International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

H.741.3

Amendment 1

(02/2015)

SERIES H: AUDIOVISUAL AND MULTIMEDIA SYSTEMS

IPTV multimedia services and applications for IPTV – IPTV application event handling

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IPTV application event handling: Audience measurement for IPTV distributed content services

Amendment 1: XML schema on the measurement data structures for linear TV service

Recommendation ITU-T H.741.3 (2012) – Amendment 1

International Telecommunication Union

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Recommendation ITU-T H.741.3

IPTV application event handling: Audience measurement for IPTV distributed content services

Amendment 1

XML schema on the measurement data structures for linear TV service

Summary

The ITU-T H.741.x series of Recommendations defines a foundational platform for audience measurement (AM) of IPTV services. They focus on the interface between terminal devices and an audience measurement aggregation function.

The AM platform integrates a method for end users to report personal information, and is designed to easily add time-shifted and interactive services and non-terminal device measurement points. While the ITU-T H.741.x series allows the implementation of audience measurement for IPTV services, its mechanism may be equally applicable to non-IPTV services.

The design philosophy in the ITU-T H.741.x series is focused on scalability, minimizing the use of resources, security, flexibility to support a variety of service provider deployments and rich privacy support to meet emerging regulations and legislation.

Recommendation ITU-T H.741.3 specifies audience measurement for IPTV distributed content services and, in particular, linear TV services. It describes specific configuration for linear TV and metadata and data structures used in the payload of AM messages. The informative appendices discuss specific implementation considerations for linear TV-specific implementation considerations, provide examples and describe capabilities and profiles.

Amendment 1 to Recommendation ITU-T H.741.3 includes XML schema on the measurement data structures for linear TV service in Appendix IV and XML schema instances for TD-AMF configuration, reports for linear TV services in Appendix V.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T H.741.3	2012-06-29	16	11.1002/1000/11662
1.1	ITU-T H.741.3 (2012) Amd. 1	2015-02-20	16	11.1002/1000/12462

Keywords

Audience measurement, audience rating service, audience viewership, contents rating, data structures, distributed content service, engagement metrics, implementation guidelines, IPTV application event handling, linear TV service, metadata, XML schema.

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* To access the Recommendation, type the URL http://handle.itu.int/ in the address field of your web browser, followed by the Recommendation's unique ID. For example, http://handle.itu.int/11.1002/1000/11830-en.

FOREWORD

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at http://www.itu.int/ITU-T/ipr/.

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IPTV application event handling: Audience measurement for IPTV distributed content services

Amendment 1

XML schema on the measurement data structures for linear TV service

1) Clause 7.2

Modify clause 7.2 as follows:

7.2 Linear TV metadata

The notation used in Tables 1 to 6 facilitates the specification of the corresponding schema:

– *Support*: 1 = mandatory (one instance), 0-1 = optional (maximum one instance), 0-* = (optional and multiple instances possible), 1-* = mandatory and multiple instances possible)

– *Type*: string, integer, float, etc.

– *Container:* elements are defined to group associated elements

In the following tables containing data structures, an alternative representation may be shown which illustrates the data structure. In the event of discrepancy between an alternative representation and the table, the correct information is to be found in the table.

Table 1 summarizes audience measurement elements for linear TV.

Table 1 – Audience measurement elements for linear TV

Element	Definition	Type	Notes or value domain
ServiceInstanceID	Identifies the instance of a specific service. Distinguishes among services when multiple services are displayed.		Defined in [ITU-T H.741.2]
ServiceIdentifier	Contains the "unique name for the service within the service provider's domain" (according to [ITU-T H.770]) which starts to be received.		NOTE – Defined in [ITU-T H.770] with the encoding in Figure 3.
ChannelChangeFilter	Reports channel start and channel stop events only when the time following an event, without either subsequent event occurring, is greater than ChannelChangeFilter ms.	xs:integer	Values: time in milliseconds, 0 means report all channel start and channel stop events. NOTE – This sets the minimum time to report latency for channel start and channel stop events, to at least the specified time in milliseconds.
ControlDevice	Indicates the device type used to navigate to a channel.		Defined in [ITU-T H.741.2]

Table 1 – Audience measurement elements for linear TV

Element	Definition	Type	Notes or value domain
StartNavMethod	Indicates the method used to navigate to a channel.	xs:integer enumeration	Values: 0 = up/down arrow, 1 = channel surfing, 2 = scheduled channel change, 3 = EPG, 4 = Last (previous), 5 = Favourite, 6 = number entry, 7 = unknown, 8 = other
StopNavMethod	Indicates the method used to navigate away from a channel.	xs:integer enumeration	Values: 0 = up/down arrow 1 = channel surfing 2 = scheduled channel change 3 = EPG 4 = Last (previous) 5 = Favourite 6 = number entry 7 = unknown 8 = other 999 = turn off terminal device
ViewMode	Identifies the viewing mode of the linear TV service which starts to be received.	xs:integer enumeration	0 = unknown 1 = full screen 2 = Picture-in-Picture 3 = Mosaic 4 = Other
NOTE – The value of "unknown" for enumerated valued elements indicates that element information is not available; the value of "other" indicates that the element information is available but does not match one of the defined enumerated values.			

```
<xsd:complexType name="IndividualServiceType">
 <xsd:sequence>
  <xsd:element name="ServiceIdentifier" type="H770IdType"/>
  <xsd:element                                  name="ServiceProviderIdentifier"
               type="H770IdType" minOccurs="0"/>
  <xsd:element                        name="AdditionalServiceDescriptionLocation"
               type="anyURI" minOccurs="0"/>
  <xsd:element                                        name="LogicalChannelNumber"
               type="xsd:positiveInteger" minOccurs="0"/>
 </xsd:sequence>
</xsd:complexType>
```

Figure 3 – XML encoding for ServiceIdentifier in linear TV audience measurement

ViewMode is an element to identify how the channel being received is rendered on the terminal device when started. The display modes are listed below:

– Full screen (means that only the linear TV video is displayed, independent of the percentage of the display covered by the video).

– Picture-in-picture (means a second service is displayed over a small part of the display of the main service. Sound is usually from the main service only).
– Mosaic (in which many linear TV channels are received and displayed simultaneously in the same format as a matrix of small TV screens).
– Other – includes presentation of video in other modes.

Table 2 provides information regarding events which are specific to the linear service.

Table 2 – Types of linear TV events

Event	Definition	Notes or value domain
Linear ChannelStart	This event occurs when a user starts watching a TV channel or switches to another TV channel for which AM reporting is authorized by the user and configured to be reported about by the SP. It causes reporting of the ChannelStart data structure defined in Table 6.	
Linear ChannelStop	This event occurs: 1) when a user stops watching a linear TV service without starting another linear TV service; 2) when a user switches to another channel for which reporting is forbidden by the user or is configured not to be reported about by the service provide (SP); 3) when the content of a specified class starts playing although it is forbidden to be measured by the user or configured not to be measured by the SP; 4) following restoration from a communications loss to indicate the time at which a channel was no longer being received; 5) when it causes reporting of the ChannelStop data structure defined in Table 6. This event may also occur during channel change filtering.	NOTE – An example of case 5 is when an AM operation is restored following power-down.

When a measurement request includes LinearTVQualifier, and is configured with EventTrigger, then the events LinearChannelStart and LinearChannelStop are by default included in the events to be measured and reported, having the highest priority.

The sample set identifiers in Table 3 are used to indicate elements to be reported when scheduled time sampling is used.

Table 3 – Sample set identifier for linear TV

Sample set identifier	Description
ChannelPlaying	Indicates that the ChannelPlaying data structure defined in Table 6 is to be reported when sampled.

The XML schema that can be exchanged for linear TV service can be found in Appendix IV.

2) Appendix IV

Add the following new Appendix IV after Appendix III:

Appendix IV

XML schema on the measurement data structures for Linear TV service

(This appendix does not form an integral part of this Recommendation.)

This is the XML schema that can be exchanged for linear TV service

```
<?xml version="1.0" encoding="UTF-8"?>
<schema xmlns:am3="http://www.itu.int/xml-namespace/itu-t/h.741.3/lineartv"
xmlns:am2="http://www.itu.int/xml-namespace/itu-t/h.741.2/datasturcture"
xmlns="http://www.w3.org/2001/XMLSchema" targetNamespace="
http://www.itu.int/xml-namespace/itu-t/h.741.3/lineartv"
elementFormDefault="qualified" attributeFormDefault="unqualified">
     <annotation>
       <documentation xml:lang="en"><![CDATA[
          This schema (H.741.3-v1.xsd) is the ITU-T H.741 Part.3 Metadata,
Version 1 (for H.741.3-201206.doc).
          The namespace of the schema is "http://www.itu.int/xml-namespace/itu-
t/h.741.3/lineartv",
          and its preferred namespace prefix is "am3".]]></documentation>
     </annotation>
     <import namespace="http://www.itu.int/xml-namespace/itu-
t/h.741.2/datastructure" schemaLocation="http://www.itu.int/xml-namespace/itu-
t/h.741.2/H.741.2-v1.xsd"/>
     <import namespace="http://www.w3.org/XML/1998/namespace"
schemaLocation="http://www.w3.org/2001/03/xml.xsd"/>
     <!-- ================================================================= -->
     <!-- ================================================================= -->
     <!-- Primitive Data Types for H.741 Part.3 -->
     <!-- ================================================================= -->
     <!-- ================================================================= -->
     <simpleType name="NumOfMillisecondsType">
       <restriction base="nonNegativeInteger"/>
     </simpleType>
     <simpleType name="H770IDSType">
       <list itemType="am2:H770IDType"/>
     </simpleType>
     <!-- ================================================================= -->
     <!-- Enumeration Types (Table 1)                                       -->
     <!-- ================================================================= -->
     <!—Values of StartNavMethod: 0=up/down arrow, 1 =channel surfing,
2=scheduled channel change, 3=EPG, 4=Last (previous), 5=Favorite, 6=number
entry, 7=unknown, 8=other -->
     <simpleType name="StartNavMethodType">
       <restriction base="integer">
          <enumeration value="0"/>
          <enumeration value="1"/>
          <enumeration value="2"/>
          <enumeration value="3"/>
          <enumeration value="4"/>
          <enumeration value="5"/>
          <enumeration value="6"/>
          <enumeration value="7"/>
          <enumeration value="8"/>
       </restriction>
     </simpleType>
     <!—Values of StopNavMethod: 0=up/down arrow 1 =channel surfing 2=scheduled
channel change 3=EPG 4=Last (previous) 5=Favourite 6=number entry 7=unknown
8=other 999 = turn off terminal device -->
     <simpleType name="StopNavMethodType">
       <restriction base="integer">
```

```
          <enumeration value="0"/>
          <enumeration value="1"/>
          <enumeration value="2"/>
          <enumeration value="3"/>
          <enumeration value="4"/>
          <enumeration value="5"/>
          <enumeration value="6"/>
          <enumeration value="7"/>
          <enumeration value="8"/>
          <enumeration value="9"/>
       </restriction>
     </simpleType>
     <!-- Valuses of ViewMode - 0=unknown 1 = full screen 2= Picture-in-Picture
3 =Mosaic 4 = Other -->
     <simpleType name="ViewModeType">
       <restriction base="integer">
          <enumeration value="0"/>
          <enumeration value="1"/>
          <enumeration value="2"/>
          <enumeration value="3"/>
          <enumeration value="4"/>
       </restriction>
     </simpleType>
     <!-- ================================================================= -->
     <!-- LTV Events and Sample Set Names(Tables 2,3)-->
     <!-- ================================================================= -->
     <simpleType name="LTVSpecificEventNameType">
       <restriction base="NMTOKEN">
          <enumeration value="LinearChannelStart"/>
          <enumeration value="LinearChannelStop"/>
       </restriction>
     </simpleType>
     <simpleType name="LTVEventNameType">
       <union memberTypes="am2:CommonEventNameType
am3:LTVSpecificEventNameType"/>
     </simpleType>
     <!-- ================================================================= -->
     <simpleType name="LTVSpecificSampleSetNameType">
       <restriction base="NMTOKEN">
          <enumeration value="ChannelPlaying"/>
       </restriction>
     </simpleType>
     <simpleType name="LTVSampleSetNameType">
       <union memberTypes="am2:CommonSampleSetNameType
am3:LTVSpecificSampleSetNameType"/>
     </simpleType>
     <!-- ================================================================= -->
     <simpleType name="LTVLimitedSampleSetNameType">
       <union memberTypes="am2:LimitedSampleSetNameType
am3:LTVSpecificSampleSetNameType"/>
     </simpleType>
     <!-- ================================================================= -->
     <!-- Type Extension to "am2:CommonEventForTriggerMethodType" &
"am2:CommonSampleSetForTriggerMethodType"  -->
     <!-- ================================================================= -->
     <complexType name="LTVEventForTriggerMethodType1">
       <complexContent>
          <restriction base="am2:CommonEventForTriggerMethodType">
           <attribute name="eventName" use="prohibited"/>
          </restriction>
       </complexContent>
     </complexType>
     <complexType name="LTVEventForTriggerMethodType">
       <complexContent>
```

```
         <extension base="am3:LTVEventForTriggerMethodType1">
          <attribute name="eventName" type="am3:LTVEventNameType"
use="required"/>
         </extension>
       </complexContent>
     </complexType>
     <!-- ================================================================= -->
     <complexType name="LTVSampleSetForTriggerMethodType1">
       <complexContent>
         <restriction base="am2:CommonSampleSetForTriggerMethodType">
          <attribute name="sampleSetName" use="prohibited"/>
         </restriction>
       </complexContent>
     </complexType>
     <complexType name="LTVSampleSetForTriggerMethodType">
       <complexContent>
         <extension base="am3:LTVSampleSetForTriggerMethodType1">
          <attribute name="sampleSetName" type="am3:LTVSampleSetNameType"
use="required"/>
         </extension>
       </complexContent>
     </complexType>
     <!-- ================================================================= -->
     <complexType name="LimitedLTVSampleSetForTriggerMethodType1">
       <complexContent>
         <restriction base="am2:LimitedSampleSetForTriggerMethodType">
          <attribute name="sampleSetName" use="prohibited"/>
         </restriction>
       </complexContent>
     </complexType>
     <complexType name="LimitedLTVSampleSetForTriggerMethodType">
       <complexContent>
         <extension base="am3:LimitedLTVSampleSetForTriggerMethodType1">
          <attribute name="sampleSetName" type="am3:LTVLimitedSampleSetNameType"
use="required"/>
         </extension>
       </complexContent>
     </complexType>
     <!-- ================================================================= -->
     <!-- Type Extension to "am2:CommonEventForScheduleType" &
"am2:CommonSampleSetForScheduleType"  -->
     <!-- ================================================================= -->
     <complexType name="LTVEventForScheduleType1">
       <complexContent>
         <restriction base="am2:CommonEventForScheduleType">
          <attribute name="eventName" use="prohibited"/>
         </restriction>
       </complexContent>
     </complexType>
     <complexType name="LTVEventForScheduleType">
       <complexContent>
         <extension base="am3:LTVEventForScheduleType1">
          <attribute name="eventName" type="am3:LTVEventNameType"
use="required"/>
         </extension>
       </complexContent>
     </complexType>
     <!-- ================================================================= -->
     <complexType name="LTVSampleSetForScheduleType1">
       <complexContent>
         <restriction base="am2:CommonSampleSetForScheduleType">
          <attribute name="sampleSetName" use="prohibited"/>
         </restriction>
       </complexContent>
```

```
    </complexType>
    <complexType name="LTVSampleSetForScheduleType">
      <complexContent>
         <extension base="am3:LTVSampleSetForScheduleType1">
          <sequence>
             <element name="SampleSetQualifier"
type="am2:SampleSetQualifierType" minOccurs="0" maxOccurs="unbounded"/>
          </sequence>
          <attribute name="sampleSetName" type="am3:LTVSampleSetNameType"
use="required"/>
         </extension>
      </complexContent>
    </complexType>
    <!-- ================================================================= -->
    <complexType name="LimitedLTVSampleSetForScheduleType1">
      <complexContent>
         <restriction base="am2:LimitedSampleSetForScheduleType">
          <attribute name="sampleSetName" use="prohibited"/>
         </restriction>
      </complexContent>
    </complexType>
    <complexType name="LimitedLTVSampleSetForScheduleType">
      <complexContent>
         <extension base="am3:LimitedLTVSampleSetForScheduleType1">
          <sequence>
             <element name="SampleSetQualifier"
type="am2:SampleSetQualifierType" minOccurs="0" maxOccurs="unbounded"/>
          </sequence>
          <attribute name="sampleSetName" type="am3:LTVLimitedSampleSetNameType"
use="required"/>
         </extension>
      </complexContent>
    </complexType>
    <!-- ================================================================= -->
    <!-- ================================================================= -->
    <!-- Data Structures for H.741 Part.3      ========================== -->
    <!-- ================================================================= -->
    <!-- ================================================================= -->
    <!-- ================================================================= -->
    <!-- Type Extension to User Permission (Channel Qualifier, Table 4)    -->
    <!-- ================================================================= -->
    <complexType name="LTVUserPermissionType">
      <complexContent>
         <extension base="am2:UserPermissionType">
          <sequence>
             <element name="ChannelQualifier" type="am3:ChannelQualifierType"
minOccurs="0"/>
          </sequence>
         </extension>
      </complexContent>
    </complexType>
    <!-- ================================================================= -->
    <complexType name="ChannelQualifierType">
      <choice minOccurs="0">
         <element name="ChannelList" type="am3:ChannelListType" minOccurs="0"/>
         <element name="AllChannelsExceptList" type="am3:ChannelListType"
minOccurs="0"/>
      </choice>
    </complexType>
    <complexType name="ChannelListType">
      <attribute name="serviceIdref" type="am3:H770IDSType" use="required"/>
    </complexType>
    <!-- ================================================================= -->
    <!-- Type Extension to Measurement Request (Linear TV Qualifier,Table4)-->
```

```
     <!-- ================================================================= -->
     <complexType name="LTVMeasurementRequestType">
       <complexContent>
          <extension base="am2:MeasurementRequestType">
           <sequence>
              <element name="LinearTVQualifier" type="am3:LinearTVQualifierType"
minOccurs="0"/>
           </sequence>
          </extension>
       </complexContent>
     </complexType>
     <!-- ================================================================= -->
     <complexType name="LinearTVQualifierType">
       <sequence>
          <element name="NavMethod" type="am3:ReportFlagType" minOccurs="0"/>
          <element name="ControlDevice" type="am2:ControlDeviceType"
minOccurs="0"/>
          <element name="ViewMode" type="am3:ReportFlagType" minOccurs="0"/>
          <element name="Obscuration" type="am3:ReportFlagType" minOccurs="0"/>
          <element name="ChannelQualifier" type="am3:ChannelQualifierType"
minOccurs="0"/>
          <element name="ChannelChangeFilter" type="am3:NumOfMillisecondsType"
minOccurs="0"/>
       </sequence>
     </complexType>
<!—values of ReportFlag: 0=do not report 1= report -->
     <simpleType name="ReportFlagType">
       <restriction base="integer">
          <enumeration value="0"/>
          <enumeration value="1"/>
       </restriction>
     </simpleType>
     <!-- ================================================================= -->
     <!-- Extension to Measurement Request Set (Table 5) -->
     <!-- ================================================================= -->
     <complexType name="LTVMeasurementRequestSetType">
       <complexContent>
          <extension base="am2:MeasurementRequestSetType">
           <sequence>
              <element name="DefaultLinearTVQualifier"
type="am3:DefaultLinearTVQualifierType" minOccurs="0"/>
              <!-- The element "LinearTVDefaultQualifier" is newly added for
consistency. (See "MeasurementRequestType") -->
           </sequence>
          </extension>
       </complexContent>
     </complexType>
     <!-- ================================================================= -->
     <complexType name="DefaultLinearTVQualifierType">
       <sequence>
          <element name="DefaultNavMethod" type="am3:ReportFlagType" default="0"
minOccurs="0"/>
          <!--element name="DefaultControlDevice" type="am2:ControlDeviceType"
default="STBRemoteControl" minOccurs="0"/-->
          <element name="DefaultControlDevice" type="am2:ControlDeviceType"
default="0" minOccurs="0"/>
          <element name="DefaultViewMode" type="am3:ReportFlagType" default="0"
minOccurs="0"/>
          <element name="DefaultObscuration" type="am3:ReportFlagType"
default="0" minOccurs="0"/>
          <element name="DefaultChannelQualifier"
type="am3:ChannelQualifierType" minOccurs="0"/>
          <element name="DefaultChannelChangeFilter"
type="am3:NumOfMillisecondsType" default="0" minOccurs="0"/>
```

```
      </sequence>
    </complexType>
    <!-- ================================================================== -->
    <!-- Extension to AM Report Package (Table 6) -->
    <!-- ================================================================== -->
    <complexType name="LTVMeasurementReportType">
      <complexContent>
         <extension base="am2:MeasurementReportType">
          <sequence>
              <element name="LinearTVReport" type="am3:LinearTVReportType"
minOccurs="0"/>
              <!-- The element "LinearTVReport" is newly added for consistency.
(See "MeasurementRequestType") -->
          </sequence>
         </extension>
      </complexContent>
    </complexType>
    <!-- ================================================================== -->
    <complexType name="LinearTVReportType">
      <sequence>
         <element name="ChannelStart" type="am3:ChannelStartEventType"
minOccurs="0"/>
         <element name="ChannelStop" type="am3:ChannelStopEventType"
minOccurs="0"/>
         <element name="ChannelPlaying"
type="am3:ChannelPlayingSampleSetIdType" minOccurs="0" maxOccurs="unbounded"/>
      </sequence>
    </complexType>

    <!-- ================================================================== -->
    <complexType name="ChannelStartEventType">
      <sequence>
         <element name="ControlDevice" type="am2:ControlDeviceType"
minOccurs="0"/>
         <element name="StartNavMethod" type="am3:StartNavMethodType"
minOccurs="0"/>
         <element name="ViewMode" type="am3:ViewModeType" minOccurs="0"/>
         <element name="Obscuration" type="am2:PercentageType" minOccurs="0"/>
      </sequence>
      <attribute name="serviceIdref" type="am2:H770IDType" use="required"/>
      <attribute name="previousServiceInstanceIdref"
type="am2:ServiceInstanceIDType" use="optional"/>
      <attribute name="serviceInstanceIdref" type="am2:ServiceInstanceIDType"
use="required"/>
    </complexType>
    <complexType name="ChannelStopEventType">
      <sequence>
         <element name="ControlDevice" type="am2:ControlDeviceType"
minOccurs="0"/>
         <element name="StopNavMethod" type="am3:StopNavMethodType"
minOccurs="0"/>
      </sequence>
      <attribute name="serviceInstanceIdref" type="am2:ServiceInstanceIDType"
use="required"/>
    </complexType>
    <complexType name="ChannelPlayingSampleSetIdType">
      <attribute name="serviceIdref" type="am2:H770IDType" use="required"/>
      <attribute name="serviceInstanceIdref" type="am2:ServiceInstanceIDType"
use="required"/>
    </complexType>
</schema>
```

Figure IV.1 – XML schema on the measurement data structures for Linear TV service

XML schema instances for examples of TD-AMF configuration and reporting can be found in Appendix V.

3) Appendix V

Add the following new Appendix V after Appendix IV:

Appendix V

XML schema instances for TD-AMF configuration, reports for Linear TV Services

(This appendix does not form an integral part of this Recommendation.)

These are the XML schema instances for examples of TD-AMF configuration and reporting based on Appendix V

V.1 Proposal of an instance based on Appendix II.1

Figure II.1 (AMF configuration package example) of H.741.3 shows values assigned to the configuration package data structure.

Figure V.1 is an instance based on the Figure II.1 (Configuration example).

```
<AMFConfigurationPackage packageId="2345" packageVersion="2">
       <!-- EffectivityDateAndTime="Immediately" if this element is omitted. -->
       <MeasurementRequestSet>
          <DefaultDeliveryAddress>http://defaultdeliveryaddress.com
</DefaultDeliveryAddress>
          <DefaultRetransmitNumber>5</DefaultRetransmitNumber>
<MeasurementRequest xsi:type="am3:LTVMeasurementRequestType"
measurementRequestId="1">
             <AllContentClassExceptList>
                <ContentClass domain="TV-Anytime">Religious</ContentClass>
             </AllContentClassExceptList>
             <MeasurementSchedule>
                <MeasurementPeriod>
               <DayOfTheWeek startTime="00:00:00.00" endTime="23:59:59.99">
            0</DayOfTheWeek>
                </MeasurementPeriod>
                <EventTrigger/>
                <TimeTrigger>
                  <Priority>1</Priority>
                  <Periodicity>300</Periodicity>
                <NothingNewReportMode>2</NothingNewReportMode>
       </TimeTrigger>
             </MeasurementSchedule>
             <MeasurementDeliverySchedule>
                <ImmediatePush>
                  <MeasurementReportNumberByPush>1
</MeasurementReportNumberByPush>
                  <MaxTimeBetweenDelivery>60</MaxTimeBetweenDelivery>
                </ImmediatePush>
             </MeasurementDeliverySchedule>
             <am3:LinearTVQualifier>
                <am3:NavMethod>1</am3:NavMethod>
                <!-- Valuses of ControlDevice - 0=STB remote control, 1=STB,
2=STB keyboard, 10=PC, 20=tablet, 30=mobile phone, 40 = other -->
```

```
                <am3:ControlDevice>Other40</am3:ControlDevice>
                <am3:ChannelQualifier>
                  <am3:AllChannelsExceptList serviceIdref="channel50 channel53
channel58 channel60"/>
                </am3:ChannelQualifier>
                <am3:ChannelChangeFilter>2000</am3:ChannelChangeFilter>
             </am3:LinearTVQualifier>
          </MeasurementRequest>
          <MeasurementRequest xsi:type="am3:LTVMeasurementRequestType"
measurementRequestId="2">
             <AllContentClassExceptList>
                <ContentClass domain="TV-Anytime">Religious</ContentClass>
             </AllContentClassExceptList>
             <MeasurementSchedule>
                <MeasurementPeriod>
                  <DayOfTheWeek startTime="00:00:00.00"
endTime="23:59:59.99">0</DayOfTheWeek>
                </MeasurementPeriod>
                <EventTrigger>
                  <Priority>0</Priority>
eventParameter1="xxxxxx"/>
                  <Event xsi:type="am3:LTVEventForScheduleType"
eventName="LinearChannelStart" eventParameter1="xx"/>
                  <Event xsi:type="am3:LTVEventForScheduleType"
eventName="LinearChannelStop" eventParameter1="xxxxxx"/>
                </EventTrigger>
             </MeasurementSchedule>
             <MeasurementDeliverySchedule>

       <StorageCongestionPolicy>DropSufficient</StorageCongestionPolicy>
                <Pull/>
             </MeasurementDeliverySchedule>
             <am3:LinearTVQualifier>
                <am3:NavMethod>0</am3:NavMethod>
                <am3:ControlDevice>0</am3:ControlDevice>
                <am3:ChannelQualifier>
                  <am3:ChannelList serviceIdref="channel50 channel53 channel58
channel60"/>
                </am3:ChannelQualifier>
                <am3:ChannelChangeFilter>2000</am3:ChannelChangeFilter>
             </am3:LinearTVQualifier>
          </MeasurementRequest>
       </MeasurementRequestSet>
</AMFConfigurationPackage>
```

Figure V.1 – Instance for AMF configuration package example

V.2 Proposal of an instance based on the Appendix II.2 (Example measurement reports)

Figure II.2 is an example of end-user behaviours and measurement reports. Six figures from Figure II.3 to Figure II.8 are example report packages.

V.2.1 Proposal of an instance based on the Figure II.3

Figure V.2 is an instance based on Figure II.3 (Example report package 1).

```
<am4:AMReportPackage subscriberIdref="WorldspGold012345678"
terminalDeviceIdref="62334466">
       <am2:MeasurementReport xsi:type="am3:LTVMeasurementReportType"
measurementRequestIdref="1" measurementReportTriggerTime="2012-12-
04T01:58:00.0Z">
          <am3:LinearTVReport>
```

```
            <am3:ChannelStart serviceInstanceIdref="1"
serviceIdref="Channel148">
                <am3:StartNavMethod>0</am3:StartNavMethod>
             <am3:ViewMode>1</am3:ViewMode>
              </am3:ChannelStart>
          </am3:LinearTVReport>
       </am2:MeasurementReport>
       <am2:MeasurementReport xsi:type="am3:LTVMeasurementReportType"
measurementRequestIdref="2" measurementReportTriggerTime="2012-12-
04T01:58:00.0Z">
          <am3:LinearTVReport>
         <am3:ChannelPlaying serviceInstanceIdref="1" serviceIdref="Channel148"
      />
          </am3:LinearTVReport>
       </am2:MeasurementReport>
</am4:AMReportPackage>
```

Figure V.2 – Instance for example report package 1

V.2.2 Proposal of an instance based on Figure II.4

Figure V.3 is an instance based on Figure II.4 (Example report package 2).

```
<am4:AMReportPackage subscriberIdref="WorldspGold012345678"
terminalDeviceIdref="62334466">
       <am2:MeasurementReport xsi:type="am3:LTVMeasurementReportType"
measurementRequestIdref="1" measurementReportTriggerTime="2012-12-
04T01:58:00.0Z">
          <am3:LinearTVReport>
             <am3:ChannelPlaying serviceInstanceIdref="1"
serviceIdref="Channel148" />
          </am3:LinearTVReport>
       </am2:MeasurementReport>
</am4:AMReportPackage>
```

Figure V.3 – Instance for example report package 2

V.2.3 Proposal of an instance based on Figure II.5

Figure V.4 is an instance based on Figure II.5 (Example report package 3).

```
<am4:AMReportPackage subscriberIdref="WorldspGold012345678"
terminalDeviceIdref="62334466">
       <am2:MeasurementReport xsi:type="am3:LTVMeasurementReportType"
measurementRequestIdref="1" measurementReportTriggerTime="2012-12-
04T04:32:00.0Z">
          <am3:LinearTVReport>
             <am3:ChannelStop serviceInstanceIdref="1">
                <am3:StartNavMethod>0</am3:StartNavMethod>
             </am3:ChannelStop>
          </am3:LinearTVReport>
       </am2:MeasurementReport>
</am4:AMReportPackage>
```

Figure V.4 – Instance for example report package 3

V.2.4 Proposal of an instance based on Figure II.6

Figure V.5 is an instance based on Figure II.6 (Example report package 4).

```
<am4:AMReportPackage subscriberIdref="WorldspGold012345678"
terminalDeviceIdref="62334466">
```

```
      <am2:MeasurementReport xsi:type="am3:LTVMeasurementReportType"
measurementRequestIdref="1" measurementReportTriggerTime="2012-12-
04T17:05:00.0Z">
          <am3:LinearTVReport>
             <am3:ChannelStart serviceInstanceIdref="4"
previousServiceInstanceIdref="3" serviceIdref="Channel154">
                <am3:StartNavMethod>0</am3:StartNavMethod>
                <am3:ViewMode>1</am3:ViewMode>
             </am3:ChannelStart>
          </am3:LinearTVReport>
      </am2:MeasurementReport>
      <am2:MeasurementReport xsi:type="am3:LTVMeasurementReportType"
measurementRequestIdref="1" measurementReportTriggerTime="2012-12-
04T17:05:00.0Z">
          <am3:LinearTVReport>
             <am3:ChannelPlaying serviceInstanceIdref="4"
serviceIdref="Channel154" />
          </am3:LinearTVReport>
      </am2:MeasurementReport>
</am4:AMReportPackage>
```

Figure V.5 – Instance for example report package 4

V.2.5 Proposal of an instance based on Figure II.7

Figure V.6 is an instance based on Figure II.7 (Example report package 5).

```
<am4:AMReportPackage subscriberIdref="WorldspGold012345678"
terminalDeviceIdref="62334466">
      <am2:MeasurementReport xsi:type="am3:LTVMeasurementReportType"
measurementRequestIdref="1" measurementReportTriggerTime="2012-12-
04T17:10:00.0Z">
          <am3:LinearTVReport>
             <am3:ChannelPlaying serviceInstanceIdref="4"
serviceIdref="Channel154" />
          </am3:LinearTVReport>
      </am2:MeasurementReport>
</am4:AMReportPackage>
```

Figure V.6 – Instance for example report package 5

V.2.6 Proposal of an instance based on Figure II.8

Figure V.7 is an instance based on Figure II.8 (Example report package 6).

```
<am4:AMReportPackage subscriberIdref="WorldspGold012345678"
terminalDeviceIdref="62334466">
      <am2:MeasurementReport xsi:type="am3:LTVMeasurementReportType"
measurementRequestIdref="2" measurementReportTriggerTime="2012-12-
04T09:05:00.0Z">
          <am3:LinearTVReport>
             <am3:ChannelStart serviceInstanceIdref="2"
serviceIdref="Channel150">
                <am3:StartNavMethod>0</am3:StartNavMethod>
                <am3:ViewMode>1</am3:ViewMode>
             </am3:ChannelStart>
          </am3:LinearTVReport>
      </am2:MeasurementReport>
      <am2:MeasurementReport xsi:type="am3:LTVMeasurementReportType"
measurementRequestIdref="2" measurementReportTriggerTime="2012-12-
04T11:15:00.5Z">
          <am3:LinearTVReport>
```

```
            <am3:ChannelStop serviceInstanceIdref="2">
               <am3:StartNavMethod>0</am3:StartNavMethod>
            </am3:ChannelStop>
         </am3:LinearTVReport>
      </am2:MeasurementReport>
      <am2:MeasurementReport xsi:type="am3:LTVMeasurementReportType"
measurementRequestIdref="2" measurementReportTriggerTime="2012-12-
04T11:15:01.0Z">
         <am3:LinearTVReport>
            <am3:ChannelStart serviceInstanceIdref="3"
serviceIdref="Channel153">
               <am3:StartNavMethod>0</am3:StartNavMethod>
               <am3:ViewMode>1</am3:ViewMode>
            </am3:ChannelStart>
         </am3:LinearTVReport>
      </am2:MeasurementReport>
</am4:AMReportPackage>
```

Figure V.7 – Instance for example report package 6

V.3 Proposal of an instance based on Appendix II.3 (Example measurement reports)

Figure II.9 is an example of PIP configuration packages. Three figures from Figure II.11 to Figure II.13 are example report packages.

V.3.1 Proposal of an instance based on Figure II.9

Figure V.8 is an instance based on Figure II.9 (PIP example configuration packages).

```
<AMFConfigurationPackage packageId="9345" packageVersion="2">
      <!-- EffectivityDateAndTime="Immediately" if this element is omitted. -->
      <MeasurementRequestSet xsi:type="am3:LTVMeasurementRequestSetType">
      <DefaultDeliveryAddress>http://defaultdeliveryaddress.com</DefaultDeliver
yAddress>
         <DefaultRetransmitNumber>5</DefaultRetransmitNumber>
         <MeasurementRequest xsi:type="am3:LTVMeasurementRequestType"
measurementRequestId="1">
            <AllContentClassExceptList>
               <ContentClass domain="TV-Anytime">Religious</ContentClass>
            </AllContentClassExceptList>
            <MeasurementSchedule>
               <MeasurementPeriod>
                 <DayOfTheWeek startTime="00:00:00.00"
endTime="23:59:59.99">0</DayOfTheWeek>
               </MeasurementPeriod>
               <EventTrigger>
                 <Event eventName="VideoResize"></Event>
                 <Event eventName="VideoObscure"></Event>
                 <Event eventName="AudioVolume"></Event>
               </EventTrigger>
            </MeasurementSchedule>
            <MeasurementDeliverySchedule>
               <ImmediatePush>
                 <MeasurementReportNumberByPush> 1
</MeasurementReportNumberByPush>
               </ImmediatePush>
            </MeasurementDeliverySchedule>
            <am3:LinearTVQualifier>
               <am3:NavMethod>1</am3:NavMethod>
               <am3:ChannelChangeFilter>2000</am3:ChannelChangeFilter>
            </am3:LinearTVQualifier>
         </MeasurementRequest>
```

```
          <am3:DefaultLinearTVQualifier
xsi:type="am3:DefaultLinearTVQualifierType">
             <am3:DefaultControlDevice>0</am3:DefaultControlDevice>
             <am3:DefaultViewMode>1</am3:DefaultViewMode>
             <am3:DefaultObscuration>1</am3:DefaultObscuration>
          </am3:DefaultLinearTVQualifier>
       </MeasurementRequestSet>
</AMFConfigurationPackage>
```

Figure V.8 – Instance for PIP example configuration packages

V.3.2 Proposal of an instance based on Figure II.11

Figure V.9 is an instance based on Figure II.11 (PIP example configuration package 1).

```
<am4:AMReportPackage subscriberIdref="WorldspGold012345678"
terminalDeviceIdref="62334466">
       <am2:MeasurementReport xsi:type="am3:LTVMeasurementReportType"
measurementRequestIdref="1" measurementReportTriggerTime="2012-12-
04T03:32:00.0Z">
          <am3:LinearTVReport>
             <am3:ChannelStart serviceInstanceIdref="1"
serviceIdref="Channel151">
                <am3:StartNavMethod>0</am3:StartNavMethod>
                <am3:ViewMode>1</am3:ViewMode>
                <am3:Obscuration>0.0</am3:Obscuration>
             </am3:ChannelStart>
          </am3:LinearTVReport>
       </am2:MeasurementReport>
</am4:AMReportPackage>
```

Figure V.9 – Instance for PIP example configuration package 1

V.3.3 Proposal of an instance based on Figure II.12

Figure V.10 is an instance based on Figure II.12 (PIP example configuration package 2).

```
<am4:AMReportPackage subscriberIdref="WorldspGold012345678"
terminalDeviceIdref="62334466">
       <am2:MeasurementReport xsi:type="am3:LTVMeasurementReportType"
measurementRequestIdref="1" measurementReportTriggerTime="2012-12-
04T09:05:00.0Z">
          <am2:AudioVolume serviceInstanceIdref="2">
             <am2:VolumeDirection>Mute</am2:VolumeDirection>
          </am2:AudioVolume>
          <am2:VideoObscure serviceInstanceIdref="1">
             <am2:Obscuration>0.25</am2:Obscuration>
          </am2:VideoObscure>
          <am3:LinearTVReport xsi:type="am3:LinearTVReportType" >
             <am3:ChannelStart previousServiceInstanceIdref="1"
serviceInstanceIdref="2" serviceIdref="Channel150">
                <am3:StartNavMethod>8</am3:StartNavMethod>
                <am3:ViewMode>2</am3:ViewMode>
                <am3:Obscuration>0.0</am3:Obscuration>
             </am3:ChannelStart>
          </am3:LinearTVReport>
       </am2:MeasurementReport>
</am4:AMReportPackage>
```

Figure V.10 – Instance for PIP example configuration package 2

V.3.4 Proposal of an instance based on Figure II.13

Figure V.11 is an instance based on Figure II.13 (PIP example configuration package 3).

```
<am4:AMReportPackage subscriberIdref="WorldspGold012345678"
terminalDeviceIdref="62334466">
       <am2:MeasurementReport measurementRequestIdref="1"
measurementReportTriggerTime="2012-12-04T13:55:00.0Z">
          <am2:AudioFocus serviceInstanceIdref="2">
             <am2:IPTVFocus>true</am2:IPTVFocus>
          </am2:AudioFocus>
          <am2:VideoObscure serviceInstanceIdref="2">
             <am2:Obscuration>0.25</am2:Obscuration>
          </am2:VideoObscure>
          <am2:VideoResize serviceInstanceIdref="2">
             <am2:ResizedImage width="1920" height="1080"/>
          </am2:VideoResize>
       </am2:MeasurementReport>
       <am2:MeasurementReport measurementRequestIdref="1"
measurementReportTriggerTime="2012-12-04T13:55:00.0Z">
          <am2:VideoObscure serviceInstanceIdref="1">
             <am2:Obscuration>0.00</am2:Obscuration>
          </am2:VideoObscure>
          <am2:VideoResize serviceInstanceIdref="1">
             <am2:ResizedImage width="810" height="540"/>
          </am2:VideoResize>
       </am2:MeasurementReport>
</am4:AMReportPackage>
```

Figure V.11 – Instance for PIP example configuration package 3

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Printed in Switzerland
Geneva, 2015