://avatarAnimationdb.com/default_idle.bvh", "http://avatarAnimationdb.com/salutes.bvh", "http://avatarAnimationdb.com/bowing.bvh", "http://avatarAnimationdb.com/dancing.bvh", and "http://avatarAnimationdb.com/salsa.bvh".

```
<vwoc:Animation>
    <vwoc:Idle>
        <vwoc:Name>urn:mpeg:mpeg-v:01-VWOC-IdleAnimationCS-
NS:DefaultIdle</vwoc:Name>
        <vwoc:Uri>http://avatarAnimationdb.com/default_idle.bvh</vwoc:Uri>
    </vwoc:Idle>
    <vwoc:Greeting>
        <vwoc:Name>urn:mpeg:mpeg-v:01-VWOC-GreetingAnimationCS-
NS:Salute</vwoc:Name>
        <vwoc:Uri>http://avatarAnimationdb.com/salutes.bvh</vwoc:Uri>
    </vwoc:Greeting>
    <vwoc:Greeting>
        <vwoc:Name>urn:mpeg:mpeg-v:01-VWOC-GreetingAnimationCS-NS:Bow</vwoc:Name>
        <vwoc:Uri>http://avatarAnimationdb.com/bowing.bvh</vwoc:Uri>
    </vwoc:Greeting>
    <vwoc:Dance>
        <vwoc:Name>urn:mpeg:mpeg-v:01-VWOC-DanceAnimationCS-NS:Dance</vwoc:Name>
        <vwoc:Uri>http://avatarAnimationdb.com/dancing.bvh</vwoc:Uri>
    </vwoc:Dance>
    <vwoc:Dance>
        <vwoc:Name>urn:mpeg:mpeg-v:01-VWOC-DanceAnimationCS-
NS:SalsaDance</vwoc:Name>
        <vwoc:Uri>http://avatarAnimationdb.com/salsa.bvh</vwoc:Uri>
    </vwoc:Dance>
</vwoc:Animation>
```


5.2.5 AvatarCommunicationSkillsType

This element defines the communication skills [3] of the avatar in relation to other avatars.

5.2.5.1 Syntax

Diagram	

Source	`<complexType name="AvatarCommunicationSkillsType">`
	`<sequence>`
	`<element name="InputVerbalCommunication" type="vwoc:VerbalCommunicationType" minOccurs="0"/>`
	`<element name="InputNonVerbalCommunication" type="vwoc:NonVerbalCommunicationType" minOccurs="0"/>`
	`<element name="OutputVerbalCommunication" type="vwoc:VerbalCommunicationType" minOccurs="0"/>`
	`<element name="OutputNonVerbalCommunication" type="vwoc:NonVerbalCommunicationType" minOccurs="0"/>`
	`</sequence>`
	`<attribute name="name" type="string"/>`
	`<attribute name="defaultLanguage" type="language" use="required"/>`
	`</complexType>`

5.2.5.2 Semantics

The objective of the type is that the virtual world and the rest of avatars can adapt their inputs and outputs to these preferences (having a balance with their own preferences too). All inputs and outputs will be individually adapted for each avatar.

The communication preferences are defined by means of two input and two output channels that guarantee multimodality. They are the verbal and non-verbal recognition as input, and the verbal and non-verbal performance as output. These channels can be specified as either enabled or disabled. All channels enabled imply that an avatar is able to speak, to perform gestures and to recognize speak and gestures.

In verbal performance and verbal recognition channels the preference for using the channel either via text or via voice can be specified.

The non-verbal and non-verbal recognition channels specify the types of gesturing: "Nonverbal language", "sign language" and "cued speech communication" [2].

All the features dependent on the language (speaking via text or voice, speaking recognition via text or voice, and sign/cued language use/recognition) use a language attribute for defining the concrete language skills.

Name	Definition
AvatarCommunicationSkillsType	A type that contains a set of descriptors providing information on the different modalities an avatar is able to communicate.
VerbalCommunicationType	Defines the verbal (voice and text) communication skills of the avatar.
NonVerbalCommunicationType	Defines the non-verbal (body gesture) communication skills of the avatar.
name	A user defined chain of characters used for addressing the CommunicationType element.

defaultLanguage	The native language of the avatar (ex. en for English, es for Spanish. The language shall be written according to the ISO 639 which describes the set of international standards that lists short codes for language names.) Note: defaultLanguage attribute specifies the avatar's preferred language for all the communication channels (it will be generally its native language). For each communication channel other languages that override this preference can be specified.

NOTE Additional information about ISO 639 can be found in Annex D.

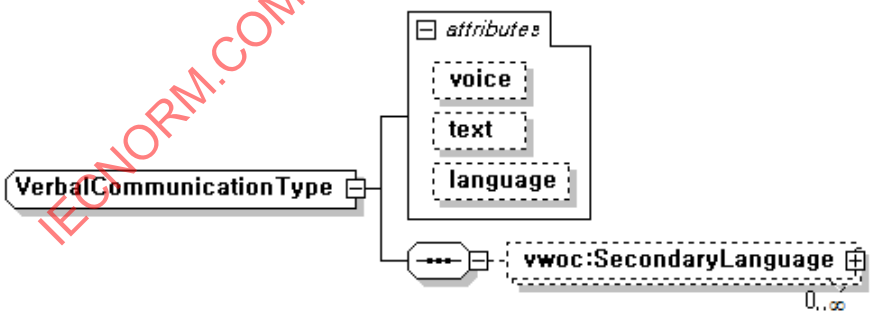
5.2.5.3 Examples

This example shows the description of avatar communication skills with the following semantics. The communication skills have a name of "Korean" which has the default language as "Korean". The preference of the primary input verbal communication is "Korean" as a language preferred for both voice and text. In addition, the secondary input verbal communication is English as a language with the preference of voice. As for the input non-verbal communication, "nod" is chosen for the complementary gesture. The preference of the primary output verbal communication is "Korean" as a language preferred for both voice and text. The secondary output verbal communication is "English" as a language with the preference of "voice". As for the output non-verbal communication, "nod" is chosen for the complementary gesture.

```
<vwoc:CommunicationSkills defaultLanguage="Korean" name="Korean">
    <vwoc:InputVerbalCommunication voice="preferred" text="preferred"
language="Korean">
        <vwoc:SecondaryLanguage preference="voice" name="English"/>
    </vwoc:InputVerbalCommunication>
    <vwoc:InputNonVerbalCommunication complementaryGesture="nod"/>
    <vwoc:OutputVerbalCommunication voice="preferred" text="preferred"
language="Korean">
        <vwoc:SecondaryLanguage preference="voice" name="English"/>
    </vwoc:OutputVerbalCommunication>
    <vwoc:OutputNonVerbalCommunication complementaryGesture="nod"/>
</vwoc:CommunicationSkills>
```

5.2.5.4 VerbalCommunicationType

5.2.5.4.1 Syntax

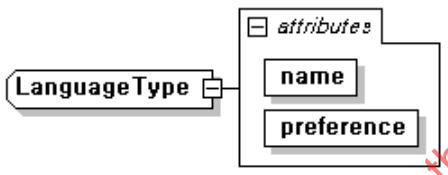
Diagram	
Source	<complexType name="VerbalCommunicationType"> <sequence> <element name="SecondaryLanguage" type="vwoc:LanguageType" minOccurs="0" maxOccurs="unbounded"/> </sequence> <attribute name="voice" type="vwoc:communicationPreferenceLevelType"/> <attribute name="text" type="vwoc:communicationPreferenceLevelType"/> <attribute name="language" type="language"/> </complexType>

5.2.5.4.2 Semantics

Name	Definition
VerbalCommunicationType	Specifies the avatar's verbal communication skills. Voice and text can be defined as enabled, disabled or preferred in order to specify what the preferred verbal mode is and the availability of the other.
SecondaryLanguage	Defines the preferred language for verbal communication according to the ISO 639 which describes the set of international standards that lists short codes for language names.
voice	Defines if the avatar is able or prefers to speak when used for OutputVerbalCommunication and understand when used for InputVerbalCommunication.
text	Defines if the avatar is able or prefers to write when used for OutputVerbalCommunication and read when used for InputVerbalCommunication.
language	Defines the preferred language for verbal communication. If it is not specified, the value of the attribute defaultLanguage defined in the CommunicationSkills type will be applied.

5.2.5.5 LanguageType

5.2.5.5.1 Syntax

Diagram	
Source	<complexType name="LanguageType"> <attribute name="name" type="language" use="required"/> <attribute name="preference" type="vwoc:communicationPreferenceType" use="required"/> </complexType>

5.2.5.5.2 Semantics

Name	Definition
LanguageType	Defines secondary communication skills for VerbalCommunication. In case it is not possible to use the preferred language (or the default language) defined for communicating with other avatar, these secondary languages will be applied.
name	String that specifies the name of the language (ex. en for English, es for Spanish…) according to the ISO 639 which describes the set of international standards that lists short codes for language names.
preference	Define the preference for using the language in verbal communication: voice or text

5.2.5.6 communicationPreferenceType

5.2.5.6.1 Syntax

Source	<simpleType name="communicationPreferenceType"> <restriction base="string"> <enumeration value="voice"/> <enumeration value="text"/> </restriction> </simpleType>

5.2.5.6.2 Semantics

Name	Definition
communicationPreferenceType	Defines the preferred level of communication of the avatar: voice or text.

5.2.5.7 communicationPreferenceLevelType

5.2.5.7.1 Syntax

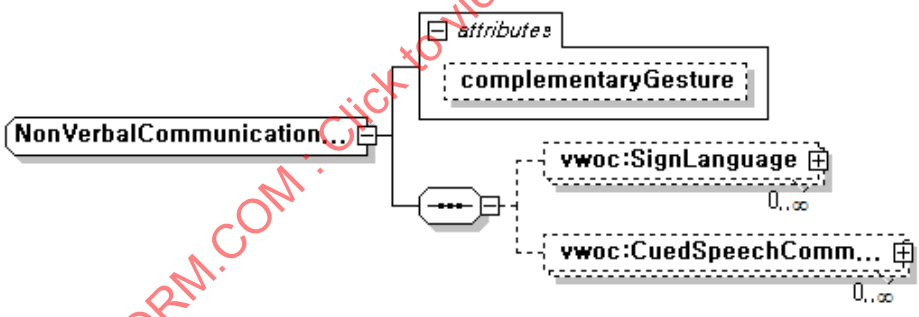
Source	<simpleType name="communicationPreferenceLevelType"> <restriction base="string"> <enumeration value="preferred"/> <enumeration value="enabled"/> <enumeration value="disabled"/> </restriction> </simpleType>

5.2.5.7.2 Semantics

Name	Definition
communicationPreferenceLevelType	Defined the level of preference for each language that the avatar can speak/understand. This level can be: preferred, enabled or disabled.

5.2.5.8 NonVerbalCommunicationType

5.2.5.8.1 Syntax

Diagram	
Source	<complexType name="NonVerbalCommunicationType"> <sequence> <element name="SignLanguage" type="vwoc:SignLanguageType" minOccurs="0" maxOccurs="unbounded"/> <element name="CuedSpeechCommunication" type="vwoc:SignLanguageType" minOccurs="0" maxOccurs="unbounded"/> </sequence> <attribute name="complementaryGesture" type="string" use="optional"/> </complexType>

5.2.5.8.2 Semantics

Name	Definition
NonVerbalCommunicationType	Specifies the avatar's non-verbal communication skills.
SignLanguage	Defines the sign languages that the avatar is able to perform when used for OutputVerbalCommunication and interpret when used for InputVerbalCommunication.
CuedSpeechCommunication	Defines the cued speech communications that the avatar is able to perform when used for OutputVerbalCommunication and interpret when used for InputVerbalCommunication.
complementaryGesture	Defines if the avatar is able to perform complementary gesture during output verbal communication.

5.2.5.9 SignLanguageType

5.2.5.9.1 Syntax

Diagram	

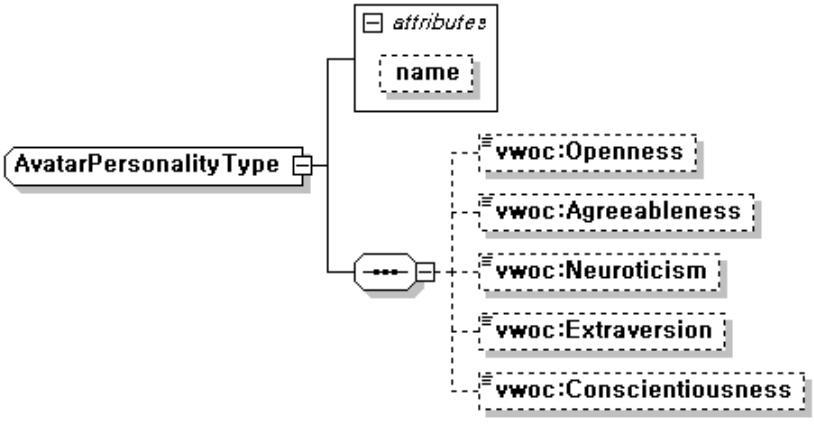
Source	`<complexType name="SignLanguageType">`
	`  <attribute name="name" type="language" use="required"/>`
	`</complexType>`

5.2.5.9.2 Semantics

Name	Definition
SignLanguageType	Defines secondary communication skills for NonVerbalCommunication (sign or cued communication). In case it is not possible to use the preferred language (or the default language), these secondary languages will be applied.
name	Specifies the name of the language (ex. en for English, es for Spanish…) according to the ISO 639 which describes the set of international standards that lists short codes for language names.

5.2.6 AvatarPersonalityType

5.2.6.1 Syntax

Diagram	

Source	

```
<!-- ################################################ -->
<!--  Avatar Personality Type                         -->
<!-- ################################################ -->
<complexType name="AvatarPersonalityType">
    <sequence>
        <element name="Openness" type="mpeg7:minusOneToOneType" minOccurs="0"/>
        <element name="Agreeableness" type="mpeg7:minusOneToOneType" minOccurs="0"/>
        <element name="Neuroticism" type="mpeg7:minusOneToOneType" minOccurs="0"/>
        <element name="Extraversion" type="mpeg7:minusOneToOneType" minOccurs="0"/>
        <element name="Conscientiousness" type="mpeg7:minusOneToOneType" minOccurs="0"/>
    </sequence>
    <attribute name="name" type="string"/>
</complexType>
```

5.2.6.2 Semantics

This tag [3] defines the personality of the avatar. This definition is based on the OCEAN model [1], consisting in a set of characteristics that personality is composed of. A combination of these characteristics is a specific personality. Therefore, an avatar contains a subtag for each attribute defined in OCEAN's model. They are: `openness`, `conscientiousness`, `extraversion`, `agreeableness` and `neuroticism`.

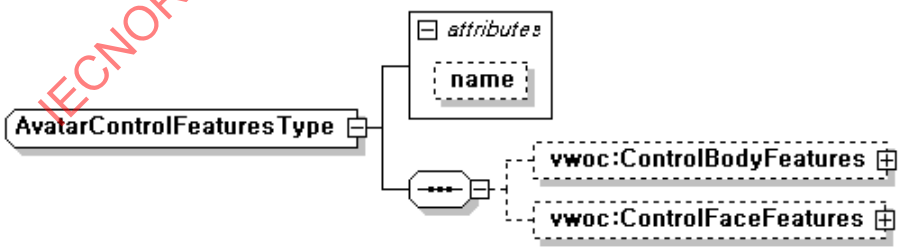
The purpose of this tag is to provide the possibility to define the avatar personality that is desired, and that the architecture of the virtual world can interpret as the inhabitant wishes. It would be able to adapt the avatar's verbal and non-verbal communication to this personality. Moreover, emotions and moods that could be provoked by virtual world events, avatar-avatar communication or the real time flow, will be modulated by this base personality.

Name	Definition
AvatarPersonalityType	A type that contains a set of descriptors defining the personality of the avatar.
Openness	A value between -1 and 1 specifying the openness level of the personality
Agreeableness	A value between -1 and 1 specifying the agreeableness level of the personality
Neuroticism	A value between -1 and 1 specifying the neuroticism level of the personality
Extraversion	A value between -1 and 1 specifying the extraversion level of the personality
Conscientiousness	A value between -1 and 1 specifying the conscientiousness level of the personality
name	A string value that specifies the name of personality.

5.2.7 AvatarControlFeaturesType

5.2.7.1 Syntax

Diagram	



Source	

```
<!-- ################################################ -->
<!--  Avatar Control Features Type                    -->
<!-- ################################################ -->
<complexType name="AvatarControlFeaturesType">
    <sequence>
        <element name="ControlBodyFeatures" type="vwoc:ControlBodyFeaturesType" minOccurs="0"/>
        <element name="ControlFaceFeatures" type="vwoc:ControlFaceFeaturesType" minOccurs="0"/>
    </sequence>
    <attribute name="name" type="string"/>
</complexType>
```

5.2.7.2 Semantics

Name	Description
AvatarControlFeaturesType	A type that contains a set of descriptors defining possible place-holders for sensors on body skeleton and face feature points.
ControlBodyFeatures	Set of elements that control moves of the body (bones)
ControlFaceFeatures	Set of elements that control moves of the face
name	A string value that specifies the name of control features.

5.2.7.3 Examples

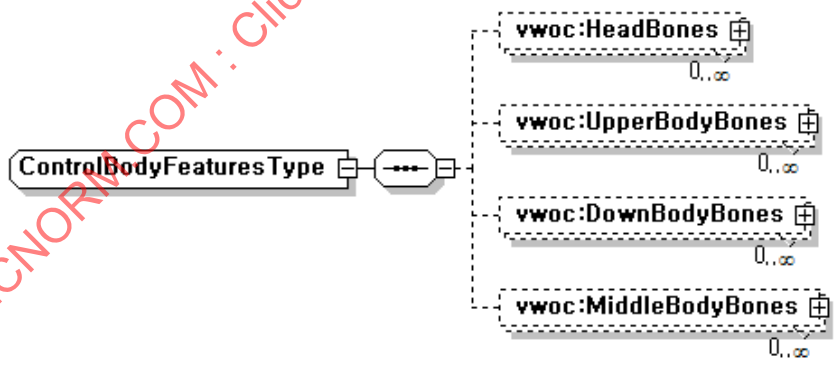
This example shows the description of controlling body and face features with the following semantics. The features control is given and works as a container.

```
<vwoc:ControlFeatures>
    <vwoc:ControlBodyFeatures>
        <vwoc:HeadBones>
        …
        </vwoc:HeadBones>
    </vwoc:ControlBodyFeatures>
    <vwoc:ControlFaceFeatures>
        <vwoc:HeadOutline>
        …
        </vwoc:HeadOutline>
    </vwoc:ControlFaceFeatures>
</vwoc:ControlFeatures>
```

5.2.7.4 ControlBodyFeaturesType

5.2.7.4.1 Syntax

Diagram



Source

```
<!-- ################################################ -->
<!--  Control Body Features Type                      -->
<!-- ################################################ -->
<complexType name="ControlBodyFeaturesType">
      <sequence>
            <element name="HeadBones" type="vwoc:ControlBodyFeaturesDescriptionType" minOccurs="0"
maxOccurs="unbounded"/>
            <element name="UpperBodyBones" type="vwoc:ControlBodyFeaturesDescriptionType"
minOccurs="0" maxOccurs="unbounded"/>
            <element name="DownBodyBones" type="vwoc:ControlBodyFeaturesDescriptionType"
minOccurs="0" maxOccurs="unbounded"/>
            <element name="MiddleBodyBones" type="vwoc:ControlBodyFeaturesDescriptionType"
minOccurs="0" maxOccurs="unbounded"/>
```

```
        </sequence>
    </complexType>
```

5.2.7.4.2 Semantics

Name	Description (Compare with Human Bones)
ControlBody FeaturesType	A type that contains a set of descriptors defining possible place-holders for sensors on body skeleton.
HeadBones	Set of bones on the head: a list of the head bones is included in a classification scheme (CS) term. A CS that may be used for this purpose is the HeadBonesCS defined in A.2.12.1 in ISO/IEC 23005-6.
UpperBodyBones	Set of bones on the upper part of the body, mainly arms and hands bones: a list of the upper body bones is included in a classification scheme (CS) term. A CS that may be used for this purpose is the UpperBodyBonesCS defined in A.2.12.2 in ISO/IEC 23005-6.

name	description
CervicalVertebrae7	cervical vertebrae 7
CervicalVertebrae6	cervical vertebrae 6
CervicalVertebrae5	cervical vertebrae 5
CervicalVertebrae4	cervical vertebrae 4
CervicalVertebrae3	cervical vertebrae 3
CervicalVertebrae2	cervical vertebrae 2
CervicalVertebrae1	cervical vertebrae 1
Skull	skull
LEyelid	Left eyelid
REyelid	Right eyelid
LEyeball	Left eyeball
REyeball	Right eyeball
LEyebrow	Left eyebrow
REyebrow	Right eyebrow
Jaw	Jaw

name	description
LClavicle	Left clavicle
LScapulae	Left scapulae
LHumerus	Left humerus
LRadius	Left radius
LWrist	Left wrist
LHand	Left hand
LThumb	Left thumb metacarpal
LPhalanges1	Left Phalanges1
LThumb2	Left thumb
LPhalanges2	Left Phalanges2
LIndex	Left index metacarpal
LPhalanges3	Left Phalanges3
LPhalanges4	Left Phalanges4
LPhalanges5	Left Phalanges5
LMiddle	Left middle metacarpal
LPhalanges6	Left Phalanges6
LPhalanges7	Left Phalanges7
LPhalanges8	Left Phalanges8
LRing	Left ring metacarpal
LPhalanges9	Left Phalanges9
LPhalanges10	Left Phalanges10
LPhalanges11	Left Phalanges11
LPinky	Left pinky metacarpal
LPhalanges12	Left Phalanges12

	LPhalanges13	Left Phalanges13
	LPhalanges14	Left Phalanges14
	RClavicle	Right clavicle
	RScapulae	Right scapulae
	RHumerus	Right humerus
	RRadius	Right radius
	RWrist	Right wrist
	RHand	Right hand
	RThumb	Right thumb Metacarpal
	RPhalanges1	Right Phalanges1
	RThumb2	Right thumb
	RPhalanges2	Right Phalanges2
	RIndex	Right index metacarpal
	RPhalanges3	Right Phalanges3
	RPhalanges4	Right Phalanges4
	RPhalanges5	Right Phalanges5
	RMiddle	Right middle metacarpal
	RPhalanges6	Right Phalanges6
	RPhalanges7	Right Phalanges7
	RPhalanges8	Right Phalanges8
	RRing	Right ring metacarpal
	RPhalanges9	Right Phalanges9
	RPhalanges10	Right Phalanges10
	RPhalanges11	Right Phalanges11
	RPinky	Right pinky metacarpal
	RPhalanges12	Right Phalanges12
	RPhalanges13	Right Phalanges13
	RPhalanges14	Right Phalanges14
DownBodyBones	Set of bones on the down part of the body, mainly legs and foot bones: a list of the down body bones is included in a classification scheme (CS) term. A CS that may be used for this purpose is the DownBodyBonesCS defined in A.2.12.3 in ISO/IEC 23005-6.	
	name	Description
	LFemur	Left femur
	LPatella	Left patella (knee bone)
	LTibia	Left tibia (femur in front)
	LFibulae	Left fibulae
	LTarsals1	Left tarsals1
	LTarsals2	Left tarsals2 (7 are all)
	LMetaTarsals	Left metatarsals (5) (foot parts)
	LPhalanges	Left Phalanges (1 - 14) (foot parts)
	RFemur	Right femur
	RPatella	Right patella (knee bone)
	RTibia	Right tibia (femur in front)
	RFibulae	Right fibulae
	RTarsals1	Right tarsals1 (parts of ankle)
	RTarsals2	Right tarsals2 (7 are all)
	RMetaTarsals	Right metatarsals (5) (foot parts)
	RPhalanges	Right Phalanges (1 - 14) (foot parts)
MiddleBodyBones	Set of bones on the middle part of the body, torso: a list of the middle body bones is included in a classification scheme (CS) term. A CS that may be used for this purpose is the MiddleBodyBonesCS defined in A.2.12.4 in ISO/IEC 23005-6.	
	name	description
	Sacrum	Sacrum
	Pelvis	pelvis
	LumbarVertebrae5	lumbar vertebrae 5

	LumbarVertebrae4	lumbar vertebrae 4
	LumbarVertebrae3	lumbar vertebrae 3
	LumbarVertebrae2	lumbar vertebrae 2
	LumbarVertebrae1	lumbar vertebrae 1
	ThoracicVertebrae12	thoracic vertebrae 12
	ThoracicVertebrae11	thoracic vertebrae 11
	ThoracicVertebrae10	thoracic vertebrae 10
	ThoracicVertebrae9	thoracic vertebrae 9
	ThoracicVertebrae8	thoracic vertebrae 8
	ThoracicVertebrae7	thoracic vertebrae 7
	ThoracicVertebrae6	thoracic vertebrae 6
	ThoracicVertebrae5	thoracic vertebrae 5
	ThoracicVertebrae4	thoracic vertebrae 4
	ThoracicVertebrae3	thoracic vertebrae 3
	ThoracicVertebrae2	thoracic vertebrae 2
	ThoracicVertebrae1	thoracic vertebrae 1

5.2.7.4.3 Examples

This example shows the description of controlling body features with the following semantics. The body features control maps the user defined body feature points to the placeholders. The following set of the feature points are mapped to the placeholders defined in the semantics.

Name of Placeholder	User defined features
Sacrum	Hip
Pelvis	Abdomen
LFemur	LThigh
LTibia (femur in front)	LShin
LFibulae	LFoot
RFemur	RThigh
RTibia (femur in front)	RShin
RFibulae	RFoot
ThoracicVertebrae1	Chest
CervicalVertebrae1	Neck
Skull	Head
LClavicle	LCollar
LHumerus	LShldr
LRadius	LForeArm
LHand	LHand
RClavicle	RCollar
RHumerus	RShldr
RRadius	RForeArm

```
<vwoc:ControlFeatures>
    <vwoc:ControlBodyFeatures>
      <vwoc:HeadBones name="urn:mpeg:mpeg-v:01-VWOC-HeadBonesCS-NS:Skull"
alias="Head"/>
      <vwoc:HeadBones name="urn:mpeg:mpeg-v:01-VWOC-HeadBonesCS-
NS:CervicalVerbae1" alias="Neck"/>
      <vwoc:UpperBodyBones name="urn:mpeg:mpeg-v:01-VWOC-UpperBodyBonesCS-
NS:LClavicle" alias="LCollar"/>
      <vwoc:UpperBodyBones name="urn:mpeg:mpeg-v:01-VWOC-UpperBodyBonesCS-
NS:LHumerus" alias="LShldr"/>
```

```
      <vwoc:UpperBodyBones name="urn:mpeg:mpeg-v:01-VWOC-UpperBodyBonesCS-
NS:LRadius" alias="LForeArm"/>
      <vwoc:UpperBodyBones name="urn:mpeg:mpeg-v:01-VWOC-UpperBodyBonesCS-
NS:LHand" alias="LHand"/>
      <vwoc:UpperBodyBones name="urn:mpeg:mpeg-v:01-VWOC-UpperBodyBonesCS-
NS:RClavicle" alias="RCollar"/>
      <vwoc:UpperBodyBones name="urn:mpeg:mpeg-v:01-VWOC-UpperBodyBonesCS-
NS:RHumerus" alias="RShldr"/>
      <vwoc:UpperBodyBones name="urn:mpeg:mpeg-v:01-VWOC-UpperBodyBonesCS-
NS:RRadius" alias="RForeArm"/>
      <vwoc:UpperBodyBones name="urn:mpeg:mpeg-v:01-VWOC-UpperBodyBonesCS-
NS:RHand" alias="RHand"/>
      <vwoc:DownBodyBones name="urn:mpeg:mpeg-v:01-VWOC-DownBodyBonesCS-
NS:LFemur" alias="LThigh"/>
      <vwoc:DownBodyBones name="urn:mpeg:mpeg-v:01-VWOC-DownBodyBonesCS-
NS:LTibia" alias="LShin"/>
      <vwoc:DownBodyBones name="urn:mpeg:mpeg-v:01-VWOC-DownBodyBonesCS-
NS:LFibulae" alias="LFoot"/>
      <vwoc:DownBodyBones name="urn:mpeg:mpeg-v:01-VWOC-DownBodyBonesCS-
NS:RFemur" alias="RThigh"/>
      <vwoc:DownBodyBones name="urn:mpeg:mpeg-v:01-VWOC-DownBodyBonesCS-
NS:RTibia" alias="RShin"/>
      <vwoc:DownBodyBones name="urn:mpeg:mpeg-v:01-VWOC-DownBodyBonesCS-
NS:RFibulae" alias="RFoot"/>
      <vwoc:MiddleBodyBones name="urn:mpeg:mpeg-v:01-VWOC-MiddleBodyBonesCS-
NS:Sacrum" alias="Hip"/>
      <vwoc:MiddleBodyBones name="urn:mpeg:mpeg-v:01-VWOC-MiddleBodyBonesCS-
NS:Pelvis" alias="Abdomen"/>
      <vwoc:MiddleBodyBones name="urn:mpeg:mpeg-v:01-VWOC-MiddleBodyBonesCS-
NS:ThoracicVertebrae1" alias="Chest"/>
   </vwoc:ControlBodyFeatures>
</vwoc:ControlFeatures>
```


5.2.7.5 ControlBodyFeaturesDescriptionType

5.2.7.5.1 Syntax

Diagram	
Source	<complexType name="ControlBodyFeaturesDescriptionType"> <attribute name="name" type="mpeg7:termReferenceType" use="required"/> <attribute name="alias" type="string" use="required"/> </complexType>

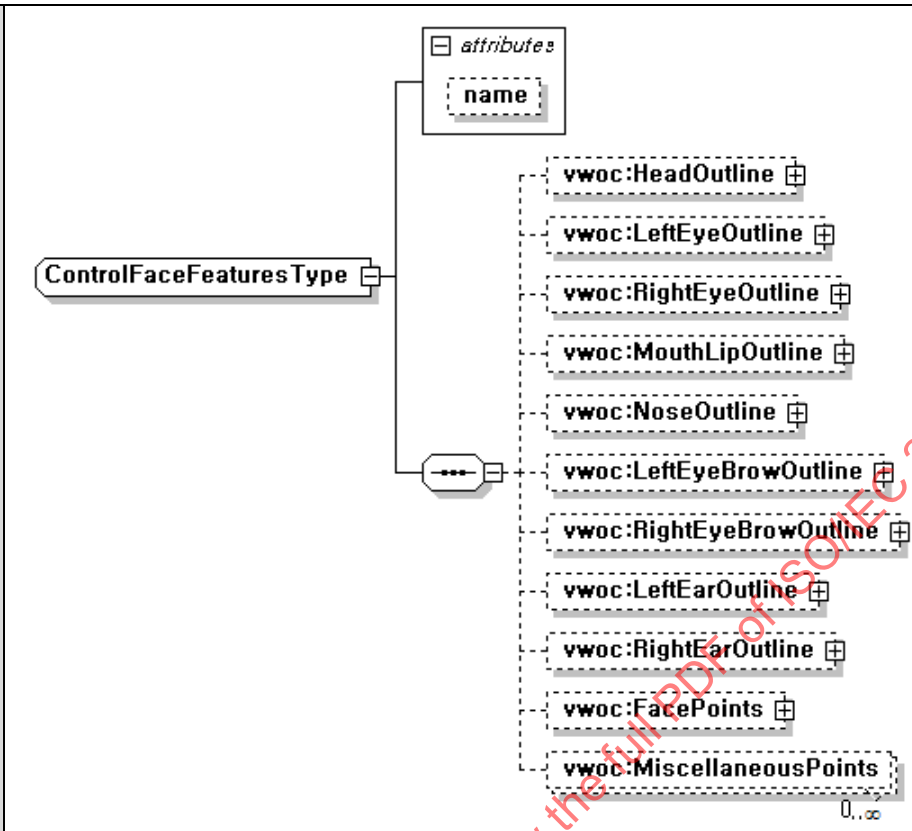
5.2.7.5.2 Semantics

Name	Definition
ControlBodyFeaturesDescriptionType	A type that contains the name and its alias of a body feature.
name	Describes a type of body feature as a reference to classification scheme (CS) term. The CSs that may be used for this purpose is defined in A.2.12 in ISO/IEC 23005-6.
alias	Describes the name of a specific body feature type.

5.2.7.6 ControlFaceFeaturesType

5.2.7.6.1 Syntax

Diagram



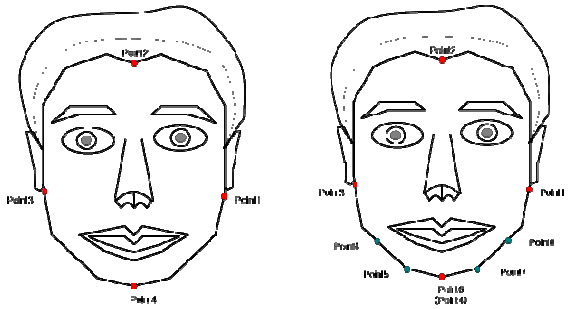
Source

```
<!-- ################################################ -->
<!--  Control Face Features Type                      -->
<!-- ################################################ -->
<complexType name="ControlFaceFeaturesType">
      <sequence>
            <element name="HeadOutline" type="vwoc:OutlineType" minOccurs="0"/>
            <element name="LeftEyeOutline" type="vwoc:OutlineType" minOccurs="0"/>
            <element name="RightEyeOutline" type="vwoc:OutlineType" minOccurs="0"/>
            <element name="MouthLipOutline" type="vwoc:OutlineType" minOccurs="0"/>
            <element name="NoseOutline" type="vwoc:OutlineType" minOccurs="0"/>
            <element name="LeftEyeBrowOutline" type="vwoc:Outline4PointsType" minOccurs="0"/>
            <element name="RightEyeBrowOutline" type="vwoc:Outline4PointsType" minOccurs="0"/>
            <element name="LeftEarOutline" type="vwoc:Outline4PointsType" minOccurs="0"/>
            <element name="RightEarOutline" type="vwoc:Outline4PointsType" minOccurs="0"/>
            <element name="FacePoints" type="vwoc:OutlineType" minOccurs="0"/>
            <element name="MiscellaneousPoints" type="vwoc:PointType" minOccurs="0"
maxOccurs="unbounded"/>
      </sequence>
      <attribute name="name" type="string"/>
</complexType>
```


5.2.7.6.2 Semantics

Name	Description
ControlFaceFeaturesType	A type that contains the name and its alias of a face feature.

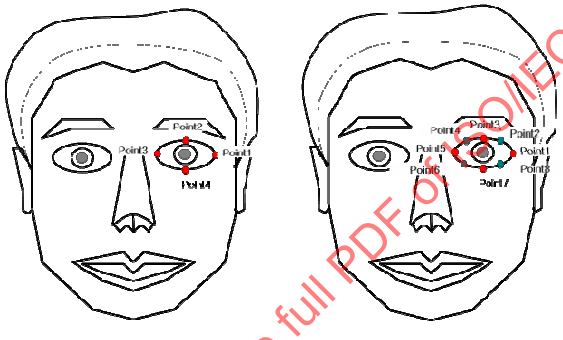
HeadOutline



Describes the outline of the head. The red dots in figure on the left hand side represent the points forming the basic outline. The additional 4 green points and the red dots on the right hand side in the above figure form the high resolution outline of the head.

Name	Description
Outline4points	Describes a basic outline of the head
Outline8points	Describes the extended outline of the head for the higher resolution outline of the head with 8 points.

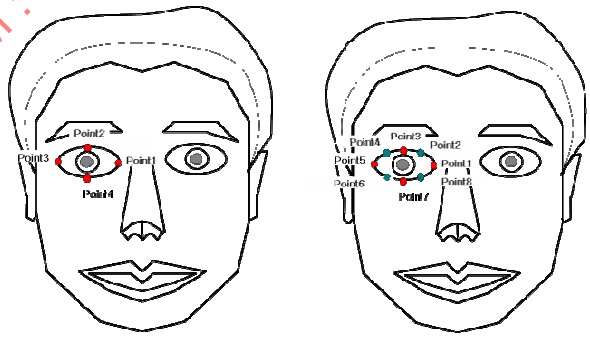
LeftEyeOutline



Describes the outline of the left eye. The red dots in figure on the left hand side represent the points forming the basic outline. The additional 4 green points and the red dots in the above figure on the right hand side form the high resolution outline.

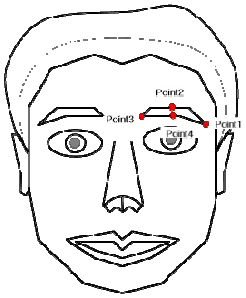
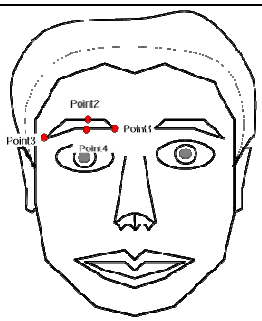
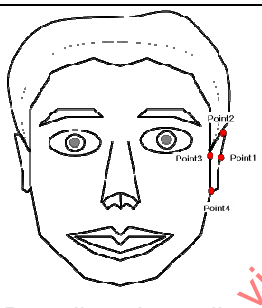
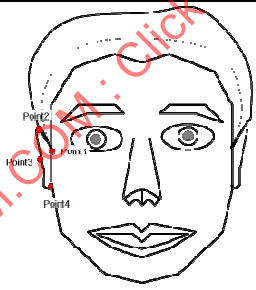
Name	Description
Outline4points	Describes a basic outline of the left eye
Outline8points	Describes the extended outline of the left for the higher resolution outline of the head with 8 points.

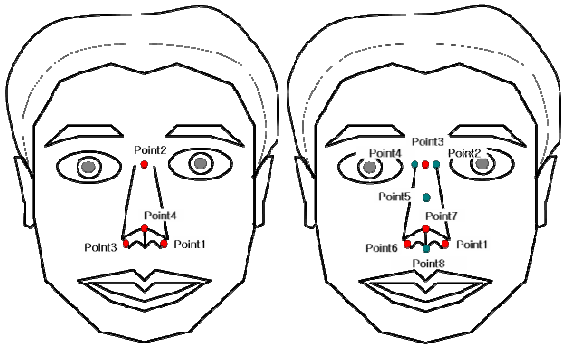
RightEyeOutline

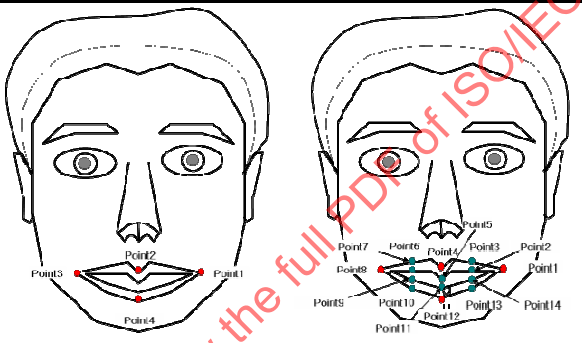


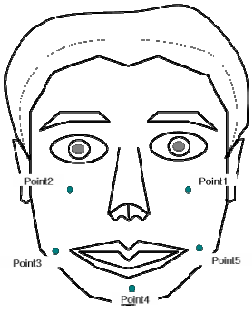
Describes the outline of the right eye. The red dots in figure on the left hand side represent the points forming the basic outline. The additional 4 green points and the red dots in the above figure on the right hand side form the high resolution outline.

Name	Description
Outline4points	Describes a basic outline of the right eye
Outline8points	Describes the extended outline of the left for the higher resolution outline of the head with 8 points.

LeftEyeBrowOutline	 Describes the outline of the left eyebrow
RightEyeBrowOutline	 Describes the outline of the right eyebrow
LeftEarOutline	 Describes the outline of the left ear
RightEarOutline	 Describes the outline of the right ear

<table>
<tr><td>NoseOutline</td><td>


Describes the basic outline of the nose. The red dots represent the points forming the basic outline. The red dots in figure on the left hand side represent the points forming the basic outline. The additional 4 green points and the red dots in the above figure on the right hand side form the high resolution outline.
<table>
<tr><td>Name</td><td>Description</td></tr>
<tr><td>Outline4points</td><td>Describes a basic outline of the nose</td></tr>
<tr><td>Outline8points</td><td>Describes the extended outline of the left for the higher resolution outline of the nose with 8 points.</td></tr>
</table>
</td></tr>
<tr><td>MouthLipOutline</td><td>


Describes the outline of the mouth lips. The red dots represent the points forming the basic outline. The red dots in figure on the left hand side represent the points forming the basic outline. The additional 10 green points and the red dots in the above figure on the right hand side form the high resolution outline.
<table>
<tr><td>Name</td><td>Description</td></tr>
<tr><td>Outline4points</td><td>Describes a basic outline of the mouth lips</td></tr>
<tr><td>Outline14points</td><td>Describes the extended outline of the left for the higher resolution outline of the head with 14 points.</td></tr>
</table>
</td></tr>
<tr><td>FacePoints</td><td>


The green dots form a high resolution facial expression.
</td></tr>
<tr><td>MiscellaneousPoints</td><td>Describes any arbitrary feature points which can be placed and defined for an advanced facial feature control.</td></tr>
<tr><td>name</td><td>The name of the face control configuration</td></tr>
<tr><td>PointType</td><td>An astract type providing root for two different point types, which are <code>LogicalPointType</code> and <code>Physical3DPointType</code> for specifying a feature point for face feature control.</td></tr>
</table>

5.2.7.6.3 Examples

This example shows the description of controlling face features with the following semantics. The face features control maps the user defined face feature points to the placeholders. The following set of the feature points are mapped to the placeholders defined in the semantics.

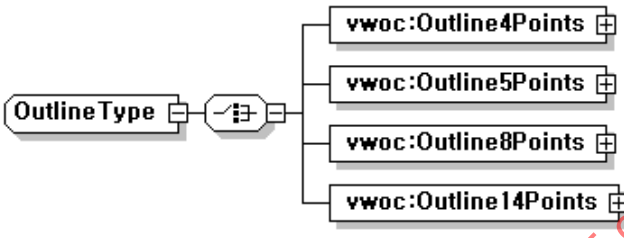
Name of Placeholder		User defined features	
HeadOutline	Point1	Head	HeadLeft
	Point2		HeadTop
	Point3		HeadRight
	Point4		HeadDown
LeftEyeOutline	Point1	Leye	LeyeLeft
	Point2		LeyeTop
	Point3		LeyeRight
	Point4		LeyeDown
RightEyeOutline	Point1	Reye	ReyeLeft
	Point2		ReyeTop
	Point3		ReyeRight
	Point4		ReyeDown
MouseLipOutline	Point1	Lips	LipsLeft
	Point2		LipsTop
	Point3		LipsRight
	Point4		LipsDown
NoseOutline	Point1	Nose	NoseLeft
	Point2		NoseTop
	Point3		NoseRight
	Point4		NoseDown

```
<vwoc:ControlFaceFeatures name="String">
    <vwoc:HeadOutline>
        <vwoc:Outline4Points>
            <vwoc:Point1 xsi:type="vwoc:LogicalPointType" name="HeadLeft"/>
            <vwoc:Point2 xsi:type="vwoc:LogicalPointType" name="HeadTop"/>
            <vwoc:Point3 xsi:type="vwoc:LogicalPointType" name="HeadRight"/>
            <vwoc:Point4 xsi:type="vwoc:LogicalPointType" name="HeadDown"/>
        </vwoc:Outline4Points>
    </vwoc:HeadOutline>
    <vwoc:LeftEyeOutline>
        <vwoc:Outline4Points>
            <vwoc:Point1 xsi:type="vwoc:LogicalPointType" name="LeyeLeft"/>
            <vwoc:Point2 xsi:type="vwoc:LogicalPointType" name="LeyeTop"/>
            <vwoc:Point3 xsi:type="vwoc:LogicalPointType" name="LeyeRight"/>
            <vwoc:Point4 xsi:type="vwoc:LogicalPointType" name="LeyeDown"/>
        </vwoc:Outline4Points>
    </vwoc:LeftEyeOutline>
    <vwoc:RightEyeOutline>
        <vwoc:Outline4Points>
            <vwoc:Point1 xsi:type="vwoc:LogicalPointType" name="ReyeLeft"/>
            <vwoc:Point2 xsi:type="vwoc:LogicalPointType" name="ReyeTop"/>
            <vwoc:Point3 xsi:type="vwoc:LogicalPointType" name="ReyeRight"/>
            <vwoc:Point4 xsi:type="vwoc:LogicalPointType" name="ReyeDown"/>
        </vwoc:Outline4Points>
    </vwoc:RightEyeOutline>
    <vwoc:MouthLipOutline>
        <vwoc:Outline4Points>
            <vwoc:Point1 xsi:type="vwoc:LogicalPointType" name="LipsLeft"/>
            <vwoc:Point2 xsi:type="vwoc:LogicalPointType" name="LipsTop"/>
            <vwoc:Point3 xsi:type="vwoc:LogicalPointType" name="LipsRight"/>
            <vwoc:Point4 xsi:type="vwoc:LogicalPointType" name="LipsDown"/>
        </vwoc:Outline4Points>
```

```
    </vwoc:MouthLipOutline>
    <vwoc:NoseOutline>
        <vwoc:Outline4Points>
            <vwoc:Point1 xsi:type="vwoc:LogicalPointType" name="NoseLeft"/>
            <vwoc:Point2 xsi:type="vwoc:LogicalPointType" name="NoseTop"/>
            <vwoc:Point3 xsi:type="vwoc:LogicalPointType" name="NoseRight"/>
            <vwoc:Point4 xsi:type="vwoc:LogicalPointType" name="NoseDown"/>
        </vwoc:Outline4Points>
    </vwoc:NoseOutline>
</vwoc:ControlFaceFeatures>
```

5.2.7.6.4 OutlineType

5.2.7.6.4.1 Syntax

Diagram	
Source	<!-- ## --> <!-- Outline Type --> <!-- ## --> <complexType name="OutlineType"> <choice> <element name="Outline4Points" type="vwoc:Outline4PointsType"/> <element name="Outline5Points" type="vwoc:Outline5PointsType"/> <element name="Outline8Points" type="vwoc:Outline8PointsType"/> <element name="Outline14Points" type="vwoc:Outline14PointsType"/> </choice> </complexType>

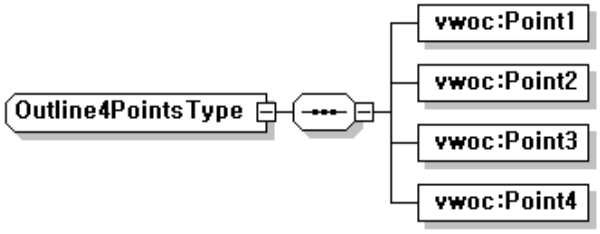
5.2.7.6.4.2 Semantics

The OutlineType contains 4 different types of outline dependent upon the number of points forming the outline.

Name	Description
OutlineType	A type that describes the outline of each facial feature.
Outline4Points	The outline with 4 points
Outline5Points	The outline with 5 points
Outline8Points	The outline with 8 points
Outline14Points	The outline with 14 points

5.2.7.6.4.3 Outline4PointsType

5.2.7.6.4.3.1 Syntax

Diagram	
Source	<!-- ## --> <!-- Outline 4 Points Type --> <!-- ## --> <complexType name="Outline4PointsType"> <sequence> <element name="Point1" type="vwoc:PointType"/> <element name="Point2" type="vwoc:PointType"/> <element name="Point3" type="vwoc:PointType"/> <element name="Point4" type="vwoc:PointType"/> </sequence> </complexType>

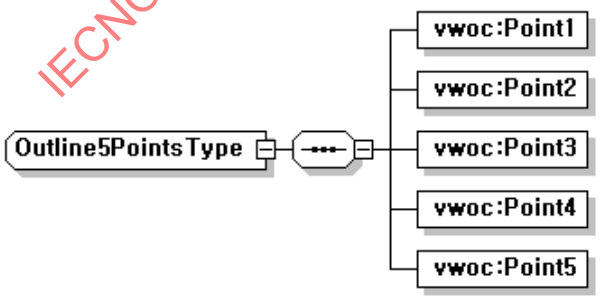
5.2.7.6.4.3.2 Semantics

The points are numbered from the leftmost point by the counter-clockwise. For example, if there are 4 points at the left, top, right, bottom of the outline, they are Point1, Point2, Point3, Point4, respectively.

Name	Description
Outline4PointsType	A type that describes the outline of each facial feature with four points.
Point1	The 1st point of the outline
Point2	The 2nd point of the outline
Point3	The 3rd point of the outline
Point4	The 4th point of the outline

5.2.7.6.4.4 Outline5PointsType

5.2.7.6.4.4.1 Syntax

Diagram	
Source	<!-- ## --> <!-- Outline 5 Points Type --> <!-- ## --> <complexType name="Outline5PointsType"> <sequence> <element name="Point1" type="vwoc:PointType"/> <element name="Point2" type="vwoc:PointType"/>

```
            <element name="Point3" type="vwoc:PointType"/>
            <element name="Point4" type="vwoc:PointType"/>
            <element name="Point5" type="vwoc:PointType"/>
        </sequence>
    </complexType>
```

5.2.7.6.4.4.2 Semantics

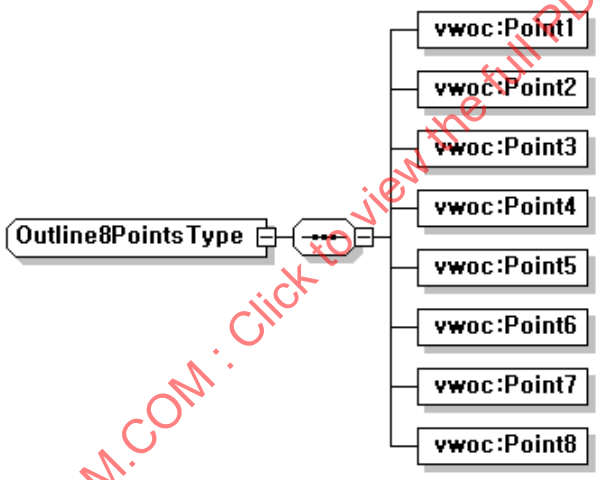
The points are numbered from the leftmost point by the counter-clockwise. For the details, refer to the figure of FacePoints in 5.2.7.6.2.

Name	Description
Outline5PointsType	A type that describes the outline of each facial feature with five points.
Point1	The 1st point of the outline
Point2	The 2nd point of the outline
Point3	The 3rd point of the outline
Point4	The 4th point of the outline
Point5	The 5th point of the outline

5.2.7.6.4.5 Outline8PointsType

5.2.7.6.4.5.1 Syntax

Diagram



Source

```
<!-- ################################################ -->
<!-- Outline 8 Points Type                            -->
<!-- ################################################ -->
<complexType name="Outline8PointsType">
    <sequence>
        <element name="Point1" type="vwoc:PointType"/>
        <element name="Point2" type="vwoc:PointType"/>
        <element name="Point3" type="vwoc:PointType"/>
        <element name="Point4" type="vwoc:PointType"/>
        <element name="Point5" type="vwoc:PointType"/>
        <element name="Point6" type="vwoc:PointType"/>
        <element name="Point7" type="vwoc:PointType"/>
        <element name="Point8" type="vwoc:PointType"/>
    </sequence>
</complexType>
```

5.2.7.6.4.5.2 Semantics

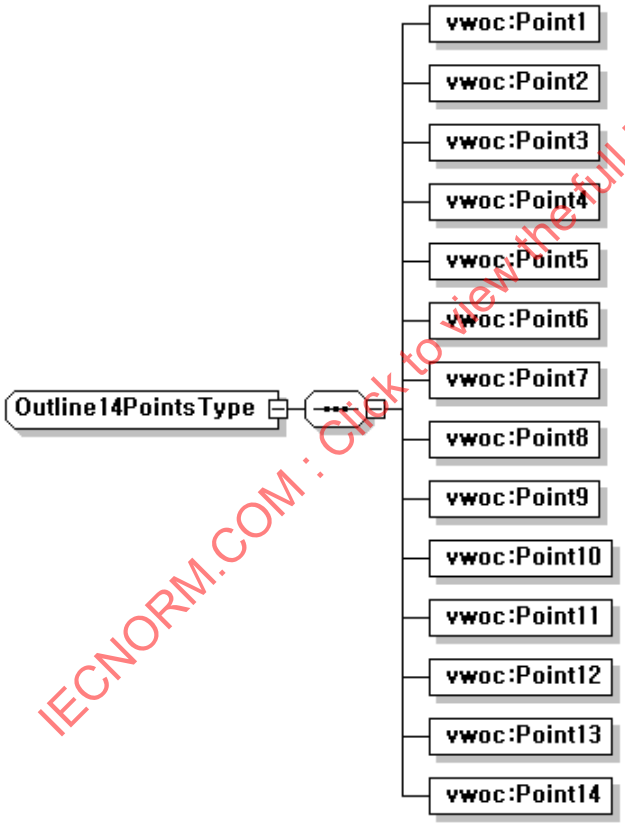
The points are numbered from the leftmost point by the counter-clockwise. For the details, refer to the figure of LeftEye in 5.2.7.6.2.

Name	Description
Outline8PointsType	A type that describes the outline of each facial feature with 8 points.
Point1	The 1st point of the outline
Point2	The 2nd point of the outline
Point3	The 3rd point of the outline
Point4	The 4th point of the outline
Point5	The 5th point of the outline
Point6	The 6th point of the outline
Point7	The 7th point of the outline
Point8	The 8th point of the outline

5.2.7.6.4.6 Outline14PointsType

5.2.7.6.4.6.1 Syntax

Diagram



Source

```
<!-- ################################################ -->
<!--  Outline 14 Points Type                          -->
<!-- ################################################ -->
<complexType name="Outline14PointsType">
    <sequence>
        <element name="Point1" type="vwoc:PointType"/>
        <element name="Point2" type="vwoc:PointType"/>
        <element name="Point3" type="vwoc:PointType"/>
        <element name="Point4" type="vwoc:PointType"/>
        <element name="Point5" type="vwoc:PointType"/>
        <element name="Point6" type="vwoc:PointType"/>
```

```
            <element name="Point7" type="vwoc:PointType"/>
            <element name="Point8" type="vwoc:PointType"/>
            <element name="Point9" type="vwoc:PointType"/>
            <element name="Point10" type="vwoc:PointType"/>
            <element name="Point11" type="vwoc:PointType"/>
            <element name="Point12" type="vwoc:PointType"/>
            <element name="Point13" type="vwoc:PointType"/>
            <element name="Point14" type="vwoc:PointType"/>
        </sequence>
</complexType>
```

5.2.7.6.4.6.2 Semantics

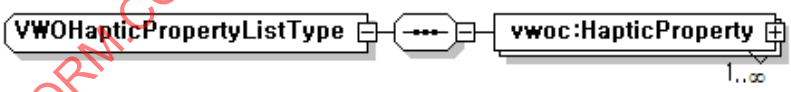
The points are numbered from the leftmost point by the counter-clockwise. For the details, refer to the figure of MouthLips in 5.2.7.6.2.

Name	Description
Outline14PointsType	A type that describes the outline of each facial feature with fourteen points.
Point1	The 1st point of the outline
Point2	The 2nd point of the outline
Point3	The 3rd point of the outline
Point4	The 4th point of the outline
Point5	The 5th point of the outline
Point6	The 6th point of the outline
Point7	The 7th point of the outline
Point8	The 8th point of the outline
Point9	The 9th point of the outline
Point10	The 10th point of the outline
Point11	The 11th point of the outline
Point12	The 12th point of the outline
Point13	The 13th point of the outline
Point14	The 14th point of the outline

5.2.8 VWOHapticPropertyListType

5.2.8.1 Syntax

Diagram



Source

```
<!-- ################################################ -->
<!-- VWO Haptic Property List Type                    -->
<!-- ################################################ -->
<complexType name="VWOHapticPropertyListType">
    <sequence>
        <element name="HapticProperty" type="vwoc:VWOHapticPropertyType" maxOccurs="unbounded"/>
    </sequence>
</complexType>
```

5.2.8.2 Semantics

Name	Definition
VWOHaptic PropertyListType	Wrapper element type which allows multiple occurrences of the haptic properties associated to the virtual world object.
HapticProperty	This element contains a set of high level descriptors of the haptic properties defined in the VWOHapticPropertyType of the virtual world object.

6 Virtual object metadata

6.1 Introduction

Virtual object metadata as a (visual) representation of virtual objects inside the environment serves the following purposes:

- characterize various kinds of objects within the VE,
- provide an interaction between virtual object and avatar
- provide an interaction with the VE …

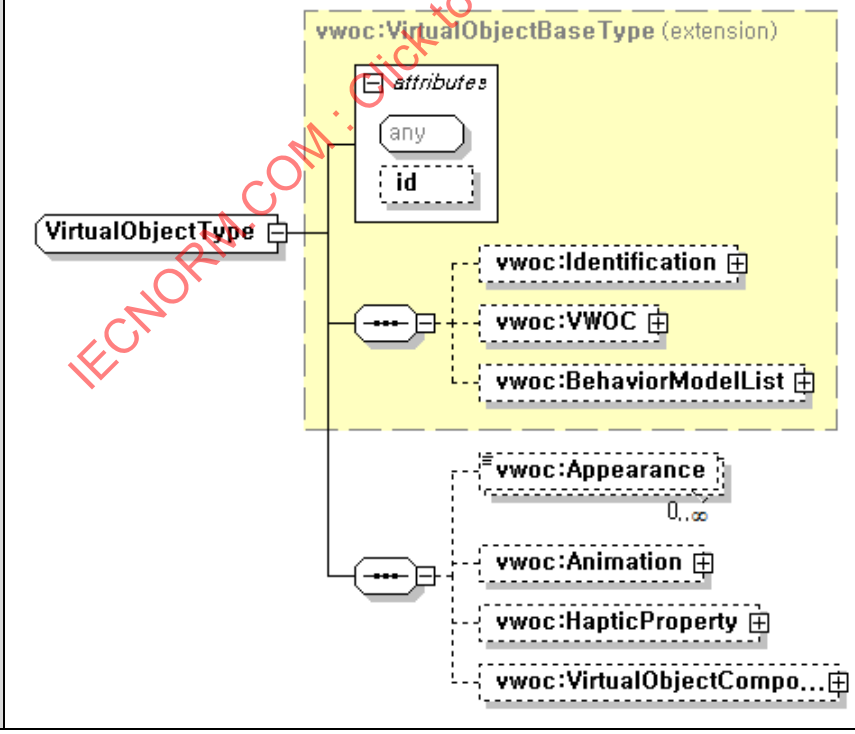
The "virtual object" element is composed of following type of data with the extension of the base type of a virtual object.

- **Appearance**: contains the high level description of the appearance and may refer a media containing the exact geometry, texture and haptic properties,
- **Animation**: contains the description of a set of animation sequences that the object is able to perform and may refer to several medias containing the exact (geometric transformations and deformations) animation parameters,
- **HapticProperty**: contains the description of the haptic property of the virtual object.
- **Virtual object components**: contains the list of the virtual objects which are concatenated to the virtual object as components.

6.2 VirtualObjectType

6.2.1 Syntax

Diagram



Source

```
<!-- ################################################ -->
<!--  Virtual Object Type                             -->
<!-- ################################################ -->
<complexType name="VirtualObjectType">
    <complexContent>
        <extension base="vwoc:VirtualObjectBaseType">
            <sequence>
                <element name="Appearance" type="anyURI" minOccurs="0" maxOccurs="unbounded"/>
                <element name="Animation" type="vwoc:VOAnimationType" minOccurs="0"/>
                <element name="HapticProperty" type="vwoc:VWOHapticPropertyType" minOccurs="0"/>
                <element name="VirtualObjectComponents" type="vwoc:VirtualObjectListType"
minOccurs="0"/>
            </sequence>
        </extension>
    </complexContent>
</complexType>
```

6.2.2 Semantics

Name	Definition
VirtualObjectType	A type that provides a representation of virtual object inside the environment.
Appearance	This element contains one or more resource link(s) to appearance(s) file(s) describing the visual and tactile elements of the object.
Animation	This element contains a set of metadata describing pre-recorded animations associated with the object.
HapticProperty	This element contains a set of high level descriptors of the haptic properties defined in the `VWOHapticPropertyType` of the virtual world object.
VirtualObject Components	This element contains the list of the virtual objects which are concatenated to the virtual object as components.

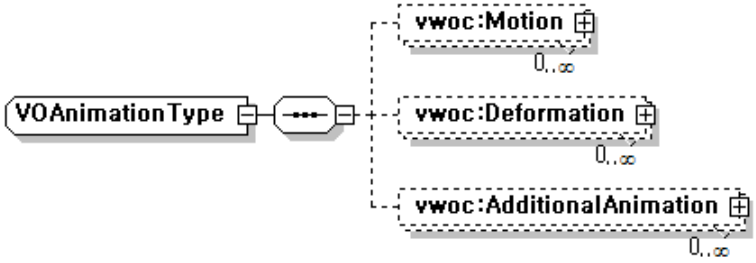
6.2.3 Examples

This example shows the description of virtual object information with the following semantics. The list of virtual objects contains 2 virtual objects is given. One virtual object whose id is “virtualObject_001” has the identification name as “clothe” and the appearance resource of “http://clothsdb.com/clothe_001.clo.” The other virtual object whose id is “virtualObject_002” has the appearance resource of “http://3DmodelDb.com/object_0001.3ds” and the animation, the name of which is “Turn360” and the resource of which is “http://voAnimationdb.com/turn_360.bvh.”

```
<vwoc:VirtualObjectList>
  <vwoc:VirtualObject xsi:type="vwoc:VirtualObjectType" id="virtualObject_001">
    <vwoc:Identification name="clothe"/>
    <vwoc:Appearance>http://clothsdb.com/clothe_001.clo</vwoc:Appearance>
  </vwoc:VirtualObject>
  <vwoc:VirtualObject xsi:type="vwoc:VirtualObjectType" id="virtualObject_002">
    <vwoc:Appearance>http://3DmodelDb.com/object_0001.3ds</vwoc:Appearance>
    <vwoc:Animation>
      <vwoc:Motion>
        <vwoc:Name>urn:mpeg:mpeg-v:01-VWOC-VOMotionCS-NS:Turn360</vwoc:Name>
        <vwoc:Uri>http://voAnimationdb.com/turn_360.bvh</vwoc:Uri>
      </vwoc:Motion>
    </vwoc:Animation>
  </vwoc:VirtualObject>
</vwoc:VirtualObjectList>
```

6.2.4 VOAnimationType

6.2.4.1 Syntax

Diagram	
Source	<!-- ## --> <!-- VO Animation Type --> <!-- ## --> <complexType name="VOAnimationType"> <sequence> <element name="Motion" type="vwoc:AnimationDescriptionType" minOccurs="0" maxOccurs="unbounded"/> <element name="Deformation" type="vwoc:AnimationDescriptionType" minOccurs="0" maxOccurs="unbounded"/> <element name="AdditionalAnimation" type="vwoc:AnimationResourcesDescriptionType" minOccurs="0" maxOccurs="unbounded"/> </sequence> </complexType>

6.2.4.2 Semantics

Name	Definition
VOAnimationType	A type that contains the description of an animation and may refer several medias containing the exact animation parameters.
Motion	Set of animations defined as a rigid motion: Examples of motion animations defined in `VOMotionCS` in A.2.4.2 are as follows.

Name	Description
MoveDown	move down
MoveLeft	move left
MoveRight	move right
MoveUp	move up
Turn180	make a turn for 180°
Turnback180	make a turn back for 180°
TurnLeft	turn left
TurnRight	turn right
Turn360	make a turn for 360°
Turnback360	make a turn back for 360°
FreeDirection	Move to an arbitrary direction
Appear	appear from somewhere
Away	go away
Disappear	disappear somewhere
Falldown	falling down
Bounce	Bounce
Toss	Toss
Spin	Spin
Fly	Fly
Vibrate	Vibrate
Flow	Flow

<table>
<tr><td>Deformation</td><td>Set of deformation animations.
Examples of deformation animations defined in <code>VODeformationCS</code> in A.2.4.1 are as follows.
<table>
<tr><th>Name</th><th>Description</th></tr>
<tr><td>Flip</td><td>Flip</td></tr>
<tr><td>Stretch</td><td>Stretch</td></tr>
<tr><td>Swirl</td><td>Swirl</td></tr>
<tr><td>Twist</td><td>Twist</td></tr>
<tr><td>Bend</td><td>Bend</td></tr>
<tr><td>Roll</td><td>Roll</td></tr>
<tr><td>Press</td><td>Press</td></tr>
<tr><td>FallToPieces</td><td>Falling to pieces</td></tr>
<tr><td>Explode</td><td>Exploding</td></tr>
<tr><td>Fire</td><td>Firing</td></tr>
</table></td></tr>
<tr><td>AdditionalAnimation</td><td>Element that contains, if exist, one or more link(s) to animation(s) file(s).</td></tr>
</table>

6.2.4.3 Examples

This example shows the description of object animation information with the following semantics. Among all animations, motion type animation of turning 360° is given. The animation resource is saved at "http://voAnimationdb.com/turn_360.bvh" and the value of animationID, its identifier is "Animation3." The intensity shall be played once with duration of 30 seconds.

```
<vwoc:Animation>
    <vwoc:Motion animationID="Animation3" duration="30" loop="1”>
        <vwoc:Name> urn:mpeg:mpeg-v:01-VWOC-VOMotionCS-NS:Turn360</vwoc:Name>
        <vwoc:Uri>http://voAnimationdb.com/turn_360.bvh</vwoc:Uri>
    </vwoc:Motion>
</vwoc:Animation>
```

Annex A
(normative)

Classification Schemes

A.1 Introduction

This Annex specifies a set of classification schemes that may be used by applications using description tools specified in this part of ISO/IEC 23005. Applications need not use these classification schemes; they can use proprietary or third party ones. However, if they choose to use the classification schemes defined in this Annex, no modifications or extensions are allowed to these classification schemes. The classification schemes in this Annex are specified using the `ClassificationScheme` defined in subclause 7.6 of ISO/IEC 15938-5:2003. All of the classification schemes defined in this Annex are uniquely identified by a URN following the "`urn:mpeg:mpeg-v:01-CI-NameCS-NS`" namespace identifier where `Name` should be replaced with the name of the classification scheme. For example, the URN "`urn:mpeg:mpeg-v:01-CI-IdleAnimationCS-NS`" identifies the classification scheme provided for `Idle` values of AvatarAnimationType.

In some cases there are several classification schemes associated with a single description. In such a case, any one of these classification schemes (as well as classification schemes not defined in this specification) may be used depending on the application domain.

A.2 Classification Schemes

A.2.1 Classification scheme for input events

A.2.1.1 MouseEventCS

This Subclause contains a classification scheme for mouse events. `MouseEventCS` corresponds to the `Mouse` element value in `VWOEventType`.

```
<ClassificationScheme uri="urn:mpeg:mpeg-v:01-VWOC-MouseEventCS-NS">
    <Term termID="click">
        <Name xml:lang="en">Click</Name>
        <Definition xml:lang="en">
            Describes the event of click the left button of a mouse(Tap swiftly.)
        </Definition>
    </Term>
    <Term termID="doubleclick">
        <Name xml:lang="en">DoubleClick</Name>
        <Definition xml:lang="en">
            Describes the event of double-click the left button of a mouse(Tap
swiftly and with the taps as close to each other as possible).
        </Definition>
    </Term>
    <Term termID="leftbtndown">
        <Name xml:lang="en">LeftButtonDown</Name>
        <Definition xml:lang="en">
            Describes the event which takes place at the moment of holding down the
left button of a mouse.
        </Definition>
    </Term>
```

```
    <Term termID="leftbtnup">
       <Name xml:lang="en">LeftButtonUP</Name>
       <Definition xml:lang="en">
          Describes the event which takes place at the moment of releasing the
left button of a mouse.
       </Definition>
    </Term>
    <Term termID="rightbtndown">
       <Name xml:lang="en">RightButtonDown</Name>
       <Definition xml:lang="en">
          Describes the event which takes place at the moment of holding down the
right button of a mouse.
       </Definition>
    </Term>
    <Term termID="rightbtnup">
       <Name xml:lang="en">RightButtonUP</Name>
       <Definition xml:lang="en">
          Describes the event which takes place at the moment of releasing the
right button of a mouse.
       </Definition>
    </Term>
    <Term termID="wheelbtndown">
       <Name xml:lang="en">WheelButtonDown</Name>
       <Definition xml:lang="en">
          Describes the event which takes place at the moment of pushing the
wheel button of a mouse.
       </Definition>
    </Term>
    <Term termID="wheelbtnup">
       <Name xml:lang="en">WheelButtonUp</Name>
       <Definition xml:lang="en">
          Describes the event which takes place at the moment of releasing the
wheel button of a mouse.
       </Definition>
    </Term>
    <Term termID="wheelscrolldown">
       <Name xml:lang="en">WheelScrollDown</Name>
       <Definition xml:lang="en">
          Describes the mouse event which takes place at the moment of scrolling
the wheel down.
       </Definition>
    </Term>
    <Term termID="wheelscrollup">
       <Name xml:lang="en">WheelScrollUp</Name>
       <Definition xml:lang="en">
          Describes the mouse event which takes place at the moment of scrolling
the wheel up.
       </Definition>
    </Term>
    <Term termID="move">
       <Name xml:lang="en">Move</Name>
       <Definition xml:lang="en">
          Describes the event which takes place while changing the mouse
position.
       </Definition>
    </Term>
</ClassificationScheme>
```

A.2.2 Classification scheme for hairstyles

This Subclause contains a classification scheme for hairstyles. `HairStyleCS` corresponds to the `HairStyle` element value in `HairType`.

```
<ClassificationScheme uri="urn:mpeg:mpeg-v:01-VWOC-HairStyleCS-NS">
    <Term termID="afro">
        <Name xml:lang="en">Afro</Name>
        <Definition xml:lang="en">
            Describes the style of the afro hair.
       </Definition>
    </Term>
    <Term termID="bun">
        <Name xml:lang="en">Bun</Name>
        <Definition xml:lang="en">
            Describes the style of the bun hair.
       </Definition>
    </Term>
    <Term termID="combover">
        <Name xml:lang="en">Combover</Name>
        <Definition xml:lang="en">
            Describes the style of the combover hair.
       </Definition>
    </Term>
    <Term termID="crewcut">
        <Name xml:lang="en">Crewcut</Name>
        <Definition xml:lang="en">
            Describes the style of the crewcut hair.
       </Definition>
    </Term>
    <Term termID="mohawk">
        <Name xml:lang="en">Mohawk</Name>
        <Definition xml:lang="en">
            Describes the style of the mohawk hair.
       </Definition>
    </Term>
    <Term termID="odando">
        <Name xml:lang="en">Odando</Name>
        <Definition xml:lang="en">
            Describes the style of the odando hair.
       </Definition>
    </Term>
    <Term termID="pigtails">
        <Name xml:lang="en">Pigtails</Name>
        <Definition xml:lang="en">
            Describes the style of the pigtails hair.
       </Definition>
    </Term>
    <Term termID="pompadour">
        <Name xml:lang="en">Pompadour</Name>
        <Definition xml:lang="en">
            Describes the style of the pompadour hair.
       </Definition>
    </Term>
    <Term termID="ponytail">
        <Name xml:lang="en">Ponytail</Name>
        <Definition xml:lang="en">
            Describes the style of the ponytail hair.
       </Definition>
```

```
    </Term>
</ClassificationScheme>
```

A.2.3 Classification schemes for avatar animation

This Subclause contains a set of classification schemes for avatar animation. Each of the classification schemes corresponds to the element values in AvatarAnimationType.

A.2.3.1 IdleAnimationCS

```
<ClassificationScheme uri="urn:mpeg:mpeg-v:01-VWOC-IdleAnimationCS-NS">
    <Term termID="idle_01">
        <Name xml:lang="en">DefaultIdle</Name>
        <Definition xml:lang="en">
            Describes the default pose of avatar.
       </Definition>
    </Term>
    <Term termID="idle_02">
        <Name xml:lang="en">RestPose</Name>
        <Definition xml:lang="en">
            Describes the rest pose of avatar.
       </Definition>
    </Term>
    <Term termID="idle_03">
        <Name xml:lang="en">Breathe</Name>
        <Definition xml:lang="en">
            Describes the breathe pose of avatar.
       </Definition>
    </Term>
    <Term termID="idle_04">
        <Name xml:lang="en">BodyNoise</Name>
        <Definition xml:lang="en">
            Describes the strong breathe pose of avatar.
       </Definition>
    </Term>
</ClassificationScheme>
```

A.2.3.2 GreetingAnimationCS

```
<ClassificationScheme uri="urn:mpeg:mpeg-v:01-VWOC-GreetingAnimationCS-NS">
    <Term termID="greeting_01">
        <Name xml:lang="en">Salute</Name>
        <Definition xml:lang="en">
            Describes the salute animation.
       </Definition>
    </Term>
    <Term termID="greeting_02">
        <Name xml:lang="en">Cheer</Name>
        <Definition xml:lang="en">
            Describes the cheer animation.
       </Definition>
    </Term>
    <Term termID="greeting_03">
        <Name xml:lang="en">Greet</Name>
        <Definition xml:lang="en">
```

```
            Describes the greet animation.
        </Definition>
    </Term>
    <Term termID="greeting_04">
        <Name xml:lang="en">Wave</Name>
        <Definition xml:lang="en">
            Describes the wave animation.
       </Definition>
    </Term>
    <Term termID="greeting_05">
        <Name xml:lang="en">Hello</Name>
        <Definition xml:lang="en">
            Describes the hello animation.
       </Definition>
    </Term>
    <Term termID="greeting_06">
        <Name xml:lang="en">Bow</Name>
        <Definition xml:lang="en">
            Describes the bow animation.
       </Definition>
    </Term>
    <Term termID="greeting_07">
        <Name xml:lang="en">CourtBow</Name>
        <Definition xml:lang="en">
            Describes the court bow animation..
       </Definition>
    </Term>
    <Term termID="greeting_08">
        <Name xml:lang="en">Flourish</Name>
        <Definition xml:lang="en">
            Describes the flourish animation..
       </Definition>
    </Term>
</ClassificationScheme>
```


A.2.3.3 DanceAnimationCS

```
<ClassificationScheme uri="urn:mpeg:mpeg-v:01-VWOC-DanceAnimationCS-NS">
    <Term termID="dance_01">
        <Name xml:lang="en">BodyPopDance</Name>
        <Definition xml:lang="en">
            Describes the body pop dance animation.
       </Definition>
    </Term>
    <Term termID="dance_02">
        <Name xml:lang="en">BreakDance</Name>
        <Definition xml:lang="en">
            Describes the break dance animation.
       </Definition>
    </Term>
    <Term termID="dance_03">
        <Name xml:lang="en">CabbagePatchDance</Name>
        <Definition xml:lang="en">
            Describes the cabbage patch dance animation.
       </Definition>
    </Term>
    <Term termID="dance_04">
        <Name xml:lang="en">CasualDance</Name>
```

```
        <Definition xml:lang="en">
            Describes the casual dance animation.
        </Definition>
    </Term>
    <Term termID="dance_05">
        <Name xml:lang="en">Dance</Name>
        <Definition xml:lang="en">
            Describes the default dance defined per avatar.
        </Definition>
    </Term>
    <Term termID="dance_06">
        <Name xml:lang="en">RaveDance</Name>
        <Definition xml:lang="en">
            Describes the rave dance animation.
        </Definition>
    </Term>
    <Term termID="dance_07">
        <Name xml:lang="en">RobotDance</Name>
        <Definition xml:lang="en">
            Describes the robot dance animation.
        </Definition>
    </Term>
    <Term termID="dance_08">
        <Name xml:lang="en">RockDance</Name>
        <Definition xml:lang="en">
            Describes the rock dance animation.
        </Definition>
    </Term>
    <Term termID="dance_09">
        <Name xml:lang="en">RockRollDance</Name>
        <Definition xml:lang="en">
            Describes the rock roll dance animation.
        </Definition>
    </Term>
    <Term termID="dance_10">
        <Name xml:lang="en">RunningManDance</Name>
        <Definition xml:lang="en">
            Describes the running man dance animation.
        </Definition>
    </Term>
    <Term termID="dance_11">
        <Name xml:lang="en">SalsaDance</Name>
        <Definition xml:lang="en">
            Describes the salsa dance animation.
        </Definition>
    </Term>
</ClassificationScheme>
```


A.2.3.4 WalkAnimationCS

```
<ClassificationScheme uri="urn:mpeg:mpeg-v:01-VWOC-WalkAnimationCS-NS">
    <Term termID="walk_01">
        <Name xml:lang="en">SlowWalk</Name>
        <Definition xml:lang="en">
            Describes the slow walk  animation.
        </Definition>
    </Term>
    <Term termID="walk_02">
```

```
        <Name xml:lang="en">DefaultWalk</Name>
        <Definition xml:lang="en">
            Describes the default walk animation.
       </Definition>
    </Term>
    <Term termID="walk_03">
        <Name xml:lang="en">FastWalk</Name>
        <Definition xml:lang="en">
            Describes the fast walk animation.
       </Definition>
    </Term>
    <Term termID="walk_04">
        <Name xml:lang="en">SlowRun</Name>
        <Definition xml:lang="en">
            Describes the slow run animation.
       </Definition>
    </Term>
    <Term termID="walk_05">
        <Name xml:lang="en">DefaultRun</Name>
        <Definition xml:lang="en">
            Describes the default run animation.
       </Definition>
    </Term>
    <Term termID="walk_06">
        <Name xml:lang="en">FastRun</Name>
        <Definition xml:lang="en">
            Describes the fast run animation.
       </Definition>
    </Term>
    <Term termID="walk_07">
        <Name xml:lang="en">Crouch</Name>
        <Definition xml:lang="en">
            Describes the crouch animation.
       </Definition>
    </Term>
    <Term termID="walk_08">
        <Name xml:lang="en">CrouchWalk</Name>
        <Definition xml:lang="en">
            Describes the crouch walk animation.
       </Definition>
    </Term>
</ClassificationScheme>
```


A.2.3.5 MovesAnimationCS

```
<ClassificationScheme uri="urn:mpeg:mpeg-v:01-VWOC-MovesAnimationCS-NS">
    <Term termID="moves_01">
        <Name xml:lang="en">MoveDown</Name>
        <Definition xml:lang="en">
            Describes the move down animation.
       </Definition>
    </Term>
    <Term termID="moves_02">
        <Name xml:lang="en">MoveLeft</Name>
        <Definition xml:lang="en">
            Describes the move left animation.
       </Definition>
    </Term>
```

```
<Term termID="moves_03">
    <Name xml:lang="en">MoveRight</Name>
    <Definition xml:lang="en">
        Describes the move right animation.
   </Definition>
</Term>
<Term termID="moves_04">
    <Name xml:lang="en">MoveUp</Name>
    <Definition xml:lang="en">
        Describes the move up animation.
   </Definition>
</Term>
<Term termID="moves_05">
    <Name xml:lang="en">PointMe</Name>
    <Definition xml:lang="en">
        Describes the point me animation.
   </Definition>
</Term>
<Term termID="moves_06">
    <Name xml:lang="en">PointYou</Name>
    <Definition xml:lang="en">
        Describes the point you animation.
   </Definition>
</Term>
<Term termID="moves_07">
    <Name xml:lang="en">Turn180</Name>
    <Definition xml:lang="en">
        Describes the turn 180 animation.
   </Definition>
</Term>
<Term termID="moves_08">
    <Name xml:lang="en">TurnBack180</Name>
    <Definition xml:lang="en">
        Describes the turn back 180 animation.
   </Definition>
</Term>
<Term termID="moves_09">
    <Name xml:lang="en">TurnLeft</Name>
    <Definition xml:lang="en">
        Describes the turn left animation.
   </Definition>
</Term>
<Term termID="moves_10">
    <Name xml:lang="en">TurnRight</Name>
    <Definition xml:lang="en">
        Describes the turn right animation.
   </Definition>
</Term>
<Term termID="moves_11">
    <Name xml:lang="en">Turn360</Name>
    <Definition xml:lang="en">
        Describes the turn 360 animation.
   </Definition>
</Term>
<Term termID="moves_12">
    <Name xml:lang="en">TurnBack360</Name>
    <Definition xml:lang="en">
        Describes the turn back 360 animation.
   </Definition>
</Term>
```

```
    <Term termID="moves_13">
       <Name xml:lang="en">FreeDirection</Name>
       <Definition xml:lang="en">
          Describes the free direction animation.
       </Definition>
    </Term>
</ClassificationScheme>
```

A.2.3.6 FightingAnimationCS

```
<ClassificationScheme uri="urn:mpeg:mpeg-v:01-VWOC-FightingAnimationCS-NS">
    <Term termID="fighting_01">
       <Name xml:lang="en">Aim</Name>
       <Definition xml:lang="en">
          Describes the aim" animation.
       </Definition>
    </Term>
    <Term termID="fighting_02">
       <Name xml:lang="en">AimLeft</Name>
       <Definition xml:lang="en">
          Describes the aim left animation.
       </Definition>
    </Term>
    <Term termID="fighting_03">
       <Name xml:lang="en">AimRight</Name>
       <Definition xml:lang="en">
          Describes the aim right animation.
       </Definition>
    </Term>
    <Term termID="fighting_04">
       <Name xml:lang="en">AimBow</Name>
       <Definition xml:lang="en">
          Describes the aim with bow animation.
       </Definition>
    </Term>
    <Term termID="fighting_05">
       <Name xml:lang="en">AimLeftBow</Name>
       <Definition xml:lang="en">
          Describes the aim left with bow animation.
       </Definition>
    </Term>
    <Term termID="fighting_06">
       <Name xml:lang="en">AimRightBow</Name>
       <Definition xml:lang="en">
          Describes the aim right with bow animation.
       </Definition>
    </Term>
    <Term termID="fighting_07">
       <Name xml:lang="en">AimLeftRifle</Name>
       <Definition xml:lang="en">
          Describes the aim left with rifle animation.
       </Definition>
    </Term>
    <Term termID="fighting_08">
       <Name xml:lang="en">AimRightRifle</Name>
       <Definition xml:lang="en">
          Describes the aim right with rifle animation.
       </Definition>
```

```
    </Term>
    <Term termID="fighting_09">
        <Name xml:lang="en">AimBazooka</Name>
        <Definition xml:lang="en">
            Describes the aim with bazooka animation.
       </Definition>
    </Term>
    <Term termID="fighting_10">
        <Name xml:lang="en">AimLeftBazooka</Name>
        <Definition xml:lang="en">
            Describes the aim left with bazooka animation.
       </Definition>
    </Term>
    <Term termID="fighting_11">
        <Name xml:lang="en">AimRightBazooka</Name>
        <Definition xml:lang="en">
            Describes the aim right with bazooka animation.
       </Definition>
    </Term>
    <Term termID="fighting_12">
        <Name xml:lang="en">AimHandgun</Name>
        <Definition xml:lang="en">
            Describes the aim with handgun animation.
       </Definition>
    </Term>
    <Term termID="fighting_13">
        <Name xml:lang="en">AimLeftHandgun</Name>
        <Definition xml:lang="en">
            Describes the aim left with handgun animation.
       </Definition>
    </Term>
    <Term termID="fighting_14">
        <Name xml:lang="en">AimRightHandgun</Name>
        <Definition xml:lang="en">
            Describes the aim right with handgun animation.
       </Definition>
    </Term>
    <Term termID="fighting_15">
        <Name xml:lang="en">HoldWeapon</Name>
        <Definition xml:lang="en">
            Describes the hold weapon animation.
       </Definition>
    </Term>
    <Term termID="fighting_16">
        <Name xml:lang="en">HoldWeaponLeft</Name>
        <Definition xml:lang="en">
            Describes the hold weapon in left hand animation.
       </Definition>
    </Term>
    <Term termID="fighting_17">
        <Name xml:lang="en">HoldWeaponRight</Name>
        <Definition xml:lang="en">
            Describes the hold weapon in right hand animation.
       </Definition>
    </Term>
    <Term termID="fighting_18">
        <Name xml:lang="en">HoldBow</Name>
        <Definition xml:lang="en">
            Describes the hold bow animation.
       </Definition>
```

```
    </Term>
    <Term termID="fighting_19">
        <Name xml:lang="en">HoldBowLeft</Name>
        <Definition xml:lang="en">
            Describes the hold bow in left hand animation.
       </Definition>
    </Term>
    <Term termID="fighting_20">
        <Name xml:lang="en">HoldBowRight</Name>
        <Definition xml:lang="en">
            Describes the hold bow in right hand animation.
       </Definition>
    </Term>
    <Term termID="fighting_21">
        <Name xml:lang="en">HoldRifle</Name>
        <Definition xml:lang="en">
            Describes the hold rifle animation.
       </Definition>
    </Term>
    <Term termID="fighting_22">
        <Name xml:lang="en">HoldRifleLeft</Name>
        <Definition xml:lang="en">
            Describes the hold rifle in left hand animation.
       </Definition>
    </Term>
    <Term termID="fighting_23">
        <Name xml:lang="en">HoldRifleRight</Name>
        <Definition xml:lang="en">
            Describes the hold rifle in right hand animation.
       </Definition>
    </Term>
    <Term termID="fighting_24">
        <Name xml:lang="en">HoldBazooka</Name>
        <Definition xml:lang="en">
            Describes the hold bazooka animation.
       </Definition>
    </Term>
    <Term termID="fighting_25">
        <Name xml:lang="en">HoldBazookaLeft</Name>
        <Definition xml:lang="en">
            Describes the hold bazooka in left hand animation.
       </Definition>
    </Term>
    <Term termID="fighting_26">
        <Name xml:lang="en">HoldBazookaRight</Name>
        <Definition xml:lang="en">
            Describes the hold bazooka in right hand animation.
       </Definition>
    </Term>
    <Term termID="fighting_27">
        <Name xml:lang="en">HoldHandgun</Name>
        <Definition xml:lang="en">
            Describes the hold handgun animation.
       </Definition>
    </Term>
    <Term termID="fighting_28">
        <Name xml:lang="en">HoldHandgunLeft</Name>
        <Definition xml:lang="en">
            Describes the hold handgun in left hand animation.
       </Definition>
```

```
    </Term>
    <Term termID="fighting_29">
        <Name xml:lang="en">HoldHandgunRight</Name>
        <Definition xml:lang="en">
            Describes the hold handgun in right hand animation.
       </Definition>
    </Term>
    <Term termID="fighting_30">
        <Name xml:lang="en">HoldWeaponThrow</Name>
        <Definition xml:lang="en">
            Describes the hold weapon and then throw animation.
       </Definition>
    </Term>
    <Term termID="fighting_31">
        <Name xml:lang="en">HoldWeaponThrowRight</Name>
        <Definition xml:lang="en">
            Describes the hold weapon and then throw on right animation.
       </Definition>
    </Term>
    <Term termID="fighting_32">
        <Name xml:lang="en">HoldWeaponThrowLeft</Name>
        <Definition xml:lang="en">
            Describes the hold weapon and then throw on left animation.
       </Definition>
    </Term>
    <Term termID="fighting_33">
        <Name xml:lang="en">Shoot</Name>
        <Definition xml:lang="en">
            Describes the shoot animation.
       </Definition>
    </Term>
    <Term termID="fighting_34">
        <Name xml:lang="en">ShootLeft</Name>
        <Definition xml:lang="en">
            Describes the shoot left animation.
       </Definition>
    </Term>
    <Term termID="fighting_35">
        <Name xml:lang="en">ShootRight</Name>
        <Definition xml:lang="en">
            Describes the shoot right animation.
       </Definition>
    </Term>
    <Term termID="fighting_36">
        <Name xml:lang="en">ShootBow</Name>
        <Definition xml:lang="en">
            Describes the shoot with bow animation.
       </Definition>
    </Term>
    <Term termID="fighting_37">
        <Name xml:lang="en">ShootBowLeft</Name>
        <Definition xml:lang="en">
            Describes the shoot with bow left hand animation.
       </Definition>
    </Term>
    <Term termID="fighting_38">
        <Name xml:lang="en">ShootBowRight</Name>
        <Definition xml:lang="en">
            Describes the shoot with bow right hand animation.
       </Definition>
```

```
    </Term>
    <Term termID="fighting_39">
        <Name xml:lang="en">ShootRifle</Name>
        <Definition xml:lang="en">
            Describes the shoot with rifle animation.
       </Definition>
    </Term>
    <Term termID="fighting_40">
        <Name xml:lang="en">ShootRifleLeft</Name>
        <Definition xml:lang="en">
            Describes the shoot with rifle left hand animation.
       </Definition>
    </Term>
    <Term termID="fighting_41">
        <Name xml:lang="en">ShootRifleRight</Name>
        <Definition xml:lang="en">
            Describes the shoot with rifle right hand animation.
       </Definition>
    </Term>
    <Term termID="fighting_42">
        <Name xml:lang="en">ShootBazooka</Name>
        <Definition xml:lang="en">
            Describes the shoot with bazooka animation.
       </Definition>
    </Term>
    <Term termID="fighting_43">
        <Name xml:lang="en">ShootBazookaLeft</Name>
        <Definition xml:lang="en">
            Describes the shoot with bazooka left hand animation.
       </Definition>
    </Term>
    <Term termID="fighting_44">
        <Name xml:lang="en">ShootBazookaRight</Name>
        <Definition xml:lang="en">
            Describes the shoot with bazooka right hand animation.
       </Definition>
    </Term>
    <Term termID="fighting_45">
        <Name xml:lang="en">ShootHandgun</Name>
        <Definition xml:lang="en">
            Describes the shoot with handgun animation.
       </Definition>
    </Term>
    <Term termID="fighting_46">
        <Name xml:lang="en">ShootHandgunLeft</Name>
        <Definition xml:lang="en">
            Describes the shoot with handgun left hand animation.
       </Definition>
    </Term>
    <Term termID="fighting_47">
        <Name xml:lang="en">ShootHandgunRight</Name>
        <Definition xml:lang="en">
            Describes the shoot with handgun right hand animation.
       </Definition>
    </Term>
    <Term termID="fighting_48">
        <Name xml:lang="en">Strike</Name>
        <Definition xml:lang="en">
            Describes the strike animation.
       </Definition>
```

```
    </Term>
    <Term termID="fighting_49">
        <Name xml:lang="en">StrikeSword</Name>
        <Definition xml:lang="en">
            Describes the strike with sword animation.
        </Definition>
    </Term>
    <Term termID="fighting_50">
        <Name xml:lang="en">StrikeSwordLeft</Name>
        <Definition xml:lang="en">
            Describes the strike with sword with left hand animation.
        </Definition>
    </Term>
    <Term termID="fighting_51">
        <Name xml:lang="en">StrikeSwordRight</Name>
        <Definition xml:lang="en">
            Describes the strike with sword with right hand animation.
        </Definition>
    </Term>
    <Term termID="fighting_52">
        <Name xml:lang="en">Punch</Name>
        <Definition xml:lang="en">
            Describes the punch animation.
        </Definition>
    </Term>
    <Term termID="fighting_53">
        <Name xml:lang="en">PunchLeft</Name>
        <Definition xml:lang="en">
            Describes the punch with left hand animation.
        </Definition>
    </Term>
    <Term termID="fighting_54">
        <Name xml:lang="en">PunchRight</Name>
        <Definition xml:lang="en">
            Describes the punch with right hand animation.
        </Definition>
    </Term>
    <Term termID="fighting_55">
        <Name xml:lang="en">Throw</Name>
        <Definition xml:lang="en">
            Describes the throw animation.
        </Definition>
    </Term>
    <Term termID="fighting_56">
        <Name xml:lang="en">ThrowWeaponLeft</Name>
        <Definition xml:lang="en">
            Describes the throw weapon with left hand animation.
        </Definition>
    </Term>
    <Term termID="fighting_57">
        <Name xml:lang="en">ThrowWeaponRight</Name>
        <Definition xml:lang="en">
            Describes the throw weapon with right hand animation.
        </Definition>
    </Term>
</ClassificationScheme>
```

A.2.3.7 HearingAnimationCS

```
<ClassificationScheme uri="urn:mpeg:mpeg-v:01-VWOC-HearingAnimationCS-NS">
    <Term termID="hearing_01">
        <Name xml:lang="en">StartHearing</Name>
        <Definition xml:lang="en">
            Describes the default animation for start hearing animation.
       </Definition>
    </Term>
    <Term termID="hearing_02">
        <Name xml:lang="en">StopHearing</Name>
        <Definition xml:lang="en">
            Describes the default animation for stop hearing animation.
       </Definition>
    </Term>
    <Term termID="hearing_03">
        <Name xml:lang="en">EarsExtend</Name>
        <Definition xml:lang="en">
            Describes the ears extend animation.
       </Definition>
    </Term>
    <Term termID="hearing_04">
        <Name xml:lang="en">TurnsHeadLeft</Name>
        <Definition xml:lang="en">
            Describes the turns head left animation.
       </Definition>
    </Term>
    <Term termID="hearing_05">
        <Name xml:lang="en">TurnsHeadRight</Name>
        <Definition xml:lang="en">
            Describes the turns head right animation.
       </Definition>
    </Term>
    <Term termID="hearing_06">
        <Name xml:lang="en">HoldsUpHand</Name>
        <Definition xml:lang="en">
            Describes the holds up hand animation.
       </Definition>
    </Term>
    <Term termID="hearing_07">
        <Name xml:lang="en">TiltsHeadRight</Name>
        <Definition xml:lang="en">
            Describes the tilts head right animation.
       </Definition>
    </Term>
    <Term termID="hearing_08">
        <Name xml:lang="en">TiltsHeadLeft</Name>
        <Definition xml:lang="en">
            Describes the tilts head left animation.
       </Definition>
    </Term>
    <Term termID="hearing_09">
        <Name xml:lang="en">CocksHeadLeft</Name>
        <Definition xml:lang="en">
            Describes the cocks head left animation.
       </Definition>
    </Term>
    <Term termID="hearing_10">
        <Name xml:lang="en">DefaultHear</Name>
```

```
        <Definition xml:lang="en">
            Describes the hearing animation.
        </Definition>
    </Term>
</ClassificationScheme>
```

A.2.3.8 SmokeAnimationCS

```
<ClassificationScheme uri="urn:mpeg:mpeg-v:01-VWOC-SmokeAnimationCS-NS">
    <Term termID="smoke_01">
        <Name xml:lang="en">SmokeIdle</Name>
        <Definition xml:lang="en">
            Describes the default smoke animation, smoke animation.
        </Definition>
    </Term>
    <Term termID="smoke_02">
        <Name xml:lang="en">SmokeInhale</Name>
        <Definition xml:lang="en">
            Describes the inhaling smoke animation.
        </Definition>
    </Term>
    <Term termID="smoke_03">
        <Name xml:lang="en">SmokeThrowDown</Name>
        <Definition xml:lang="en">
            Describes the throw down smoke animation.
        </Definition>
    </Term>
</ClassificationScheme>
```

A.2.3.9 CongratulationsAnimationCS

```
<ClassificationScheme    uri="urn:mpeg:mpeg-v:01-VWOC-CongratulationsAnimationCS-
NS">
    <Term termID="congratulations_01">
        <Name xml:lang="en">Applaud</Name>
        <Definition xml:lang="en">
            Describes the applaud animation.
        </Definition>
    </Term>
    <Term termID="congratulations_02">
        <Name xml:lang="en">Clap</Name>
        <Definition xml:lang="en">
            Describes the clap animation.
        </Definition>
    </Term>
</ClassificationScheme>
```

A.2.3.10 CommonActionsAnimationCS

```
<ClassificationScheme uri="urn:mpeg:mpeg-v:01-VWOC-CommonActionsAnimationCS-NS">
    <Term termID="commonActions_01">
        <Name xml:lang="en">Appear</Name>
        <Definition xml:lang="en">
            Describes the appear from somewhere animation.
```

```
      </Definition>
    </Term>
    <Term termID="commonActions_02">
       <Name xml:lang="en">Away</Name>
       <Definition xml:lang="en">
          Describes the away animation.
      </Definition>
    </Term>
    <Term termID="commonActions_03">
       <Name xml:lang="en">Blowkiss</Name>
       <Definition xml:lang="en">
          Describes the blow kiss animation.
      </Definition>
    </Term>
    <Term termID="commonActions_04">
       <Name xml:lang="en">Brush</Name>
       <Definition xml:lang="en">
          Describes the brush animation.
      </Definition>
    </Term>
    <Term termID="commonActions_05">
       <Name xml:lang="en">Busy</Name>
       <Definition xml:lang="en">
          Describes the busy animation.
      </Definition>
    </Term>
    <Term termID="commonActions_06">
       <Name xml:lang="en">Crazy</Name>
       <Definition xml:lang="en">
          Describes the crazy animation.
      </Definition>
    </Term>
    <Term termID="commonActions_07">
       <Name xml:lang="en">Dead</Name>
       <Definition xml:lang="en">
          Describes the dead animation.
      </Definition>
    </Term>
    <Term termID="commonActions_08">
       <Name xml:lang="en">Disappear</Name>
       <Definition xml:lang="en">
          Describes the disappear animation.
      </Definition>
    </Term>
    <Term termID="commonActions_09">
       <Name xml:lang="en">Drink</Name>
       <Definition xml:lang="en">
          Describes the drink animation.
      </Definition>
    </Term>
    <Term termID="commonActions_10">
       <Name xml:lang="en">Eat</Name>
       <Definition xml:lang="en">
          Describes the eat animation.
      </Definition>
    </Term>
    <Term termID="commonActions_11">
       <Name xml:lang="en">Explain</Name>
       <Definition xml:lang="en">
          Describes the explain animation.
```

```
      </Definition>
    </Term>
    <Term termID="commonActions_12">
        <Name xml:lang="en">Falldown</Name>
        <Definition xml:lang="en">
            Describes the falldown animation.
       </Definition>
    </Term>
    <Term termID="commonActions_13">
        <Name xml:lang="en">Flip</Name>
        <Definition xml:lang="en">
            Describes the flip animation.
       </Definition>
    </Term>
    <Term termID="commonActions_14">
        <Name xml:lang="en">Fly</Name>
        <Definition xml:lang="en">
            Describes the fly animation.
       </Definition>
    </Term>
    <Term termID="commonActions_15">
        <Name xml:lang="en">Gag</Name>
        <Definition xml:lang="en">
            Describes the gag animation.
       </Definition>
    </Term>
    <Term termID="commonActions_16">
        <Name xml:lang="en">Getattention</Name>
        <Definition xml:lang="en">
            Describes the getattention animation.
       </Definition>
    </Term>
    <Term termID="commonActions_17">
        <Name xml:lang="en">Impatient</Name>
        <Definition xml:lang="en">
            Describes the impatient animation.
       </Definition>
    </Term>
    <Term termID="commonActions_18">
        <Name xml:lang="en">Jump</Name>
        <Definition xml:lang="en">
            Describes the jump animation.
       </Definition>
    </Term>
    <Term termID="commonActions_19">
        <Name xml:lang="en">Kick</Name>
        <Definition xml:lang="en">
            Describes the kick animation.
       </Definition>
    </Term>
    <Term termID="commonActions_20">
        <Name xml:lang="en">Land</Name>
        <Definition xml:lang="en">
            Describes the land animation.
       </Definition>
    </Term>
    <Term termID="commonActions_21">
        <Name xml:lang="en">Prejump</Name>
        <Definition xml:lang="en">
            Describes the prejump animation.
```

```
      </Definition>
    </Term>
    <Term termID="commonActions_22">
       <Name xml:lang="en">Puke</Name>
       <Definition xml:lang="en">
          Describes the puke animation.
      </Definition>
    </Term>
    <Term termID="commonActions_23">
       <Name xml:lang="en">Read</Name>
       <Definition xml:lang="en">
          Describes the read animation.
      </Definition>
    </Term>
    <Term termID="commonActions_24">
       <Name xml:lang="en">Sit</Name>
       <Definition xml:lang="en">
          Describes the sit animation.
      </Definition>
    </Term>
    <Term termID="commonActions_25">
       <Name xml:lang="en">Sleep</Name>
       <Definition xml:lang="en">
          Describes the sleep animation.
      </Definition>
    </Term>
    <Term termID="commonActions_26">
       <Name xml:lang="en">Stand</Name>
       <Definition xml:lang="en">
          Describes the stand animation.
      </Definition>
    </Term>
    <Term termID="commonActions_27">
       <Name xml:lang="en">StandUp</Name>
       <Definition xml:lang="en">
          Describes the stand up animation.
      </Definition>
    </Term>
    <Term termID="commonActions_28">
       <Name xml:lang="en">Stretch</Name>
       <Definition xml:lang="en">
          Describes the stretch animation.
      </Definition>
    </Term>
    <Term termID="commonActions_29">
       <Name xml:lang="en">Stride</Name>
       <Definition xml:lang="en">
          Describes the stride animation.
      </Definition>
    </Term>
    <Term termID="commonActions_30">
       <Name xml:lang="en">Suggest</Name>
       <Definition xml:lang="en">
          Describes the suggest animation.
      </Definition>
    </Term>
    <Term termID="commonActions_31">
       <Name xml:lang="en">Surf</Name>
       <Definition xml:lang="en">
          Describes the surf animation.
```

```
      </Definition>
    </Term>
    <Term termID="commonActions_32">
       <Name xml:lang="en">Talk</Name>
       <Definition xml:lang="en">
          Describes the talk animation.
       </Definition>
    </Term>
    <Term termID="commonActions_33">
       <Name xml:lang="en">Think</Name>
       <Definition xml:lang="en">
          Describes the think animation.
       </Definition>
    </Term>
    <Term termID="commonActions_34">
       <Name xml:lang="en">Type</Name>
       <Definition xml:lang="en">
          Describes the type animation.
       </Definition>
    </Term>
    <Term termID="commonActions_35">
       <Name xml:lang="en">Whisper</Name>
       <Definition xml:lang="en">
          Describes the whisper animation.
       </Definition>
    </Term>
    <Term termID="commonActions_36">
       <Name xml:lang="en">Whistle</Name>
       <Definition xml:lang="en">
          Describes the whistle animation.
       </Definition>
    </Term>
    <Term termID="commonActions_37">
       <Name xml:lang="en">Write</Name>
       <Definition xml:lang="en">
          Describes the write animation.
       </Definition>
    </Term>
    <Term termID="commonActions_38">
       <Name xml:lang="en">Yawn</Name>
       <Definition xml:lang="en">
          Describes the yawn animation.
       </Definition>
    </Term>
    <Term termID="commonActions_39">
       <Name xml:lang="en">Yeah</Name>
       <Definition xml:lang="en">
          Describes the yeah animation.
       </Definition>
    </Term>
    <Term termID="commonActions_40">
       <Name xml:lang="en">Yoga</Name>
       <Definition xml:lang="en">
          Describes the yoga animation.
       </Definition>
    </Term>
</ClassificationScheme>
```

A.2.3.11 SpecificActionsAnimationCS

```
<ClassificationScheme    uri="urn:mpeg:mpeg-v:01-VWOC-SpecificActionsAnimationCS-
NS">
    <Term termID="specificActions_01">
       <Name xml:lang="en">Airguitar</Name>
       <Definition xml:lang="en">
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    </Term>
    <Term termID="specificActions_02">
       <Name xml:lang="en">AngryFingerwag</Name>
       <Definition xml:lang="en">
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      </Definition>
    </Term>
    <Term termID="specificActions_03">
       <Name xml:lang="en">AngryTantrum</Name>
       <Definition xml:lang="en">
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    </Term>
    <Term termID="specificActions_04">
       <Name xml:lang="en">Backflip</Name>
       <Definition xml:lang="en">
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    </Term>
    <Term termID="specificActions_05">
       <Name xml:lang="en">Beckon</Name>
       <Definition xml:lang="en">
          Describes the beck on animation.
      </Definition>
    </Term>
    <Term termID="specificActions_06">
       <Name xml:lang="en">Bigyawn</Name>
       <Definition xml:lang="en">
          Describes the big yawn animation.
      </Definition>
    </Term>
    <Term termID="specificActions_07">
       <Name xml:lang="en">Boo</Name>
       <Definition xml:lang="en">
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    </Term>
    <Term termID="specificActions_08">
       <Name xml:lang="en">Burp</Name>
       <Definition xml:lang="en">
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    <Term termID="specificActions_09">
       <Name xml:lang="en">Candlestick</Name>
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    <Term termID="specificActions_10">
       <Name xml:lang="en">Comeagain</Name>
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      <Definition xml:lang="en">
         Describes the come again animation.
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   <Term termID="specificActions_11">
      <Name xml:lang="en">Decline</Name>
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   <Term termID="specificActions_12">
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   <Term termID="specificActions_14">
      <Name xml:lang="en">FartArm</Name>
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   <Term termID="specificActions_15">
      <Name xml:lang="en">FistPump</Name>
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   <Term termID="specificActions_16">
      <Name xml:lang="en">Flyslow</Name>
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   <Term termID="specificActions_17">
      <Name xml:lang="en">Guns</Name>
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   <Term termID="specificActions_18">
      <Name xml:lang="en">Ha</Name>
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   <Term termID="specificActions_19">
      <Name xml:lang="en">Hide</Name>
      <Definition xml:lang="en">
         Describes the hide animation.
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   <Term termID="specificActions_20">
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      <Definition xml:lang="en">
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   <Term termID="specificActions_21">
      <Name xml:lang="en">Hover</Name>
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   <Term termID="specificActions_22">
      <Name xml:lang="en">HoverDown</Name>
      <Definition xml:lang="en">
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      </Definition>
   </Term>
   <Term termID="specificActions_23">
      <Name xml:lang="en">HoverUp</Name>
      <Definition xml:lang="en">
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      </Definition>
   </Term>
   <Term termID="specificActions_24">
      <Name xml:lang="en">Huh</Name>
      <Definition xml:lang="en">
         Describes the huh animation.
      </Definition>
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   <Term termID="specificActions_25">
      <Name xml:lang="en">Jumpforjoy</Name>
      <Definition xml:lang="en">
         Describes the jump for joy animation.
      </Definition>
   </Term>
   <Term termID="specificActions_26">
      <Name xml:lang="en">KickRoundhouse</Name>
      <Definition xml:lang="en">
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      </Definition>
   </Term>
   <Term termID="specificActions_27">
      <Name xml:lang="en">Kissmybutt</Name>
      <Definition xml:lang="en">
         Describes the kiss my butt animation.
      </Definition>
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   <Term termID="specificActions_28">
      <Name xml:lang="en">LaughtShort</Name>
      <Definition xml:lang="en">
         Describes the laught short animation.
      </Definition>
   </Term>
   <Term termID="specificActions_29">
      <Name xml:lang="en">Lol</Name>
      <Definition xml:lang="en">
         Describes the lol animation.
      </Definition>
   </Term>
   <Term termID="specificActions_30">
      <Name xml:lang="en">Loser</Name>
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      <Definition xml:lang="en">
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   <Term termID="specificActions_31">
      <Name xml:lang="en">MotorcycleSit</Name>
      <Definition xml:lang="en">
         Describes the motorcycle Sit animation.
      </Definition>
   </Term>
   <Term termID="specificActions_32">
      <Name xml:lang="en">Musclebeach</Name>
      <Definition xml:lang="en">
         Describes the muscle beach animation.
      </Definition>
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   <Term termID="specificActions_33">
      <Name xml:lang="en">NoWay</Name>
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   </Term>
   <Term termID="specificActions_34">
      <Name xml:lang="en">NoHead</Name>
      <Definition xml:lang="en">
         Describes the no head animation.
      </Definition>
   </Term>
   <Term termID="specificActions_35">
      <Name xml:lang="en">NoUnhappy</Name>
      <Definition xml:lang="en">
         Describes the no unhappy animation.
      </Definition>
   </Term>
   <Term termID="specificActions_36">
      <Name xml:lang="en">Nod</Name>
      <Definition xml:lang="en">
         Describes the nod animation.
      </Definition>
   </Term>
   <Term termID="specificActions_37">
      <Name xml:lang="en">Nope</Name>
      <Definition xml:lang="en">
         Describes the nope animation.
      </Definition>
   </Term>
   <Term termID="specificActions_38">
      <Name xml:lang="en">Nyanya</Name>
      <Definition xml:lang="en">
         Describes the nyanya animation.
      </Definition>
   </Term>
   <Term termID="specificActions_39">
      <Name xml:lang="en">Okay</Name>
      <Definition xml:lang="en">
         Describes the okay animation.
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   </Term>
   <Term termID="specificActions_40">
      <Name xml:lang="en">Oooh</Name>
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        <Definition xml:lang="en">
            Describes the oooh animation.
        </Definition>
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    <Term termID="specificActions_41">
        <Name xml:lang="en">Peace</Name>
        <Definition xml:lang="en">
            Describes the peace animation.
        </Definition>
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    <Term termID="specificActions_42">
        <Name xml:lang="en">Point</Name>
        <Definition xml:lang="en">
            Describes the point animation.
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    <Term termID="specificActions_43">
        <Name xml:lang="en">Pose</Name>
        <Definition xml:lang="en">
            Describes the pose animation.
        </Definition>
    </Term>
    <Term termID="specificActions_44">
        <Name xml:lang="en">PunchOneTwo</Name>
        <Definition xml:lang="en">
            Describes the punch one two animation.
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    <Term termID="specificActions_45">
        <Name xml:lang="en">RpsCountDown</Name>
        <Definition xml:lang="en">
            Describes the rps count down animation.
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    <Term termID="specificActions_46">
        <Name xml:lang="en">RpsPaper</Name>
        <Definition xml:lang="en">
            Describes the rps paper animation.
        </Definition>
    </Term>
    <Term termID="specificActions_47">
        <Name xml:lang="en">RpsRock</Name>
        <Definition xml:lang="en">
            Describes the rps rock animation.
        </Definition>
    </Term>
    <Term termID="specificActions_48">
        <Name xml:lang="en">RpsDcissors</Name>
        <Definition xml:lang="en">
            Describes the rps dcissors animation.
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    </Term>
    <Term termID="specificActions_49">
        <Name xml:lang="en">Score</Name>
        <Definition xml:lang="en">
            Describes the score animation.
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    <Term termID="specificActions_50">
        <Name xml:lang="en">ShakeFists</Name>
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      <Definition xml:lang="en">
         Describes the shake fists animation.
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      <Name xml:lang="en">Show</Name>
      <Definition xml:lang="en">
         Describes the show animation.
      </Definition>
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   <Term termID="specificActions_52">
      <Name xml:lang="en">SitGeneric</Name>
      <Definition xml:lang="en">
         Describes the sit generic animation.
      </Definition>
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   <Term termID="specificActions_53">
      <Name xml:lang="en">SitGround</Name>
      <Definition xml:lang="en">
         Describes the sit ground animation.
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   <Term termID="specificActions_54">
      <Name xml:lang="en">SitGroundConstrained</Name>
      <Definition xml:lang="en">
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   <Term termID="specificActions_55">
      <Name xml:lang="en">SitToStand</Name>
      <Definition xml:lang="en">
         Describes the sit to stand animation.
      </Definition>
   </Term>
   <Term termID="specificActions_56">
      <Name xml:lang="en">SlowFly</Name>
      <Definition xml:lang="en">
         Describes the slow fly animation.
      </Definition>
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   <Term termID="specificActions_57">
      <Name xml:lang="en">Snapshot</Name>
      <Definition xml:lang="en">
         Describes the snapshot animation.
      </Definition>
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   <Term termID="specificActions_58">
      <Name xml:lang="en">Spin</Name>
      <Definition xml:lang="en">
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   <Term termID="specificActions_59">
      <Name xml:lang="en">SoftLand</Name>
      <Definition xml:lang="en">
         Describes the soft land animation.
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   </Term>
   <Term termID="specificActions_60">
      <Name xml:lang="en">Tantrum</Name>
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      <Definition xml:lang="en">
         Describes the tantrum land animation.
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   <Term termID="specificActions_61">
      <Name xml:lang="en">ThumbsDown</Name>
      <Definition xml:lang="en">
         Describes the thumbs down animation.
      </Definition>
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   <Term termID="specificActions_62">
      <Name xml:lang="en">ThumbsUp</Name>
      <Definition xml:lang="en">
         Describes the sit thumbs up animation.
      </Definition>
   </Term>
   <Term termID="specificActions_63">
      <Name xml:lang="en">Tongue</Name>
      <Definition xml:lang="en">
         Describes the sit tongue animation.
      </Definition>
   </Term>
   <Term termID="specificActions_64">
      <Name xml:lang="en">TryonShirt</Name>
      <Definition xml:lang="en">
         Describes the tryon shirt animation.
      </Definition>
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   <Term termID="specificActions_65">
      <Name xml:lang="en">Uncertain</Name>
      <Definition xml:lang="en">
         Describes the uncertain animation.
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   <Term termID="specificActions_66">
      <Name xml:lang="en">Wassamatta</Name>
      <Definition xml:lang="en">
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   <Term termID="specificActions_67">
      <Name xml:lang="en">What</Name>
      <Definition xml:lang="en">
         Describes the what animation.
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   <Term termID="specificActions_68">
      <Name xml:lang="en">Yay</Name>
      <Definition xml:lang="en">
         Describes the yay land animation.
      </Definition>
   </Term>
   <Term termID="specificActions_69">
      <Name xml:lang="en">YesHappy</Name>
      <Definition xml:lang="en">
         Describes the yes happy animation.
      </Definition>
   </Term>
   <Term termID="specificActions_70">
      <Name xml:lang="en">YesHead</Name>
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