INTERNATIONAL STANDARD

ISO/IEC 21000-18

First edition
2007-06-15

AMENDMENT 1
2008-06-01

Information technology — Multimedia framework (MPEG-21) —

Part 18: Digital Item Streaming

AMENDMENT 1: Simple fragmentation rule

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

Partie 18: Transmission d'élément numérique

AMENDEMENT 1: Règle de fragmentation simple

Reference number
ISO/IEC 21000-18:2007/Amd.1:2008(E)

© ISO/IEC 2008

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS

Not for Resale

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.



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
Web www.iso.org

Published in Switzerland

--`,,```,,,,````-`-`,,`,,`,`,,`---

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS

Not for Resale

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 21000-18:2007 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 2008 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Information technology — Multimedia framework (MPEG-21) —

Part 18:
Digital Item Streaming

AMENDMENT 1: Simple fragmentation rule

In Clause 2 add the following normative reference following the reference to ISO/IEC 15938-5:

ISO/IEC 16262:2002, *Information technology — ECMAScript language specfication*

In 7.3.5 add the following paragraph:

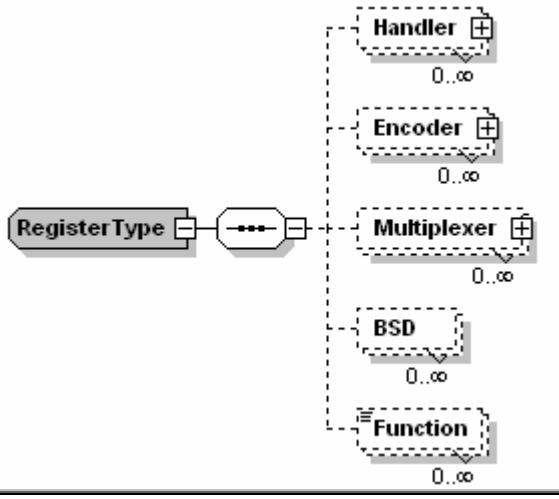
BBL also allows for user-defined XPath functions to be defined by the BBL author using ECMAScript with DIS extensions. See also 7.3.24 and 9.

© ISO/IEC 2008 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

In 7.3.17 replace Table 17 Register Type with the following:

Table 17 — RegisterType

<table>
<tr><td>Diagram</td><td colspan="4"> 
</td></tr>
<tr><td>Children</td><td colspan="4">bbl:Handler bbl:Encoder bbl:Multiplexer bbl:Bsd</td></tr>
<tr><td rowspan="4">Attributes</td><td>Name</td><td>Type</td><td>Use</td><td>Description</td></tr>
<tr><td>xmlSource</td><td>xs:string</td><td>optional</td><td rowspan="3">See SourceElementType (7.3.8)</td></tr>
<tr><td>binarySource</td><td>xs:string</td><td>optional</td></tr>
<tr><td>bSrcNamespace</td><td>xs:string</td><td>optional</td></tr>
<tr><td>Source</td><td colspan="4"><pre>
<xs:complexType name="RegisterType">
  <xs:complexContent>
    <xs:extension base="bbl:SourceElementType">
      <xs:sequence>
        <xs:element name="Handler" type="bbl:HandlerType"
                    minOccurs="0" maxOccurs="unbounded"/>
        <xs:element name="Encoder" type="bbl:EncoderType"
                    minOccurs="0" maxOccurs="unbounded"/>
        <xs:element name="Multiplexer" type="bbl:MultiplexerType"
                    minOccurs="0" maxOccurs="unbounded"/>
        <xs:element name="BSD" type="bbl:BSDType"
                    minOccurs="0" maxOccurs="unbounded"/>
        <xs:element name="Function" type="bbl:FunctionType"
                    minOccurs="0" maxOccurs="unbounded"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
</pre></td></tr>
</table>

Insert a new Subclause 7.3.24 as follows and renumber subsequent subclauses appropriately:

7.3.24 `Function` element

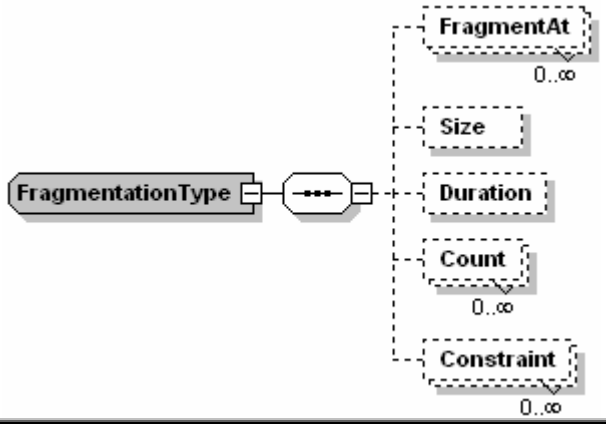
A `Function` element is of type `FunctionType` and registers a user-defined XPath function. A user-defined XPath function is defined using the ECMAScript language (ISO/IEC 16262) with the DIS extensions as per clause 9. The function definition shall be contained as text content of a `Function` element.

© ISO/IEC 2008 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

Table AMD1. 1 — FunctionType

Diagram				
Used by	bbl:Register			
Attributes	**Name**	**Type**	**Use**	**Description**
	bbl:name	xs:Qname	required	The name of the function being defined.
	bbl:args	xs:nonNegativeInteger	optional	The number of arguments that the function accepts.
Source	<xs:complexType name="FunctionType"> <xs:simpleContent> <xs:extension base="xs:string"> <xs:attribute ref="bbl:name" use="required"/> <xs:attribute name="args" type="xs:nonNegativeInteger" use="optional" default="0"/> </xs:extension> </xs:simpleContent> </xs:complexType>			

In 7.3.36 replace the `Fragmentation` *element specification with the following*:

Diagram				
Children	bbl:FragmentAt bbl:Size bbl:Duration bbl:Count bbl:Constraint			
Attributes	**Name**	**Type**	**Use**	**Description**
	attributes	xs:NCName	optional	Specifies whether reassembly attributes should be added to the fragments. Possible values are none, id, and context. A value of none indicates that no reassembly attributes should be attached to the fragments. This is the default value. A value of id indicates that bbl:fragmentRef and bbl:fragmentID attributes are to be attached to fragmentation nodes in the parent and child fragments respectively. The ID value assigned to each fragment is that of the id attribute of the fragmentAt element, if present, or an arbitrary ID which is unique in the BBL description, assigned by the processor. If the fragmentAt element matches multiple nodes, the ID assigned shall be the concatenation of the value of the fragmentAt id attribute and a unique integer. A value of context indicates that the bbl:context attribute, with a value as specified in [3] is added to the child fragment.
Source	<xs:complexType name="FragmentationType"> <xs:sequence> <xs:element name="FragmentAt" type="bbl:FragmentAtType" minOccurs="0" maxOccurs="unbounded"/>			

© ISO/IEC 2008 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

```
      <xs:element name="Size" type="bbl:SizeType" minOccurs="0"/>
      <xs:element name="Duration" type="bbl:DurationType" minOccurs="0"/>
      <xs:element name="Count" type="bbl:CountType" minOccurs="0"
                  maxOccurs="unbounded"/>
      <xs:element name="Constraint" type="bbl:ConstraintType" minOccurs="0"
                  maxOccurs="unbounded"/>
    </xs:sequence>
    <xs:attribute name="attributes" use="optional" default="none">
      <xs:simpleType>
        <xs:restriction base="xs:NCName">
          <xs:enumeration value="none"/>
          <xs:enumeration value="id"/>
          <xs:enumeration value="context"/>
        </xs:restriction>
      </xs:simpleType>
    </xs:attribute>
  </xs:complexType>
```

Insert a new Subclause 7.3.37 as follows and renumber subsequent subclauses appropriately:

7.3.37 `FragmentAt` element

A `FragmentAt` element is of type `FragmentAtType` and declares that content should be fragmented so that a new fragment is to be created for any node matched. The specific node(s) matched shall be present in both parent and child fragments, and may have `fragmentRef` and `fragmentID` attributes respectively. Included descendants shall be be present in the child fragment.

Included content shall be traversed in hierarchical order – beginning at the root of the content – and descendant content of a fragmentation node will be included in subsequent fragments.

For an example of the use of this element see C.8.

Table AMD1. 2 — FragmentAtType

Diagram	FragmentAtType			
Used by	`bbl:Fragmentation`			
Attributes	**Name**	**Type**	**Use**	**Description**
	`match`	xs:string	required	A W3C XPATH expression which is evaluated against the nodes returned by the parent `include` element and resolves to the node(s) at which new fragment(s) are to be created.
	`deliveryTime`	xs:string	optional	The delivery time of the fragment(s) declared by `FragmentAt`.
	`repeat`	xs:string	optional	The repetition period of the fragment(s) declared by `FragmentAt`.
	`id`	xs:ID	optional	If the `attributes` attribute is present on the parent `Fragmentation` element (see 7.3.36) and its value is id, then if the `id` attribute is present on a `FragmentAt` element its value shall be the ID value assigned to the `bbl:fragementRef` and `bbl:fragmentID` attributes attached to fragmentation nodes in the parent and child fragments.
Source	<xs:complexType name="FragmentAtType"> <xs:attribute ref="bbl:match" use="required"/> <xs:attribute name="deliveryTime" type="xs:string" use="optional"/> <xs:attribute name="repeat" type="xs:string" use="optional" default="0"/> <xs:attribute name="id" type="xs:ID" use="optional"/> </xs:complexType>			

--`,,```,,,,````-`-`,,`,,`,`,,`---
© ISO/IEC 2008 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

In 7.4 add the following rows to the Table 46:

`bbl:fragmentRef`	This attribute may be attached to a fragmentation node in a parent fragment whose descendant content will be in a subsequent fragment. The value of this attribute shall match the value of a corresponding `bbl:fragmentID` attribute attached to the fragmentation node in the child fragment.
`bbl:fragmentID`	This attribubte may be attached to a fragmentation node in a child fragment whose parent has been included in a previous fragment. The value of this attribute shall match the value of a corresponding `bbl:fragmentRef` attribute attached to the fragmentation node in the parent fragment.

Add Clause 9 as follows:

9 Extensions to ECMAScript

9.1 Overview

This clause defines a set of ECMAScript (ISO/IEC 16262) objects and their properties that extend ECMAScript for use in DIS. ECMAScript is used in DIS for user-defined XPath functions (see also 7.3.24).

9.2 DOM API

For processing of XML in ECMAScript based functions in DIS, the W3C DOM API shall be used. For this purpose the ECMAScript bindings for the DOM Level 3 Core (see W3C DOM) are normatively included in ECMAScript for DIS.

The DOM API has additional restrictions in DIS in regards to calling functions that modify nodes.

If a node belongs to the BBL document, then it shall not be modifiable unless otherwise stated elsewhere in this document.

If a node belongs to a source document, then it shall not be modifiable unless otherwise stated elsewhere in this document.

NOTE Nodes that are part of a Packet remain modifiable.

9.3 Global properties

The following properties are globally available in the ECMAScript for DIS environment.

Table AMD1. 3 — Global properties

Property name	Description
`bblInfo`	This global property is a `BBLInfo` object (see 9.4.1) that contains functions to access BBL provided information.

© ISO/IEC 2008 All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

9.4 Objects

9.4.1 BBLInfo

A `BBLInfo` object provides the ECMAScript function with access to information provided by the BBL processor. A BBLInfo object has the properties listed in the table below.

Table AMD1. 4 — BBLInfo object properties

Value properties:	`timeScheme` This is a read-only string value that is the in-scope time scheme.
Object properties:	None.
Function properties:	`addr( node )` This function accepts a DOM `Element` object argument representing an element from the in-scope XML Source Document and returns a string value which is an XPath expression providing an absolute and unambiguous location of the node within the XML Source Document. This function generates a `DISError` if the `node` argument is not a DOM `Element` object belonging to the in-scope XML Source Document.
	`deliveryTime( id )` This function accepts a string value argument that is the id of a `Packet` or `PacketStream` element in the BBL document and returns a number value which is the delivery time of the Packet (if the id identifies a `Packet`) or first Packet in the Packet Stream (if the id identifies a `PacketStream`). This function generates a `DISError` if the id argument does not identify either a `Packet` or `PacketStream` element in the BBL document
	`duration( id )` This function accepts a string value argument that is the id of a `Packet` or `PacketStream` element in the BBL document and returns a number value which is the duration of the Packet (if the id identifies a `Packet`) or of the most recently transmitted Packet in the Packet Stream (if the id identifies a `PacketStream`). This function generates a `DISError` if the id argument does not identify either a `Packet` or `PacketStream` element in the BBL document
	`finalDeliveryTime( id )` This function accepts a string value argument that is the id of a `Packet` or `PacketStream` element in the BBL document and returns a number value which is the delivery time of the Packet (if the id identifies a `Packet`) or last Packet in the Packet Stream (if the id identifies a `PacketStream`). NOTE For a Packet this function returns the same value as a call to `deliveryTime( id )`. This function generates a `DISError` if the id argument does not identify either a `Packet` or `PacketStream` element in the BBL document

9.4.2 DISError

This object inherits from the ECMAScript `Error` object and is thrown as an exception when a runtime error specific to DIS occurs. It has no additional properties to the ones inherited from the `Error` object.

--`,,```,,,,````-`-`,,`,,`,`,,`---

© ISO/IEC 2008 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

9.4.3 XPath types

The table below defines the ECMAScript for DIS bindings for XPath types.

Table AMD1. 5 — ECMAScript for DIS bindings for XPath types

XPath type	ECMAScript object
node-set	NodeList[a]
boolean	Boolean[b]
number	Number[b]
string	String[b]

[a] As defined by the ECMAScript bindings for the W3C DOM API (see also 0).

[b] Native ECMAScript object.

9.4.4 BBL variable types

The table below defines the ECMAScript for DIS bindings for BBL variable types as defined in Table 13 – Allowed variable types.

Table AMD1. 6 — ECMAScript for DIS bindings for BBL variable types

BBL variable type	ECMAScript object
xs:integer	Number
xs:int	Number
xs:long	Number
xs:short	Number
xs:decimal	Number
xs:float	Number
xs:double	Number
xs:boolean	Boolean
xs:byte	Number
xs:QName	String
xs:dateTime	Date
xs:base64Binary	String
xs:hexBinary	String
xs:unsignedInt	Number
xs:unsignedShort	Number
xs:unsignedByte	Number
xs:time	String
xs:date	Date
xs:anySimpleType	String

© ISO/IEC 2008 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

In Annex A replace the schema text with the following:

```
<xs:schema
  xmlns:bbl="urn:mpeg:mpeg21:2007:01-BBL-NS"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  targetNamespace="urn:mpeg:mpeg21:2007:01-BBL-NS"
  elementFormDefault="qualified" attributeFormDefault="unqualified"
  version="1.0.0">
  <!-- ********************************************************************** -->
  <!--                          Abstract Type Declarations                    ** -->
  <!-- ********************************************************************** -->
  <xs:attribute name="name" type="xs:QName"/>
  <!-- ********************************************************************** -->
  <xs:attribute name="value" type="xs:string"/>
  <!-- ********************************************************************** -->
  <xs:attribute name="match" type="xs:string" default="."/>
  <!-- ********************************************************************** -->
  <xs:attribute name="handler" type="xs:IDREF"/>
  <!-- ********************************************************************** -->
  <xs:attribute name="encoding" type="xs:IDREF"/>
  <!-- ********************************************************************** -->
  <xs:attributeGroup name="timeScheme">
    <xs:attribute name="timeScheme">
      <xs:simpleType>
        <xs:union>
          <xs:simpleType>
            <xs:restriction base="xs:NCName">
              <xs:enumeration value="npt"/>
              <xs:enumeration value="smpte-24"/>
              <xs:enumeration value="smpte-24-drop"/>
              <xs:enumeration value="smpte-25"/>
              <xs:enumeration value="smpte-30"/>
              <xs:enumeration value="smpte-30-drop"/>
              <xs:enumeration value="smpte-50"/>
              <xs:enumeration value="smpte-60"/>
              <xs:enumeration value="smpte-60-drop"/>
              <xs:enumeration value="mp7t"/>
              <xs:enumeration value="clock"/>
            </xs:restriction>
          </xs:simpleType>
          <xs:simpleType>
            <xs:restriction base="xs:string">
              <xs:pattern value="frac\(\d+\)"/>
            </xs:restriction>
          </xs:simpleType>
          <xs:simpleType>
            <xs:restriction base="xs:string"/>
          </xs:simpleType>
        </xs:union>
      </xs:simpleType>
    </xs:attribute>
  </xs:attributeGroup>
  <!-- ********************************************************************** -->
  <xs:complexType name="SourceElementType" abstract="true">
    <xs:attribute name="xmlSource" type="xs:string" use="optional"/>
    <xs:attribute name="binarySource" type="xs:string" use="optional"/>
    <xs:attribute name="bSrcNamespace" type="xs:string" use="optional"/>
    <xs:attributeGroup ref="bbl:timeScheme"/>
  </xs:complexType>
  <!-- ********************************************************************** -->
  <xs:complexType name="IdentifiableElementType">
    <xs:complexContent>
      <xs:extension base="bbl:SourceElementType">
        <xs:attribute name="id" type="xs:ID" use="optional"/>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
```

--`,,```,,,,````-`-`,,`,,`,`,,`---

8

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS

© ISO/IEC 2008 – All rights reserved

Not for Resale

```
  <!-- ********************************************************************** -->
  <xs:complexType name="BBLDocType">
    <xs:complexContent>
      <xs:extension base="bbl:IdentifiableElementType">
        <xs:sequence>
          <xs:element name="Declarations" minOccurs="0"
                      type="bbl:DeclarationsType"/>
          <xs:element name="Variables" minOccurs="0" type="bbl:VariablesType"/>
          <xs:element name="Register" type="bbl:RegisterType"/>
          <xs:choice maxOccurs="unbounded">
            <xs:element name="Packet" type="bbl:PacketType"/>
            <xs:element name="PacketStream" type="bbl:PacketStreamType"/>
          </xs:choice>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <!-- ********************************************************************** -->
  <xs:complexType name="AbstractVarType">
    <xs:complexContent>
      <xs:extension base="bbl:SourceElementType">
        <xs:attribute ref="bbl:name" use="required"/>
        <xs:attribute ref="bbl:value" use="required"/>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <!-- ********************************************************************** -->
  <xs:complexType name="ParametricElementType">
    <xs:complexContent>
      <xs:extension base="bbl:IdentifiableElementType">
        <xs:sequence minOccurs="0" maxOccurs="unbounded">
          <xs:any namespace="##other"/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <!-- ********************************************************************** -->
  <xs:complexType name="AbstractPacketType" abstract="true">
    <xs:complexContent>
      <xs:extension base="bbl:IdentifiableElementType">
        <xs:sequence>
          <xs:element name="HandlerParams" type="bbl:ParametricElementType"
minOccurs="0"/>
        </xs:sequence>
        <xs:attribute ref="bbl:handler" use="optional"/>
        <xs:attribute name="deliveryCondition" type="xs:string" use="optional"/>
        <xs:attribute name="deliveryTime" type="xs:string" use="optional"/>
        <xs:attribute name="repeat" type="xs:float" use="optional" default="0.0"/>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <!-- ********************************************************************** -->
  <xs:complexType name="AbstractContentType">
    <xs:complexContent>
      <xs:extension base="bbl:IdentifiableElementType">
        <xs:sequence maxOccurs="unbounded">
          <xs:any namespace="##any" processContents="skip"/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <!-- ********************************************************************** -->
  <xs:complexType name="TimingElementType">
    <xs:attribute ref="bbl:match" use="optional"/>
    <xs:attribute ref="bbl:value" use="required"/>
  </xs:complexType>
  <!-- ********************************************************************** -->
```

© ISO/IEC 2008 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

```
<!-- **                    BBL concrete types                          ** -->
<!-- ********************************************************************** -->
<xs:element name="BBL">
  <xs:complexType>
    <xs:choice maxOccurs="unbounded">
      <xs:element name="Instance" type="bbl:InstanceType"/>
      <xs:element name="Binding" type="bbl:BindingType"/>
    </xs:choice>
  </xs:complexType>
</xs:element>
<!-- ********************************************************************** -->
<xs:complexType name="InstanceType">
  <xs:complexContent>
    <xs:extension base="bbl:BBLDocType"/>
  </xs:complexContent>
</xs:complexType>
<!-- ********************************************************************** -->
<xs:complexType name="BindingType">
  <xs:complexContent>
    <xs:extension base="bbl:BBLDocType"/>
  </xs:complexContent>
</xs:complexType>
<!-- ********************************************************************** -->
<xs:complexType name="DeclarationsType">
  <xs:sequence maxOccurs="unbounded">
    <xs:any namespace="##any" processContents="skip"/>
  </xs:sequence>
</xs:complexType>
<!-- ********************************************************************** -->
<xs:complexType name="VariablesType">
  <xs:complexContent>
    <xs:extension base="bbl:SourceElementType">
      <xs:choice maxOccurs="unbounded">
        <xs:element name="Define" type="bbl:DefineType"/>
        <xs:element name="Assign" type="bbl:AbstractVarType"/>
      </xs:choice>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<!-- ********************************************************************** -->
<xs:complexType name="RegisterType">
  <xs:complexContent>
    <xs:extension base="bbl:SourceElementType">
      <xs:sequence>
        <xs:element name="Handler" type="bbl:HandlerType"
                   minOccurs="0" maxOccurs="unbounded"/>
         <xs:element name="Encoder" type="bbl:EncoderType"
                    minOccurs="0" maxOccurs="unbounded"/>
         <xs:element name="Multiplexer" type="bbl:MultiplexerType"
                    minOccurs="0" maxOccurs="unbounded"/>
        <xs:element name="BSD" type="bbl:BSDType"
                    minOccurs="0" maxOccurs="unbounded"/>
        <xs:element name="Function" type="bbl:FunctionType"
                    minOccurs="0" maxOccurs="unbounded"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<!-- ********************************************************************** -->
<xs:complexType name="DefineType">
  <xs:complexContent>
    <xs:extension base="bbl:AbstractVarType">
      <xs:attribute name="type" type="bbl:VarType" use="optional" default="xs:int"/>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:simpleType name="VarType">
```


© ISO/IEC 2008 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

```
    <xs:restriction base="xs:QName">
      <xs:enumeration value="xs:integer"/>
      <xs:enumeration value="xs:int"/>
      <xs:enumeration value="xs:long"/>
      <xs:enumeration value="xs:short"/>
      <xs:enumeration value="xs:decimal"/>
      <xs:enumeration value="xs:float"/>
      <xs:enumeration value="xs:double"/>
      <xs:enumeration value="xs:boolean"/>
      <xs:enumeration value="xs:byte"/>
      <xs:enumeration value="xs:QName"/>
      <xs:enumeration value="xs:dateTime"/>
      <xs:enumeration value="xs:base64Binary"/>
      <xs:enumeration value="xs:hexBinary"/>
      <xs:enumeration value="xs:unsignedInt"/>
      <xs:enumeration value="xs:unsignedShort"/>
      <xs:enumeration value="xs:unsignedByte"/>
      <xs:enumeration value="xs:time"/>
      <xs:enumeration value="xs:date"/>
      <xs:enumeration value="xs:anySimpleType"/>
    </xs:restriction>
  </xs:simpleType>
  <!-- ********************************************************************** -->
  <xs:complexType name="HandlerType">
    <xs:complexContent>
      <xs:extension base="bbl:ParametricElementType">
        <xs:attribute name="handlerURI" type="xs:anyURI" use="required"/>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <!-- ********************************************************************** -->
  <xs:complexType name="EncoderType">
   <xs:complexContent>
     <xs:extension base="bbl:ParametricElementType">
       <xs:attribute name="encoderURI" type="xs:anyURI"
                     use="required"/>
     </xs:extension>
   </xs:complexContent>
  </xs:complexType>
  <!-- ********************************************************************** -->
  <xs:complexType name="MultiplexerType">
    <xs:choice maxOccurs="unbounded">
      <xs:element name="Channel" type="bbl:ChannelType"/>
      <xs:element name="Multiplexer" type="bbl:MultiplexerType"/>
    </xs:choice>
    <xs:attribute ref="bbl:handler" use="optional"/>
    <xs:attribute name="mode" use="required">
      <xs:simpleType>
        <xs:restriction base="xs:NCName">
          <xs:enumeration value="packetCount"/>
          <xs:enumeration value="bandwidth"/>
        </xs:restriction>
      </xs:simpleType>
    </xs:attribute>
    <xs:attribute name="weight" type="xs:int" use="optional" default="1"/>
  </xs:complexType>
  <!-- ********************************************************************** -->
  <xs:complexType name="ChannelType">
    <xs:attribute name="id" type="xs:ID" use="required"/>
    <xs:attribute name="weight" type="xs:int" use="optional" default="1"/>
  </xs:complexType>
  <!-- ********************************************************************** -->
  <xs:complexType name="BSDType">
    <xs:attribute name="namespace" type="xs:anyURI" use="required"/>
    <xs:attribute name="bsSchemaLocation" type="xs:anyURI" use="required"/>
    <xs:attribute name="fromBinarySource" type="xs:boolean" use="optional"
                  default="true"/>
```

© ISO/IEC 2008 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

```
  </xs:complexType>
  <!-- ********************************************************************** -->
  <xs:complexType name="FunctionType">
    <xs:annotation>
      <xs:documentation>Defines an ECMAScript based XPath function</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="xs:string">
        <xs:attribute ref="bbl:name" use="required"/>
        <xs:attribute name="args" type="xs:nonNegativeInteger" use="optional"
default="0"/>
      </xs:extension>
    </xs:simpleContent>
  </xs:complexType>
  <!-- ********************************************************************** -->
  <xs:complexType name="PacketType">
    <xs:complexContent>
      <xs:extension base="bbl:AbstractPacketType">
        <xs:sequence>
          <xs:element name="Content" type="bbl:AbstractContentType"/>
          <xs:element name="Variables" type="bbl:VariablesType" minOccurs="0"/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <!-- ********************************************************************** -->
  <xs:complexType name="PacketStreamType">
    <xs:complexContent>
      <xs:extension base="bbl:AbstractPacketType">
        <xs:sequence>
          <xs:choice>
            <xs:element name="ContentTemplate" type="bbl:AbstractContentType"/>
            <xs:element name="Bind" type="bbl:BindType"/>
          </xs:choice>
          <xs:element name="Variables" type="bbl:VariablesType" minOccurs="0"/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <!-- ********************************************************************** -->
  <xs:complexType name="IncludeType">
    <xs:complexContent>
      <xs:extension base="bbl:SourceElementType">
        <xs:sequence>
          <xs:element name="Timing" type="bbl:TimingType" minOccurs="0"/>
          <xs:element name="Fragmentation" type="bbl:FragmentationType"
                      minOccurs="0"/>
          <xs:choice minOccurs="0" maxOccurs="unbounded">
            <xs:element ref="bbl:Attribute"/>
            <xs:element name="Include" type="bbl:IncludeType"/>
            <xs:element name="Encode" type="bbl:EncodeType"/>
          </xs:choice>
        </xs:sequence>
        <xs:attribute name="ref" type="xs:string" use="required"/>
        <xs:attribute name="depth" use="optional" default="0">
          <xs:simpleType>
            <xs:restriction base="xs:integer">
              <xs:minInclusive value="-1"/>
            </xs:restriction>
          </xs:simpleType>
        </xs:attribute>
        <xs:attribute name="height" use="optional" default="0">
          <xs:simpleType>
            <xs:restriction base="xs:integer">
              <xs:minInclusive value="-1"/>
            </xs:restriction>
          </xs:simpleType>
```


© ISO/IEC 2008 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

```
      </xs:attribute>
      <xs:attribute ref="bbl:match" use="optional"/>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<!-- ********************************************************************** -->
<xs:complexType name="TimingType">
  <xs:choice maxOccurs="unbounded">
    <xs:element name="DeliveryTimes" type="bbl:TimingElementType">
    </xs:element>
    <xs:element name="Durations" type="bbl:TimingElementType">
    </xs:element>
  </xs:choice>
</xs:complexType>
<!-- ********************************************************************** -->
<xs:complexType name="FragmentationType">
  <xs:sequence>
    <xs:element name="FragmentAt" type="bbl:FragmentAtType" minOccurs="0"
                maxOccurs="unbounded"/>
    <xs:element name="Size" type="bbl:SizeType" minOccurs="0"/>
    <xs:element name="Duration" type="bbl:DurationType" minOccurs="0"/>
    <xs:element name="Count" type="bbl:CountType" minOccurs="0"
                maxOccurs="unbounded"/>
    <xs:element name="Constraint" type="bbl:ConstraintType" minOccurs="0"
                maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:attribute name="attributes" use="optional" default="none">
    <xs:simpleType>
      <xs:restriction base="xs:NCName">
        <xs:enumeration value="none"/>
        <xs:enumeration value="id"/>
        <xs:enumeration value="context"/>
      </xs:restriction>
    </xs:simpleType>
  </xs:attribute>
</xs:complexType>
<!-- ********************************************************************** -->
<xs:complexType name="FragmentAtType">
  <xs:attribute ref="bbl:match" use="required"/>
  <xs:attribute name="deliveryTime" type="xs:string" use="optional"/>
  <xs:attribute name="repeat" type="xs:string" use="optional" default="0"/>
  <xs:attribute name="id" type="xs:ID" use="optional"/>
</xs:complexType>
<!-- ********************************************************************** -->
<xs:complexType name="SizeType">
  <xs:attribute name="value" type="xs:positiveInteger" use="required"/>
</xs:complexType>
<!-- ********************************************************************** -->
<xs:complexType name="DurationType">
  <xs:attribute name="value" type="xs:string" use="required"/>
</xs:complexType>
<!-- ********************************************************************** -->
<xs:complexType name="CountType">
  <xs:attribute name="value" type="xs:positiveInteger" use="required"/>
  <xs:attribute ref="bbl:match" use="optional"/>
</xs:complexType>
<!-- ********************************************************************** -->
<xs:complexType name="ConstraintType">
  <xs:attribute name="type" use="required">
    <xs:simpleType>
      <xs:restriction base="xs:NCName">
        <xs:enumeration value="first"/>
        <xs:enumeration value="last"/>
        <xs:enumeration value="unbroken"/>
      </xs:restriction>
    </xs:simpleType>
  </xs:attribute>
```

--`,,```,,,,````-`-`,,`,,`,`,,`---

© ISO/IEC 2008 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

```
    <xs:attribute ref="bbl:match" use="optional"/>
  </xs:complexType>
  <!-- ********************************************************************** -->
  <xs:complexType name="EncodeType">
    <xs:complexContent>
      <xs:extension base="bbl:ParametricElementType">
        <xs:attribute ref="bbl:encoding" use="required"/>
        <xs:attribute ref="bbl:match" use="optional"/>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <!-- ********************************************************************** -->
  <xs:complexType name="BindType">
    <xs:complexContent>
      <xs:extension base="bbl:SourceElementType">
        <xs:sequence minOccurs="0">
          <xs:element name="Binding" type="bbl:BindingType"/>
        </xs:sequence>
        <xs:attribute name="binding" type="xs:string" use="optional"/>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <!-- ********************************************************************** -->
  <!-- ** Elts & Attrs used in BBL documents attached to non-bbl elements   ** -->
  <!-- ********************************************************************** -->
  <xs:element name="value-of">
    <xs:complexType>
      <xs:complexContent>
        <xs:extension base="bbl:SourceElementType">
          <xs:attribute name="select" type="xs:string" use="required"/>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
  </xs:element>
  <!-- ********************************************************************** -->
  <xs:element name="Attribute">
    <xs:complexType>
      <xs:complexContent>
        <xs:extension base="bbl:IdentifiableElementType">
          <xs:sequence>
            <xs:element ref="bbl:value-of" minOccurs="0"/>
          </xs:sequence>
          <xs:attribute ref="bbl:name" use="required"/>
          <xs:attribute ref="bbl:match" use="optional"/>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
  </xs:element>
  <!-- ********************************************************************** -->
  <!-- **  BBL attributes which are transmitted as part of xml fragments    ** -->
  <!-- ********************************************************************** -->
  <!-- ********************************************************************** -->
  <xs:attribute name="context" type="xs:string" fixed="$addr"/>
  <!-- ********************************************************************** -->
  <xs:attribute name="rap" type="xs:boolean" fixed="true"/>
  <!-- ********************************************************************** -->
  <xs:attribute name="seqNo" type="xs:integer"/>
  <!-- ********************************************************************** -->
  <xs:attribute name="processable" type="xs:boolean" default="true"/>
</xs:schema>
```


--`,,```,,,,````-`-`,,`,,`,`,,`---
© ISO/IEC 2008 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

In Annex C insert new Subclause C.8:

C.8 Simple fragmentation example

This subclause provides an example of the use of the `FragmentAt` element (see 7.3.37).

The following DIDL document, Example-C_8.didl.xml, represents a (fictitious) musical album.

```
<?xml version="1.0"?>
<!-- This is a Digital Item Declaration for the (fictitious) musical album "Always Red". -
->
<DIDL
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:dc="http://purl.org/dc/elements/1.1/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns="urn:mpeg:mpeg21:2002:02-DIDL-NS">
  <Item>
    <Descriptor>
      <Statement mimeType="application/x-dmu-content-organizer-hints"> DMU 9876:: Item
Type="Music Album"; </Statement>
    </Descriptor>
    <Descriptor id="ALBUM_INFO">
      <Statement mimeType="text/xml">
        <Mpeg7 xmlns="urn:mpeg:mpeg7:schema:2001">
          <DescriptionUnit xsi:type="CreationInformationType">
            <Creation>
              <Title xmlns:lang="en">Always Red</Title>
              <Creator>
                <Role href="urn:mpeg:mpeg7:cs:RoleCS:2001:PERFORMER"/>
                <Agent xsi:type="PersonGroupType">
                  <Name>Always Red</Name>
                </Agent>
              </Creator>
              <Creator>
                <Role href="urn:mpeg:mpeg7:cs:RoleCS:2001:MUSICIAN"/>
                <Agent xsi:type="PersonType">
                  <Name>
                    <GivenName>Jack</GivenName>
                    <FamilyName>Jake</FamilyName>
                  </Name>
                </Agent>
                <Instrument>
                  <Tool>
                    <Name>Vocals</Name>
                  </Tool>
                </Instrument>
              </Creator>
              <Creator>
                <Role href="urn:mpeg:mpeg7:cs:RoleCS:2001:MUSICIAN"/>
                <Agent xsi:type="PersonType">
                  <Name>
                    <GivenName>Jack</GivenName>
                    <FamilyName>Juno</FamilyName>
                  </Name>
                </Agent>
                <Instrument>
                  <Tool>
                    <Name>Vocals</Name>
                  </Tool>
                </Instrument>
                <Instrument>
                  <Tool>
                    <Name>Tambourine</Name>
                  </Tool>
                </Instrument>
```

--`,,```,,,,````-`-`,,`,,`,`,,`---

© ISO/IEC 2008 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

```
                <Instrument>
                  <Tool>
                    <Name>Finger Snaps</Name>
                  </Tool>
                </Instrument>
              </Creator>
              <Creator>
                <Role href="urn:mpeg:mpeg7:cs:RoleCS:2001:MUSICIAN"/>
                <Agent xsi:type="PersonType">
                  <Name>
                    <GivenName>Joe</GivenName>
                    <FamilyName>Dump</FamilyName>
                  </Name>
                </Agent>
                <Instrument>
                  <Tool>
                    <Name>Acoustic Guitar</Name>
                  </Tool>
                </Instrument>
                <Instrument>
                  <Tool>
                    <Name>Electric Guitar</Name>
                  </Tool>
                </Instrument>
                <Instrument>
                  <Tool>
                    <Name>Piano</Name>
                  </Tool>
                </Instrument>
              </Creator>
              <Creator>
                <Role href="urn:mpeg:mpeg7:cs:RoleCS:2001:MUSICIAN"/>
                <Agent xsi:type="PersonType">
                  <Name>
                    <GivenName>Jeff</GivenName>
                    <FamilyName>Kelly</FamilyName>
                  </Name>
                </Agent>
                <Instrument>
                  <Tool>
                    <Name>Acoustic Bass</Name>
                  </Tool>
                </Instrument>
              </Creator>
              <Creator>
                <Role href="urn:mpeg:mpeg7:cs:RoleCS:2001:MUSICIAN"/>
                <Agent xsi:type="PersonType">
                  <Name>
                    <GivenName>Jim</GivenName>
                    <FamilyName>Jinks</FamilyName>
                  </Name>
                </Agent>
                <Instrument>
                  <Tool>
                    <Name>Drums</Name>
                  </Tool>
                </Instrument>
                <Instrument>
                  <Tool>
                    <Name>Marimba</Name>
                  </Tool>
                </Instrument>
                <Instrument>
                  <Tool>
                    <Name>Shaker</Name>
                  </Tool>
                </Instrument>
                <Instrument>
```


© ISO/IEC 2008 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

```
                  <Tool>
                    <Name>Carob Pods</Name>
                  </Tool>
                </Instrument>
              </Creator>
              <Creator>
                <Role href="urn:mpeg:mpeg7:cs:RoleCS:2001:PUBLISHER"/>
                <Agent xsi:type="OrganizationType">
                  <Name>Acme Records</Name>
                </Agent>
              </Creator>
              <CreationCoordinates>
                <Date>
                  <TimePoint>1995-10-24</TimePoint>
                </Date>
              </CreationCoordinates>
              <CopyrightString>Copyright 1995, Acme Records, All Rights Reserved.
Unauthorized duplication is a violation of applicable laws. </CopyrightString>
            </Creation>
          </DescriptionUnit>
        </Mpeg7>
      </Statement>
    </Descriptor>
    <Descriptor id="DI_IDENTIFIER">
      <Statement mimeType="text/xml">
        <Identifier xmlns="urn:mpeg:mpeg21:2002:01-DII-NS">urn:mpegRA:mpeg21:dii:acme:CD-
ID:a409c80c</Identifier>
      </Statement>
    </Descriptor>
    <Descriptor id="ICON_FILE">
      <Descriptor>
        <Statement mimeType="application/x-dmu-content-organizer-hints"> DMU 9876::
Descriptor Type="Item Icon"; </Statement>
      </Descriptor>
      <Component>
        <Resource ref="http://www.dmu.com/always_red/B002U0A.t.jpg"
mimeType="image/jpeg"/>
      </Component>
    </Descriptor>
    <Component>
      <Resource ref="http://www.dmu.com/always_red/always_red.html" mimeType="text/html"/>
      <Anchor precedence="500">
        <Descriptor>
          <Statement mimeType="text/plain"> View Table of Contents </Statement>
        </Descriptor>
      </Anchor>
      <Anchor precedence="100">
        <Descriptor>
          <Statement mimeType="text/plain"> View Credits </Statement>
        </Descriptor>
        <Fragment fragmentId="credits"/>
      </Anchor>
    </Component>
    <Component>
      <Descriptor>
        <Statement mimeType="application/x-dmu-content-organizer-hints"> DMU 9876::
Descriptor Type="Album Cover Art"; </Statement>
      </Descriptor>
      <Resource ref="http://www.dmu.com/always_red/B002U0A.l.jpg" mimeType="image/jpeg"/>
    </Component>
    <Item>
      <Descriptor>
        <Statement mimeType="application/x-dmu-content-organizer-hints"> DMU 9876:: Item
Type="Song"; </Statement>
      </Descriptor>
      <Descriptor id="SONG1_TITLE">
        <Statement mimeType="text/xml">
          <Mpeg7 xmlns="urn:mpeg:mpeg7:schema:2001">
```

© ISO/IEC 2008 – All rights reserved

Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

```
            <DescriptionUnit xsi:type="CreationInformationType">
              <Creation>
                <Title xmlns:lang="en">Save It</Title>
              </Creation>
            </DescriptionUnit>
          </Mpeg7>
        </Statement>
      </Descriptor>
      <Descriptor>
        <Statement mimeType="text/xml">
          <rdf:RDF>
            <rdf:Description>
              <dc:coverage>233</dc:coverage>
            </rdf:Description>
          </rdf:RDF>
        </Statement>
      </Descriptor>
      <Component>
        <Resource ref="http://www.dmu.com/always_red/01_Save_It_192.mp3"
mimeType="audio/mpeg"/>
        <Anchor precedence="100">
          <Descriptor>
            <Statement mimeType="text/plain"> Play Song </Statement>
          </Descriptor>
        </Anchor>
      </Component>
      <Component>
        <Resource ref="http://www.dmu.com/always_red/Save_It.txt" mimeType="text/plain"/>
        <Anchor precedence="25">
          <Descriptor>
            <Statement mimeType="text/plain"> View Lyrics </Statement>
          </Descriptor>
        </Anchor>
      </Component>
    </Item>
    <Item>
      <Descriptor>
        <Statement mimeType="application/x-dmu-content-organizer-hints"> DMU 9876:: Item
Type="Song"; </Statement>
      </Descriptor>
      <Descriptor id="SONG2_TITLE">
        <Statement mimeType="text/xml">
          <Mpeg7 xmlns="urn:mpeg:mpeg7:schema:2001">
            <DescriptionUnit xsi:type="CreationInformationType">
              <Creation>
                <Title xmlns:lang="en">I Haven’t been Anywhere</Title>
              </Creation>
            </DescriptionUnit>
          </Mpeg7>
        </Statement>
      </Descriptor>
      <Descriptor>
        <Statement mimeType="text/xml">
          <rdf:RDF>
            <rdf:Description>
              <dc:coverage>193</dc:coverage>
            </rdf:Description>
          </rdf:RDF>
        </Statement>
      </Descriptor>
      <Component>
        <Resource ref="http://www.dmu.com/always_red/02_I_Haven't_been_Anywhere_192.mp3"
mimeType="audio/mpeg"/>
        <Anchor precedence="100">
          <Descriptor>
            <Statement mimeType="text/plain"> Play Song </Statement>
          </Descriptor>
        </Anchor>
```


© ISO/IEC 2008 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

```
      </Component>
      <Component>
        <Resource ref="http://www.dmu.com/always_red/I_Havent_been_Anywhere.txt"
mimeType="text/plain"/>
        <Anchor precedence="25">
          <Descriptor>
            <Statement mimeType="text/plain"> View Lyrics </Statement>
          </Descriptor>
        </Anchor>
      </Component>
    </Item>
    <Item>
      <Descriptor>
        <Statement mimeType="application/x-dmu-content-organizer-hints"> DMU 9876:: Item
Type="Song"; </Statement>
      </Descriptor>
      <Descriptor id="SONG3_TITLE">
        <Statement mimeType="text/xml">
          <Mpeg7 xmlns="urn:mpeg:mpeg7:schema:2001">
            <DescriptionUnit xsi:type="CreationInformationType">
              <Creation>
                <Title xmlns:lang="en">Sawdust and Sticks</Title>
              </Creation>
            </DescriptionUnit>
          </Mpeg7>
        </Statement>
      </Descriptor>
      <Descriptor>
        <Statement mimeType="text/xml">
          <rdf:RDF>
            <rdf:Description>
              <dc:coverage>209</dc:coverage>
            </rdf:Description>
          </rdf:RDF>
        </Statement>
      </Descriptor>
      <Component>
        <Resource ref="http://www.dmu.com/always_red/03_Sawdust_and_Sticks_192.mp3"
mimeType="audio/mpeg"/>
        <Anchor precedence="100">
          <Descriptor>
            <Statement mimeType="text/plain"> Play Song </Statement>
          </Descriptor>
        </Anchor>
      </Component>
      <Component>
        <Resource ref="http://www.dmu.com/always_red/Sawdust_and_Sticks.txt"
mimeType="text/plain"/>
        <Anchor precedence="25">
          <Descriptor>
            <Statement mimeType="text/plain"> View Lyrics </Statement>
          </Descriptor>
        </Anchor>
      </Component>
    </Item>
    <Item>
      <Descriptor>
        <Statement mimeType="application/x-dmu-content-organizer-hints"> DMU 9876:: Item
Type="Song"; </Statement>
      </Descriptor>
      <Descriptor id="SONG4_TITLE">
        <Statement mimeType="text/xml">
          <Mpeg7 xmlns="urn:mpeg:mpeg7:schema:2001">
            <DescriptionUnit xsi:type="CreationInformationType">
              <Creation>
                <Title xmlns:lang="en">When the Thistle Blooms</Title>
              </Creation>
            </DescriptionUnit>
```

--`,,```,,,,````-`-`,,`,,`,`,,`---

© ISO/IEC 2008 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

```
          </Mpeg7>
        </Statement>
      </Descriptor>
      <Descriptor>
        <Statement mimeType="text/xml">
          <rdf:RDF>
            <rdf:Description>
              <dc:coverage>235</dc:coverage>
            </rdf:Description>
          </rdf:RDF>
        </Statement>
      </Descriptor>
      <Component>
        <Resource ref="http://www.dmu.com/always_red/04_When_the_Thistle_Blooms_192.mp3"
mimeType="audio/mpeg"/>
        <Anchor precedence="100">
          <Descriptor>
            <Statement mimeType="text/plain"> Play Song </Statement>
          </Descriptor>
        </Anchor>
      </Component>
      <Component>
        <Resource ref="http://www.dmu.com/always_red/When_the_Thistle_Blooms.txt"
mimeType="text/plain"/>
        <Anchor precedence="25">
          <Descriptor>
            <Statement mimeType="text/plain"> View Lyrics </Statement>
          </Descriptor>
        </Anchor>
      </Component>
    </Item>
  </Item>
</DIDL>
```

The following BBL document is an example of how the preceding DIDL document could be simply fragmented using the `FragmentAt` fragmentation rule.

```
<?xml version="1.0"?>
<BBL
  xmlns="urn:mpeg:mpeg21:2007:01-BBL-NS"
  xmlns:bbl="urn:mpeg:mpeg21:2007:01-BBL-NS"
  xmlns:did="urn:mpeg:mpeg21:2002:02-DIDL-NS">
  <Instance xmlSource="Example-C_8.did.xml" timeScheme="npt">
    <Register>
      <Handler id="defaultHandler" handlerURI="urn:acme:mpeg:mpeg21:dis:handler:UDP"/>
    </Register>
    <PacketStream deliveryTime="1.0">
      <ContentTemplate>
        <Include ref="/did:DIDL" depth="-1">
          <Fragmentation attributes="id">
            <FragmentAt bbl:match="did:Item/did:Descriptor[@id='ALBUM_INFO']" id="info"
deliveryTime="2.2"/>
            <FragmentAt bbl:match="did:Item/did:Descriptor[@id='ICON_FILE']" id="icon"
deliveryTime="2.0"/>
            <FragmentAt bbl:match="did:Item/did:Component[1]" id="description"
deliveryTime="4.5"/>
            <FragmentAt bbl:match="did:Item/did:Component[2]" id="coverart"
deliveryTime="4.0"/>
            <FragmentAt bbl:match="did:Item/did:Item[1]" id="song1" deliveryTime="5.0"/>
            <FragmentAt bbl:match="did:Item/did:Item[2]" id="song2" deliveryTime="233.0"/>
            <FragmentAt bbl:match="did:Item/did:Item[3]" id="song3" deliveryTime="426.0"/>
            <FragmentAt bbl:match="did:Item/did:Item[4]" id="song4" deliveryTime="635.0"/>
          </Fragmentation>
          <Attribute bbl:name="xmlns:bbl" bbl:match=".">
            <value-of select="'urn:mpeg:mpeg21:2006:01-BBL-NS'"/>
```


© ISO/IEC 2008 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

```
          </Attribute>
          <Attribute bbl:name="bbl:namespaceContextNode" bbl:match=".">
            <value-of select="'true'"/>
          </Attribute>
          <Attribute bbl:name="bbl:rap" bbl:match=".">
            <value-of select="'true'"/>
          </Attribute>
        </Include>
      </ContentTemplate>
    </PacketStream>
  </Instance>
</BBL>
```

© ISO/IEC 2008 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale

ICS 35.040

Price based on 21 pages

© ISO/IEC 2008 – All rights reserved
Copyright International Organization for Standardization
Provided by IHS under license with ISO
No reproduction or networking permitted without license from IHS
Not for Resale