

---

---

**Information technology — Multimedia  
framework (MPEG-21)**

Part 15:  
**Event Reporting**

**AMENDMENT 1: Security in Event Reporting**

*Technologies de l'information — Cadre multimédia (MPEG-21)*

*Partie 15: Rapport d'événement*

*AMENDMENT 1: Sécurité lors du rapport d'événement*

**PDF disclaimer**

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

ISO/IEC NORM.COM : Click to view the full PDF of ISO/IEC 21000-15:2006/AMD1:2008



**COPYRIGHT PROTECTED DOCUMENT**

© ISO/IEC 2008

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

## 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.

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

Amendment 1 to ISO/IEC 21000-15:2006 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

IECNORM.COM : Click to view the full PDF of ISO/IEC 21000-15:2006/AMD1:2008

## Information technology — Multimedia framework (MPEG-21)

### Part 15: Event Reporting

#### AMENDMENT 1: Security in Event Reporting

Add the following new clause, after Clause 9:

### 10. Protection

#### 10.1 General

This subclause specifies how to protect Event Report Requests and Event Reports at different levels of granularity, from a complete ER or ERR to specific elements within them.

First, it is defined how to ensure integrity and authenticity to the requested and reported data by means of digital signatures. Then, a mechanism for protecting ERs and ERRs is specified. Finally, Annex A presents the XML schema defined, Annex B presents an example of a digitally signed Event Report Request and Annex C presents an example of a partially protected Event Report.

#### 10.2 Data integrity and authenticity

This subclause specifies a solution to provide authenticity and integrity to ERRs, ERs and elements within them. It makes use of the `dsig:Signature` element defined in [1]. Figure 3 sketches the `dsig:Signature` element. The semantics for all elements under `Signature` should refer to W3C XML Signature recommendation [1].

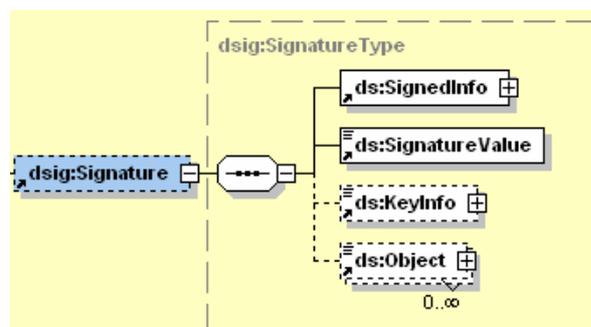


Figure 3 – Signature element

The dsig:Signature element is added as an optional child element to the following elements of ISO/IEC 21000-15:

- <erl:ERR>
- <erl:ERRDescriptor>
- <erl:Modification>
- <erl:ERSpecification>
- <erl:EventConditionDescriptor>
- <erl:ER>
- <erl:ERDescriptor>
- <erl:Modification>
- <erl:Recipient>
- <erl>Status>
- <erl:Source>
- <erl:ERData>
- <erl:EmbeddedERR>

Figure 4 presents the diagram for the resultant ER element. It has the dsig:Signature element as an optional child element. If present, the dsig:Signature element shall contain the digital signature for the erl:ER element.

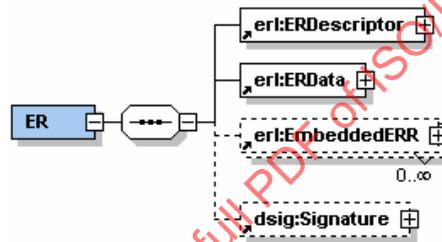


Figure 4 – ER element

### 10.3 Data encryption

This subsection specifies how to protect Event Reports and Event Report Requests and elements within them. It defines the equivalent encrypted elements for ERs and ERRs according to the W3C XML Encryption recommendation.

#### 10.3.1 Encrypted elements

The equivalent encrypted elements are defined according to W3C XML Encryption recommendation [2] for ERs and ERRs are the following:

- <erl:EncryptedERR>
- <erl:EncryptedERSpecification>
- <erl:EncryptedEventConditionDescriptor>
- <erl:EncryptedER>
- <erl:EncryptedERDescriptor>
- <erl:EncryptedERData>
- <erl:EncryptedEmbeddedERR>

Figure 5 presents the `erl:EncryptedER` element defined. The semantics for all elements under `erl:EncryptedER` should refer to [2].

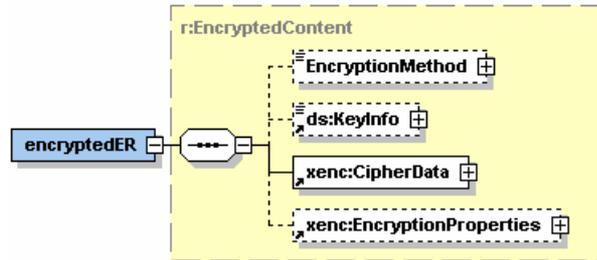


Figure 5 – EncryptedER element

Add the following new annexes, after Annex D:

## Annex E (informative)

### XML Schema Definition

#### E.1 General

This annex contains the XML schema for the syntax of the types and elements of the Security in Event Reporting Amendment 1.

#### E.2 Schema for Event Reporting

This subclause contains the XML Schema for Event Reporting. Using this schema ERs, ERRs and elements within them can be digitally signed using the `dsig:Signature` element as defined in the W3C XML Signature recommendation and they can be encrypted using the `EncryptedER` elements.

```
<?xml version="1.0"?>
<!--
<!--
<!--
<!--          Schema for ERL XML Document Type
<!--
<!--
<!--
<!--
<xsd:schema xmlns:erl="urn:mpeg:mpeg21:2005:01-ERL-NS"
xmlns:r="urn:mpeg:mpeg21:2003:01-REL-R-NS" xmlns:dii="urn:mpeg:mpeg21:2002:01-
DII-NS" xmlns:dia="urn:mpeg:mpeg21:2003:01-DIA-NS"
xmlns:sx="urn:mpeg:mpeg21:2003:01-REL-SX-NS"
xmlns:mpeg7="urn:mpeg:mpeg7:schema:2004"
xmlns:dsig="http://www.w3.org/2000/09/xmlsig#"

```

```

xmlns:enc="http://www.w3.org/2001/04/xmlenc#"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:ns1="urn:uddi-
org:schemaCentricC14N:2002-07-10" targetNamespace="urn:mpeg:mpeg21:2005:01-ERL-
NS" elementFormDefault="qualified" attributeFormDefault="unqualified">
  <xsd:import namespace="urn:mpeg:mpeg21:2003:01-DIA-NS"
schemaLocation="dia.xsd"/>
  <xsd:import namespace="urn:mpeg:mpeg21:2002:01-DII-NS"
schemaLocation="dii.xsd"/>
  <xsd:import namespace="urn:mpeg:mpeg21:2003:01-REL-R-NS" schemaLocation="rel-
r.xsd"/>
  <xsd:import namespace="urn:mpeg:mpeg21:2003:01-REL-SX-NS" schemaLocation="rel-
sx.xsd"/>
  <xsd:import namespace="urn:mpeg:mpeg7:schema:2004" schemaLocation="mpeg7.xsd"/>
  <xsd:import namespace="http://www.w3.org/XML/1998/namespace"
schemaLocation="./xml_2001.xsd"/>
  <xsd:import namespace="http://www.w3.org/2000/09/xmldsig#"
schemaLocation="http://www.w3.org/TR/2002/REC-xmldsig-core-20020212/xmldsig-core-
schema.xsd"/>
  <xsd:import namespace="http://www.w3.org/2001/04/xmlenc#"
schemaLocation="http://www.w3.org/TR/2002/REC-xmlenc-core-20021210/xenc-
schema.xsd"/>
  <xsd:import namespace="urn:uddi-org:schemaCentricC14N:2002-07-10"
schemaLocation="http://www.uddi.org/schema/SchemaCentricCanonicalization.xsd"/>
  <!-- ##### -->
  <!-- 7.1 Definition of an Event Report Request -->
  <!-- ##### -->
  <xsd:element name="ERR">
    <xsd:complexType>
      <xsd:choice>
        <xsd:sequence>
          <xsd:element ref="erl:ERRDescriptor"/>
          <xsd:element ref="erl:ERSpecification"/>
          <xsd:element ref="erl:EventConditionDescriptor"/>
          <xsd:element ref="dsig:Signature" minOccurs="0"/>
        </xsd:sequence>
        <xsd:element name="EncryptedERR" type="erl:EncryptedData"/>
      </xsd:choice>
    </xsd:complexType>
  </xsd:element>
  <!-- ##### -->
  <!-- 7.2 Definition of ERRDescriptor -->
  <!-- ##### -->
  <xsd:element name="ERRDescriptor">
    <xsd:complexType>
      <xsd:sequence>
        <xsd:element name="LifeTime" minOccurs="0">
          <xsd:complexType>
            <xsd:sequence>
              <xsd:element name="StartTime" type="xsd:date"/>
              <xsd:element name="EndTime" type="xsd:date"/>
            </xsd:sequence>
          </xsd:complexType>
        </xsd:element>
        <xsd:element name="Modification" type="erl:ModificationType"
maxOccurs="unbounded"/>
        <xsd:element name="Priority" default="2" minOccurs="0">
          <xsd:simpleType>
            <xsd:restriction base="xsd:string">
              <xsd:enumeration value="0"/>
              <xsd:enumeration value="1"/>
            </xsd:restriction>
          </xsd:simpleType>
        </xsd:element>
      </xsd:sequence>
    </xsd:complexType>
  </xsd:element>

```

```

        <xsd:enumeration value="2"/>
        <xsd:enumeration value="3"/>
        <xsd:enumeration value="4"/>
        <xsd:enumeration value="5"/>
    </xsd:restriction>
</xsd:simpleType>
</xsd:element>
    <xsd:element ref="dsig:Signature" minOccurs="0"/>
</xsd:sequence>
</xsd:complexType>
</xsd:element>
<xsd:complexType name="ModificationType">
    <xsd:sequence>
        <xsd:element ref="erl:PeerId"/>
        <xsd:element ref="erl:UserId"/>
        <xsd:element name="Time" type="xsd:dateTime"/>
        <xsd:element name="Description" type="erl:DescriptionType" minOccurs="0"/>
        <xsd:element ref="dsig:Signature" minOccurs="0"/>
    </xsd:sequence>
</xsd:complexType>
<!-- ##### -->
<!-- 7.3 Definition of ER Descriptor within an ER-R -->
<!-- ##### -->
<xsd:element name="ERSpecification">
    <xsd:complexType>
        <xsd:choice>
            <xsd:sequence>
                <xsd:element ref="dii:Identifier" minOccurs="0"/>
                <xsd:element name="ERDescription" type="erl:DescriptionType"
minOccurs="0"/>
                <xsd:element name="AccessControl" type="xsd:anyType" minOccurs="0"/>
                <xsd:element name="ERPayloadSpecification">
                    <xsd:complexType>
                        <xsd:sequence>
                            <xsd:element name="ERIdentifier" minOccurs="0">
                                <xsd:complexType>
                                    <xsd:simpleContent>
                                        <xsd:extension base="xsd:anyURI">
                                            <xsd:attribute name="baseId" type="xsd:boolean"/>
                                        </xsd:extension>
                                    </xsd:simpleContent>
                                </xsd:complexType>
                            </xsd:element>
                            <xsd:element name="PeerId" minOccurs="0"/>
                            <xsd:element name="UserId" minOccurs="0"/>
                            <xsd:element name="Time" minOccurs="0"/>
                            <xsd:element name="Location" minOccurs="0"/>
                            <xsd:element name="DIOperation" minOccurs="0" maxOccurs="unbounded"/>
                            <xsd:element name="DomainData" minOccurs="0" maxOccurs="unbounded">
                                <xsd:complexType>
                                    <xsd:attribute name="reportTag" type="xsd:string"
use="optional"/>
                                    <xsd:attribute name="semantics" type="xsd:anyURI"
use="required"/>
                                    <xsd:attribute name="syntax" type="xsd:anyURI" use="required"/>
                                    <xsd:attribute name="value" type="xsd:string" use="optional"/>
                                </xsd:complexType>
                            </xsd:element>
                            <xsd:element name="DIMetadata" minOccurs="0" maxOccurs="unbounded">
                                <xsd:complexType>

```

```

        <xsd:sequence>
          <xsd:element name="DISelection" minOccurs="0">
            <xsd:complexType>
              <xsd:choice>
                <xsd:element name="DISelectionViaDII"
minOccurs="0"/>
                <xsd:element name="DISelectionViaRelatedDII"
minOccurs="0"/>
                <xsd:element name="DISelectionViaXPath"
minOccurs="0"/>
                <xsd:element name="DISelectionViaMetadataElements"
minOccurs="0" maxOccurs="unbounded">
                  <xsd:complexType>
                    <xsd:attribute name="nameSpace"/>
                    <xsd:attribute name="itemType"/>
                    <xsd:attribute name="itemName"/>
                    <xsd:attribute name="internalOperator"/>
                    <xsd:attribute name="itemValue"/>
                    <xsd:attribute name="externalOperator"/>
                  </xsd:complexType>
                </xsd:element>
              </xsd:choice>
            </xsd:complexType>
          </xsd:element>
          <xsd:element name="DIMetadataElement" minOccurs="0"
maxOccurs="unbounded">
            <xsd:complexType>
              <xsd:attribute name="nameSpace"/>
              <xsd:attribute name="tagName"/>
            </xsd:complexType>
          </xsd:element>
          <!-- Selection of the DI from which the metadata will be
reported -->
          <!-- Selection of the metadata to be reported -->
        </xsd:sequence>
      </xsd:complexType>
    </xsd:element>
  </xsd:sequence>
</xsd:complexType>
</xsd:element>
<xsd:element name="ERFormatSpecification">
  <xsd:complexType>
    <xsd:choice>
      <xsd:element name="Ref" type="xsd:anyURI"/>
      <xsd:element name="XMLschema" type="xsd:anyURI"/>
      <xsd:element name="MimeType" type="xsd:string"/>
    </xsd:choice>
  </xsd:complexType>
</xsd:element>
<xsd:element name="ERDeliverySpecification" minOccurs="0"
maxOccurs="unbounded">
  <xsd:complexType>
    <xsd:sequence>
      <xsd:element name="Recipient" type="erl:RecipientType" minOccurs="0"
maxOccurs="unbounded"/>
      <xsd:element name="DeliveryTime" type="erl:TimeType"/>
      <xsd:element name="DITransportService">
        <xsd:complexType>
          <xsd:sequence>
            <xsd:element ref="r:serviceReference"/>

```

```

        </xsd:sequence>
    </xsd:complexType>
</xsd:element>
</xsd:sequence>
</xsd:complexType>
</xsd:element>
<xsd:element ref="erl:EmbeddedERR" minOccurs="0" maxOccurs="unbounded"/>
<xsd:element ref="dsig:Signature" minOccurs="0"/>
</xsd:sequence>
<xsd:element name="EncryptedERSpecification" type="erl:EncryptedData"/>
</xsd:choice>
</xsd:complexType>
</xsd:element>
<!-- ##### -->
<!-- 7.4 Definition of Event Condition Descriptor -->
<!-- ##### -->
<xsd:element name="EventConditionDescriptor">
    <xsd:complexType>
        <xsd:choice>
            <xsd:group ref="erl:EventConditionGroup" maxOccurs="unbounded"/>
            <xsd:element name="EncryptedEventConditionDescriptor"
type="erl:EncryptedData"/>
        </xsd:choice>
    </xsd:complexType>
</xsd:element>
<xsd:group name="EventConditionGroup">
    <xsd:sequence>
        <xsd:element name="Operator" type="erl:ExternalOperator" minOccurs="0"
maxOccurs="unbounded"/>
        <xsd:element name="TimeCondition" minOccurs="0" maxOccurs="unbounded">
            <xsd:complexType>
                <xsd:group ref="erl:TimeConditionGroup" maxOccurs="unbounded"/>
            </xsd:complexType>
        </xsd:element>
        <xsd:element name="Operator" type="erl:ExternalOperator" minOccurs="0"
maxOccurs="unbounded"/>
        <xsd:element name="DIOperationCondition" minOccurs="0"
maxOccurs="unbounded">
            <xsd:complexType>
                <xsd:group ref="erl:DIOperationConditionGroup" maxOccurs="unbounded"/>
            </xsd:complexType>
        </xsd:element>
        <xsd:element name="Operator" type="erl:ExternalOperator" minOccurs="0"
maxOccurs="unbounded"/>
        <xsd:element name="PeerCondition" minOccurs="0" maxOccurs="unbounded">
            <xsd:complexType>
                <xsd:group ref="erl:PeerConditionGroup" maxOccurs="unbounded"/>
            </xsd:complexType>
        </xsd:element>
        <xsd:element name="Operator" type="erl:ExternalOperator" minOccurs="0"
maxOccurs="unbounded"/>
        <xsd:element ref="dsig:Signature" minOccurs="0"/>
    </xsd:sequence>
</xsd:group>
<xsd:group name="TimeConditionGroup">
    <xsd:sequence>
        <xsd:element name="TimeEvent" type="erl:TimeType"/>
        <xsd:element name="Operator" type="erl:ExternalOperator" minOccurs="0"
maxOccurs="unbounded"/>
    </xsd:sequence>

```

```

</xsd:group>
<xsd:group name="DIOperationConditionGroup">
  <xsd:sequence>
    <xsd:element name="DIOperationEvent">
      <xsd:complexType>
        <xsd:sequence>
          <xsd:element ref="erl:UserId" minOccurs="0" maxOccurs="unbounded"/>
          <xsd:element ref="erl:PeerId" minOccurs="0" maxOccurs="unbounded"/>
          <xsd:element name="Operation" type="xsd:anyURI"/>
          <xsd:element name="DII" type="xsd:anyURI" maxOccurs="unbounded"/>
          <xsd:element name="RelatedDII" type="xsd:anyURI" minOccurs="0"
maxOccurs="unbounded"/>
        </xsd:sequence>
      </xsd:complexType>
    </xsd:element>
    <xsd:element name="Operator" type="erl:ExternalOperator" minOccurs="0"
maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:group>
<xsd:group name="PeerConditionGroup">
  <xsd:sequence>
    <xsd:element name="PeerEvent">
      <xsd:complexType>
        <xsd:sequence>
          <xsd:any namespace="##any" processContents="lax"
maxOccurs="unbounded"/>
        </xsd:sequence>
        <xsd:attributeGroup ref="erl:InternalOperator"/>
      </xsd:complexType>
    </xsd:element>
    <xsd:element name="Operator" type="erl:ExternalOperator" minOccurs="0"
maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:group>
<!-- ##### -->
<!-- 8.1 Definition of ER -->
<!-- ##### -->
<xsd:element name="ER">
  <xsd:complexType>
    <xsd:choice>
      <xsd:sequence>
        <xsd:element ref="erl:ERDescriptor"/>
        <xsd:element ref="erl:ERData"/>
        <xsd:element ref="erl:EmbeddedERR" minOccurs="0" maxOccurs="unbounded"/>
        <xsd:element ref="dsig:Signature" minOccurs="0"/>
      </xsd:sequence>
      <xsd:element name="EncryptedER" type="erl:EncryptedData"/>
    </xsd:choice>
  </xsd:complexType>
</xsd:element>
<!-- ##### -->
<!-- ##### -->
<!-- 8.2 Definition of Event Report Descriptor -->
<!-- ##### -->
<xsd:element name="ERDescriptor">
  <xsd:complexType>
    <xsd:choice>
      <xsd:sequence>
        <xsd:element name="Description" type="erl:DescriptionType"
minOccurs="0"/>

```

```

<xsd:element name="Recipient" type="erl:RecipientType"/>
<xsd:element name="Status">
  <xsd:complexType>
    <xsd:attribute name="value" type="xsd:boolean" default="false"/>
  </xsd:complexType>
</xsd:element>
<xsd:element name="Modification" type="erl:ModificationType"
maxOccurs="unbounded"/>
  <xsd:element name="ERSource">
    <xsd:complexType>
      <xsd:sequence>
        <xsd:choice>
          <xsd:element ref="erl:ERR" minOccurs="0"/>
          <xsd:element name="ERRReference" type="xsd:anyURI" minOccurs="0"/>
          <xsd:element name="OtherSource" type="xsd:anyURI" minOccurs="0"/>
        </xsd:choice>
        <xsd:element ref="dsig:Signature" minOccurs="0"/>
      </xsd:sequence>
    </xsd:complexType>
  </xsd:element>
  <xsd:element ref="dsig:Signature" minOccurs="0"/>
</xsd:sequence>
  <xsd:element name="EncryptedERDescriptor" type="erl:EncryptedData"/>
</xsd:choice>
</xsd:complexType>
</xsd:element>
<!-- ##### -->
<!-- 8.3 Definition of ERData -->
<!-- ##### -->
<xsd:element name="ERData">
  <xsd:complexType>
    <xsd:choice>
      <xsd:sequence>
        <xsd:element ref="erl:PeerId" minOccurs="0"/>
        <xsd:element ref="erl:UserId" minOccurs="0"/>
        <xsd:element name="Time" type="xsd:dateTime" minOccurs="0"/>
        <xsd:element name="Location" type="mpeg7:PlaceType" minOccurs="0"/>
        <xsd:element name="DII" type="xsd:anyURI" minOccurs="0"/>
        <xsd:element name="RelatedDII" type="xsd:anyURI" minOccurs="0"/>
        <xsd:element name="DIOperation" type="xsd:anyURI" minOccurs="0"/>
        <xsd:element name="ReportedDomainData" minOccurs="0"
maxOccurs="unbounded">
          <xsd:complexType>
            <xsd:sequence>
              <xsd:any namespace="##any" processContents="lax"
maxOccurs="unbounded"/>
            </xsd:sequence>
            <xsd:attribute name="name" type="xsd:string"/>
          </xsd:complexType>
        </xsd:element>
        <xsd:element name="ReportedDIMetadata" minOccurs="0"
maxOccurs="unbounded">
          <xsd:complexType>
            <xsd:sequence>
              <xsd:any namespace="##any" processContents="lax"
maxOccurs="unbounded"/>
            </xsd:sequence>
            <xsd:attribute name="name" type="xsd:string"/>
          </xsd:complexType>
        </xsd:element>

```

```

        <xsd:element ref="dsig:Signature" minOccurs="0"/>
    </xsd:sequence>
    <xsd:element name="EncryptedERData" type="erl:EncryptedData"/>
</xsd:choice>
</xsd:complexType>
</xsd:element>
<!-- ##### -->
<!-- 8.4 Definition of Embedded Event Report Request -->
<!-- ##### -->
<xsd:element name="EmbeddedERR">
    <xsd:complexType>
        <xsd:choice>
            <xsd:sequence>
                <xsd:choice maxOccurs="unbounded">
                    <xsd:element ref="erl:ERR"/>
                    <xsd:element name="ERRReference" type="xsd:anyURI"/>
                </xsd:choice>
                <xsd:element ref="dsig:Signature" minOccurs="0"/>
            </xsd:sequence>
            <xsd:element name="EncryptedEmbeddedERR" type="erl:EncryptedData"
minOccurs="0"/>
        </xsd:choice>
    </xsd:complexType>
</xsd:element>
<!-- ##### -->
<!-- 9.1 Definition of Time types -->
<!-- ##### -->
<xsd:complexType name="TimeType">
    <xsd:choice minOccurs="0">
        <xsd:element name="SpecificTime" type="erl:SpecificTime"/>
        <xsd:element name="ElapsedTime" type="erl:ElapsedTime"/>
        <xsd:element name="PeriodicTime" type="erl:PeriodicTime"/>
    </xsd:choice>
</xsd:complexType>
<xsd:complexType name="SpecificTime">
    <xsd:choice>
        <xsd:element name="OnTime" type="xsd:dateTime"/>
        <xsd:sequence>
            <xsd:element name="AfterOn" type="xsd:dateTime" minOccurs="0"/>
            <xsd:element name="BeforeOn" type="xsd:dateTime" minOccurs="0"/>
        </xsd:sequence>
    </xsd:choice>
</xsd:complexType>
<xsd:complexType name="ElapsedTime">
    <xsd:sequence>
        <xsd:element name="StartElapse" type="erl:StartElapse" minOccurs="0"/>
        <xsd:element name="EndElapse" type="erl:EndElapse" minOccurs="0"/>
    </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="StartElapse">
    <xsd:choice>
        <xsd:element name="sTime" type="xsd:time"/>
        <xsd:element name="sDuration" type="xsd:duration"/>
    </xsd:choice>
</xsd:complexType>
<xsd:complexType name="EndElapse">
    <xsd:choice>
        <xsd:element name="eTime" type="xsd:time"/>
        <xsd:element name="eDuration" type="xsd:duration"/>
    </xsd:choice>

```

```

</xsd:complexType>
<xsd:complexType name="PeriodicTime">
  <xsd:sequence>
    <xsd:element name="Start" type="xsd:dateTime"/>
    <xsd:element name="DayofWeek" type="erl:DayofWeekType" minOccurs="0"/>
    <xsd:element name="Period" type="xsd:duration"/>
    <xsd:element name="Duration" type="xsd:duration"/>
    <xsd:element name="End" type="xsd:dateTime"/>
  </xsd:sequence>
</xsd:complexType>
<!-- Definition of DayofWeekType datatype -->
<xsd:simpleType name="DayofWeekType">
  <xsd:restriction base="xsd:string">
    <xsd:pattern value="\-?[1-5]{1}W[1-7]{1}D"/>
  </xsd:restriction>
</xsd:simpleType>
<!-- ##### -->
<!-- 9.2 Definition of PeerId -->
<!-- ##### -->
<xsd:element name="PeerId" type="xsd:anyURI"/>
<!-- ##### -->
<!-- 9.3 Definition of UserId -->
<!-- ##### -->
<xsd:element name="UserId" type="xsd:anyURI"/>
<!-- ##### -->
<!-- 9.4 Definition of External operator -->
<!-- ##### -->
<xsd:complexType name="ExternalOperator">
  <xsd:attribute name="name" type="erl:ExternalOprType"/>
</xsd:complexType>
<xsd:simpleType name="ExternalOprType">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="AND"/>
    <xsd:enumeration value="OR"/>
    <xsd:enumeration value="XOR"/>
    <xsd:enumeration value="NOT"/>
    <xsd:enumeration value="("/>
    <xsd:enumeration value=")"/>
  </xsd:restriction>
</xsd:simpleType>
<!-- ##### -->
<!-- 9.5 Definition of Internal operator -->
<!-- ##### -->
<xsd:attributeGroup name="InternalOperator">
  <xsd:attribute name="name" type="erl:InternalOprType"/>
  <xsd:attribute name="location" type="erl:InternalOprLocationType"/>
</xsd:attributeGroup>
<xsd:simpleType name="InternalOprType">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="&gt;"/>
    <xsd:enumeration value="&lt;"/>
    <xsd:enumeration value="&gt;="/>
    <xsd:enumeration value="&lt;="/>
    <xsd:enumeration value="&gt;&lt;"/>
    <xsd:enumeration value="="/>
    <xsd:enumeration value="+"/>
    <xsd:enumeration value="-"/>
    <xsd:enumeration value="*"/>
    <xsd:enumeration value="/"/>
    <xsd:enumeration value="%"/>
  </xsd:restriction>

```

```

    <xsd:enumeration value="("/>
    <xsd:enumeration value=")"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="InternalOprLocationType">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="prefix"/>
    <xsd:enumeration value="infix"/>
    <xsd:enumeration value="postfix"/>
  </xsd:restriction>
</xsd:simpleType>
<!-- ##### -->
<!-- 9.6 Definition of DescriptionType -->
<!-- ##### -->
<xsd:simpleType name="DescriptionType">
  <xsd:restriction base="xsd:string"/>
</xsd:simpleType>
<!-- ##### -->
<!-- 9.8 Definition of RecipientType -->
<!-- ##### -->
<xsd:complexType name="RecipientType">
  <xsd:sequence>
    <xsd:element ref="erl:PeerId"/>
    <xsd:element ref="erl:UserId" minOccurs="0"/>
    <xsd:element ref="dsig:Signature" minOccurs="0"/>
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="EncryptedData">
  <xsd:complexContent>
    <xsd:extension base="enc:EncryptedDataType"/>
  </xsd:complexContent>
</xsd:complexType>
</xsd:schema>

```

IECNORM.COM : Click to view the full PDF of ISO/IEC 21000-15:2006/AMD1:2008

## Annex F (informative)

### An example of a Signed Event Report Request

This annex provides an illustrative example of an Event Report Request digitally signed.

```
<?xml version="1.0" encoding="UTF-8"?>
<ERR xmlns="urn:mpeg:mpeg21:2005:01-ERL-NS" xmlns:dia="urn:mpeg:mpeg21:2003:01-
DIA-NS" xmlns:dii="urn:mpeg:mpeg21:2002:01-DII-NS"
xmlns:dsig="http://www.w3.org/2000/09/xmldsig#"
xmlns:mpeg7="urn:mpeg:mpeg7:schema:2004" xmlns:r="urn:mpeg:mpeg21:2003:01-REL-R-
NS" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="urn:mpeg:mpeg21:2005:01-ERL-NS er_v2.xsd">
  <ERRDescriptor>
    <LifeTime>
      <StartTime>2004-07-01T00:00:00</StartTime>
      <EndTime>2004-07-08T00:00:00</EndTime>
    </LifeTime>
    <Modification>
      <PeerId>GUID:1AC5-4527-A864-3EA2</PeerId>
      <UserId>CISAC:IPI:P-1435 6382</UserId>
      <Time>2004-06-30T18:15:00</Time>
      <Description>Creation of ER-R by Bob@acme.org</Description>
    </Modification>
    <Modification>
      <PeerId>GUID:54A9-32CA-9836-AC30</PeerId>
      <UserId>CISAC:IPI:P-1435 6382</UserId>
      <Time>2004-07-05T24:00:00</Time>
    </Modification>
    <Priority>1</Priority>
  </ERRDescriptor>
  <ERSpecification>
    <Identifier xmlns="urn:mpeg:mpeg21:2002:01-DII-
NS">urn:mpegRA:mpeg21:dii:cid:1702</Identifier>
    <ERDescription>This is a description of the ER</ERDescription>
    <AccessControl/>
    <ERPayloadSpecification>
      <ERIdentifier baseId="true">urn:isbn:0-395-36341-1</ERIdentifier>
      <PeerId/>
      <UserId/>
      <Time/>
      <Location/>
      <DIOperation/>
      <DomainData reportTag="Name" semantics="acme:PhoneName"
syntax="xsd:String"/>
      <DomainData semantics="AcmeFilm:length" syntax="xsd:Integer" value="155"/>
      <DIMetadatas>
        <DISelection>
          <DISelectionViaDII> urn:mpegRA:mpeg21:dii:isrc:BE-R45-98-03948576
          </DISelectionViaDII>
        </DISelection>
        <DIMetadatasElement tagName="Title"/>
        <DIMetadatasElement tagName="Artist"/>
        <DIMetadatasElement tagName="ISWC"/>
      </DIMetadatas>
    </ERPayloadSpecification>
  </ERSpecification>
</ERR>
```