INTERNATIONAL ORGANIZATION FOR STANDARDIZATION
ORGANISATION INTERNATIONALE NORMALISATION
ISO/IEC JTC 1/SC 29/WG 11
CODING OF MOVING PICTURES AND AUDIO

ISO/IEC JTC 1/SC 29/WG 11 N3971

March 2001, Singapore

Source:	**Multimedia Description Schemes (MDS) Group**
Title:	**MPEG-21 Digital Item Declaration WD (v2.0)**
Status:	**Approved**
Editors:	**Vaughn Iverson, Young-Won Song, Rik Van de Walle, Mark Rowe, Doim Chang, Ernesto Santos, Todd Schwartz**

ISO/IEC JTC 1/SC 29 N 3971

Date: 2001-03-23

ISO/IEC WD 21000-2:2001

Information Technology — Multimedia Framework — Part 2: Digital Item Declaration

Document type:
Document subtype:
Document stage:
Document language: E

C:\WINDOWS\Desktop\TAKE\wnnnn-did-wd.doc STD Version 1.0

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Foreword

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

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. 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 part of ISO/IEC 21000 may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

International Standard ISO/IEC 21000-2 was prepared by Joint Technical Committee ISO/IEC JTC 1, *JTC*, Subcommittee SC 29, .

This second/third/... edition cancels and replaces the first/second/... edition (), [clause(s) / subclause(s) / table(s) / figure(s) / annex(es)] of which [has / have] been technically revised.

ISO/IEC 21000:2001 consists of the following parts, under the general title *Information Technology — Multimedia Framework*:

— *Part 1: Technical Report*

— *Part 2: Digital Item Declaration*

— *Part 3: Digital Item Identification and Description*

— *Part 4: ???*

— *Part 5: ???*

— *Part 6: ???*

— *Part 7: ???*

Introduction

The current state of the art in multimedia technology provides the different players in the multimedia value and delivery chain (from content creators to end-users) with a huge amount of information and services. Devices and ubiquitous networks enable access to information and services from almost everywhere at anytime. No solutions exist that allow different communities, each with their own models, rules, procedures, interests and content formats, to interact efficiently using this complex infrastructure. Examples of these communities are the content, financial, communication, computer, and consumer electronics sectors. Developing a common multimedia framework will facilitate co-operation between these sectors and support the efficient implementation of the different models, rules, procedures, interests, and content formats.

The MPEG-21 vision is to define a multimedia framework to enable transparent and augmented use of multimedia resources across a wide range of networks and devices used by the different communities.

The MPEG-21 multimedia framework has identified and defined the key elements needed to support the multimedia value and delivery chain, the relationships between, and the operations supported by them. MPEG-21 will elaborate the elements by defining the syntax and semantics of their characteristics, such as interfaces to the elements. MPEG-21 will also address the necessary framework functionality, such as the protocols associated with the interfaces, and mechanisms to provide a repository, composition, conformance, etc.

MPEG-21 recommendations will be determined by interoperability requirements, and their level of detail may vary for each framework element. The actual instantiation and implementation of the framework elements below the abstraction level required to achieve interoperability, will not be specified.

The MPEG-21 standard consists of the following seven elements:

- **Digital Item Declaration**

MPEG-21 shall establish a uniform and flexible abstraction and interoperable schema for declaring Digital Items.

- **Digital Item Identification and Description**

MPEG-21 shall design a method for identification and description that is interoperable to provide, provide for, support, adopt, reference or integrate for: accuracy, reliability and uniqueness of identification; seamless identification of any entity regardless of its nature, type or granularity; persistent and efficient methods for the association of identifiers with Digital Items; security and integrity of IDs and descriptions which will survive all kinds of manipulations and alterations; and automated processing of rights transactions and content location, retrieval, and acquisition.

- **Content Handling and Usage**

The MPEG-21 Multimedia Framework should provide interfaces and protocols that enable creation, manipulation, search, access, storage, delivery, and (re)use of content (which can be any media data and descriptive data) across the content distribution and consumption value chain; with emphasis on improving the interaction model for users with personalization and content handling.

The above should be supported both when the End User is performing the above functions and when the functions are delegated to "non human entities" (such as “agents”). In this context, content handling should not be understood as managing the rights of the content.

- **Intellectual Property Management & Protection**

The MPEG-21 Multimedia Framework should provide a multimedia digital rights management framework that enables all Users to express their rights to, interests in, and agreements related to Digital Items and enable all

Users to derive appropriate levels of assurance that those rights, interests and agreements will be persistently and reliably managed and protected across a wide range of networks and devices.

- **Terminals and Networks**

The goal is to achieve interoperable transparent access to (distributed) advanced multimedia content by shielding Users from network and terminal installation, management, and implementation issues.

This will enable the provision of network and terminal resources on demand to form User communities where multimedia content can be created and shared, always with the agreed/contracted quality, reliability, and flexibility, allowing the multimedia applications to connect diverse sets of Users, such that the quality of the user experience will be guaranteed.

This implies that as a minimum: networks should provide content transport functions according to a Quality of Service (QoS) contract established between the user and the network; terminals and networks should provide scalable execution functions as requested by content; and access to network and terminal resources will happen through standard interfaces.

- **Content Representation**

MPEG-21 shall provide content representation technology able to efficiently represent content of all data types with the following features: the ability to match the QoS offered by terminals and networks in an optimal way, especially for real-time media such as video and audio, e.g., by providing scalability and error resilience; and the ability to be synchronized and multiplexed and allow for interaction.

- **Event Reporting**

MPEG-21 should provide metrics and interfaces that enable Users to understand precisely the performance of all reportable events (such as transactions) within the framework. Such “Event Reporting” then provides Users a means of acting on specific interactions, as well as enabling a vast set of out-of-scope processes, frameworks and models to interoperate with MPEG-21. Event Reporting creates a standardized set of metrics and interfaces with which to describe the temporally unique events and interactions within MPEG-21.

More information on the aforementioned elements of MPEG-21 can be found in ISO/IEC 21000-1:2001.

Information Technology — Multimedia Framework — Part 2: Digital Item Declaration

1 Scope

This document describes the Digital Item Declaration technology under consideration in part 2 of the MPEG-21 standard. This technology is described in three normative sections:

- Model: The Digital Item Declaration Model describes a set of abstract terms and concepts to form a useful model for defining Digital Items. Within this model, a Digital Item is the digital representation of "a work", and as such, it is the thing that is acted upon (managed, described, exchanged, collected, etc.) within the model.
- Representation: Normative description of the syntax and semantics of each of the Digital Item Declaration elements, as represented in XML. This section also contains some non-normative examples for illustrative purposes.
- Schema: Normative XML schema comprising the entire grammar of the Digital Item Declaration representation in XML.

In addition, illustrative (non-normative) examples are provided.

2 Normative references

The following Recommendations and International Standards contain provisions, which, through reference in this text, constitute provisions of ISO/IEC 21000-2. At the time of publication, the editions indicated were valid. All Recommendations and Standards are subject to revision, and parties to agreements based on ISO/IEC 21000-2 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of ISO and IEC maintain registers of currently valid International Standards.

- URI (Uniform Resource Identifier): IETF Draft Standard RFC 2396
- BNF (Backus-Naur Form): ISO/IEC 14977:1996(E)
- XML (Extensible Markup Language): Extensible Markup Language 1.0 (Second Edition), W3C Recommendation, 6 October 2000
- XML Schema: XML Schema Part 1: Structures and Part 2: Datatypes, W3C Proposed Recommendation, 16 March 2001
- XPointer: XML Pointer Language (XPointer) Version 1.0, W3C Last Call Working Draft, 8 January 2001

3 Terms, definitions, symbols, abbreviated terms

3.1 Terms

3.1.1 Digital Item

In ISO/IEC 21000-1:2001 (part 1 of MPEG-21: Technical Report), Digital Items are defined as structured digital objects, including a standard representation and identification, and meta-data. This entity is the fundamental unit of distribution and transaction within the MPEG-21 framework as a whole; it has, however, no further technical meaning. Within this document (part 2 of MPEG-21: Digital Item Declaration), an *item* is a grouping of sub-*items* and/or *components* that are bound to relevant *descriptors*, as defined within theDigital Item Declaration Model. The term *item* is a technical term, and is, as such, a narrower term than Digital Item. In conclusion, the use of the two different terms Digital Item and *item* within MPEG-21 is consistent and intended.

3.2 Conventions

3.2.1 Naming convention

It should be noted that the Digital Item Declaration Model (section 4) contains the concept names that are used throughout the MPEG-21 standard. As such, this model should be considered to be the “ultimate arbiter” of MPEG-21 concept names. Documentation convention

3.2.2 Documentation convention

The semantics of each element in the Digital Item Declaration Model is specified using the constructs provided by BNF, and is shown in this document using a specific font and background:

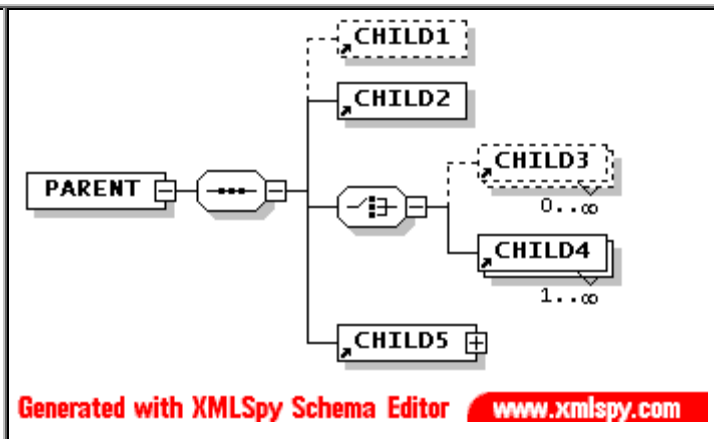
```
element ::= (part1 | part2)+ part3*
```

The syntax of each element in the Digital Item Declaration Representation is specified using the constructs provided by XML Schema.

Element names and attribute names in the representation are CAPITALIZED. Throughout the document, *italics* are used when referring to elements defined in the Digital Item Declaration Model (see section 4), hereafter known as the Model.

The syntax of each element in the Digital Item Declaration representation is specified using the following format.

Diagram

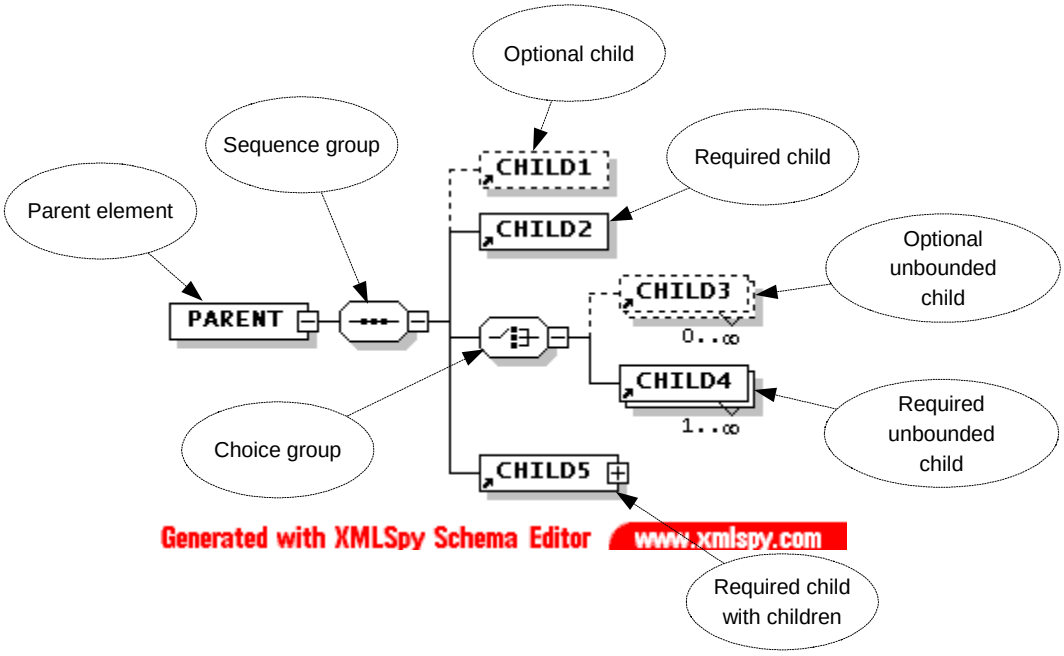


Children	<CHILD1> <CHILD2> <CHILD3> <CHILD4> <CHILD5>		
Used by	<GRANDPARENT1> <GRANDPARENT2>		
Attributes	**Name**	**Type**	**Description**
	ID	ID	A unique ID value, which can be referenced by another element.

Source

```
<xsd:element name="PARENT">
    <xsd:complexType>
        <xsd:sequence>
            <xsd:element ref="CHILD1" minOccurs="0"/>
            <xsd:element ref="CHILD2"/>
            <xsd:choice>
                <xsd:element ref="CHILD3" minOccurs=”0” maxOccurs=”unbounded”/>
                <xsd:element ref="CHILD4” minOccurs=”1” maxOccurs=”unbounded”/>
            </xsd:choice>
            <xsd:element ref="CHILD5"/>
        </xsd:sequence>
        <xsd:attribute name="ID" type=”xsd:id”/>
        </xsd:complexType>
    </xsd:element>
```

The Language Definition section contains syntax diagrams for each element. Here is an example syntax diagram with annotations:



Non-normative examples are included in separate sections, and are shown in this document using a separate font and background:

```
<Example attribute1="example attribute value">
   <Element1>example element content</Element1>
```

```
</Example>
```

3.3 Abbreviations

For the purposes of this International Standard, the terms and definitions given in the following apply:

BNF: Backus-Naur Form

DID: Digital Item Declaration

IANA: Internet Assigned Numbers Authority

IPMP: Intellectual Property Management and Protection

JPEG: Joint Photographic Experts Group

MPEG: Moving Picture Experts Group

MPEG-21: ISO/IEC 21000

MP3: MPEG1/2 layer 3 (audio coding)

URI: Uniform Resource Identifier (IETF Standard is RFC 2396)

URL: Uniform Resource Locator (IETF Standard is RFC 1738)

URN: Uniform Resource Name (IETF Standard is RFC 2396)

XML: Extensible Markup Language (W3C Recommendation, 6 October 2000)

4 Digital Item Declaration Model

4.1 Purpose and Overview

The purpose of this document is to describe a set of abstract terms and concepts to form a useful model for defining Digital Items. Within this model, a Digital Item is the digital representation of "a work", and as such, it is the thing that is acted upon (managed, described, exchanged, collected, etc.) within the model. The goal of this model is to be as flexible and general as possible, while providing for the "hooks" that enable higher level functionality. This, in turn, will allow the model to serve as a key foundation in the building of higher level models in other MPEG-21 elements (such as Identification & Description or IPMP). This model specifically does not define a language in and of itself. Instead, the model helps to provide a common set of abstract concepts and terms that can be used to define such a scheme, or to perform mappings between existing schemes capable of Digital Item Declaration, for comparison purposes.

4.2 Abstract Model

Please note that in the descriptions below, the defined elements in *italics* are intended to be unambiguous terms within this model. The prose descriptions define the semantic "meaning" of the terms, and the modified BNF representations define the precise intended relationship or structure between terms within the model.

4.2.1 Container

A *container* is a structure that allows *items* and/or *containers* to be grouped. These groupings of *items* and/or *containers* can be used to form logical *packages* (for transport or exchange) or logical *shelves* (for organization). *Descriptors* allow for the "labeling" of *containers* with information that is appropriate for the purpose of the grouping (e.g. delivery instructions for a *package*, or category information for a *shelf*).

It should be noted that a *container* itself is not an *item*; *containers* are groupings of *items* and/or *containers*.

```
container ::= container* item* descriptor*
```

4.2.2 Item

An *item* is a grouping of sub-*items* and/or *components* that are bound to relevant *descriptors*. *Descriptors* contain information about the *item*, as a representation of a work. *Items* may contain *choices*, which allow them to be customized or configured. *Items* may be conditional (on *predicates* asserted by *selections* defined in the *choices*). An *item* that contains no sub-items can be considered an entity -- a logically indivisible work. An *item* that does contain sub-*items* can be considered a compilation -- a work composed of potentially independent sub-parts. *Items* may also contain *annotations* to their sub-parts.

The relationship between *items* and Digital Items (as defined in ISO/IEC 21000-1:2001, MPEG-21 Technical Report) could be stated as follows: *items* are declarative representations of Digital Items.

```
item ::= (item | component)+ choice* descriptor* condition* annotation*
```

4.2.3 Component

A *component* is the binding of a *resource* to all of its relevant *descriptors*. These *descriptors* are information related to all or part of the specific *resource* instance. Such *descriptors* will typically contain control or structural information

about the *resource* (such as bit rate, character set, start points or encryption information) but not information describing the "content" within.

It should be noted that a *component* itself is not an *item*; *components* are building blocks of *items*.

```
component ::= resource descriptor* anchor* condition*
```

4.2.4 Anchor

An *anchor* binds *descriptors* to a *fragment,* which corresponds to a specific location or range within a *resource*.

```
anchor ::= fragment descriptor* condition*
```

4.2.5 Descriptor

A *descriptor* associates information with the enclosing element. This information may be a *component* (such as a thumbnail of an image, or a text *component*), or a textual *statement.* Note: It is under consideration that the *descriptor* element may include information that can be used to place it in a known classification scheme. For example: Handling and Usage Rules, User Preference information or Content Identifiers.

```
descriptor ::= descriptor* (component | statement) condition*
```

4.2.6 Condition

A *condition* describes the enclosing element as being optional, and links it to the *selection*(s) that affect its inclusion. Multiple *predicates* within a *condition* are combined as a conjunction (an AND relationship). Any *predicate* can be negated within a *condition*. Multiple *conditions* associated with a given element are combined as a disjunction (an OR relationship) when determining whether to include the element.

```
condition ::= predicate+
```

4.2.7 Choice

A *choice* describes a set of related *selections* that can affect the configuration of an *item*. The *selections* within a *choice* are either exclusive (choose exactly one) or inclusive (choose any number, including all or none).

```
choice ::= selection+ descriptor* condition*
```

4.2.8 Selection

A *selection* describes a specific decision that will affect one or more *conditions* somewhere within an *item*. If the *selection* is chosen, its predicate becomes true; if it is not chosen, its *predicate* becomes false; if it is left unresolved, its *predicate* is undecided.

```
selection ::= predicate descriptor* condition*
```

4.2.9 Annotation

An *annotation* describes a set of information about another identified element of the model without altering or adding to that element. The information can take the form of *assertions*, *descriptors*, and *anchors*.

```
annotation ::= assertion* descriptor* anchor*
```

4.2.10 Assertion

An *assertion* defines a full or partially configured state of a *choice* by asserting true, false or undecided values for some number of *predicates* associated with the *selections* for that *choice*.

```
assertion ::= predicate*
```

4.2.11 Resource

A *resource* is an individually identifiable asset such as a video or audio clip, an image, or a textual asset. A *resource* may also potentially be a physical object. All *resources* must be locatable via an unambiguous address.

4.2.12 Fragment

A *fragment* unambiguously designates a specific point or range within a *resource*. *Fragment* may be *resource* type specific.

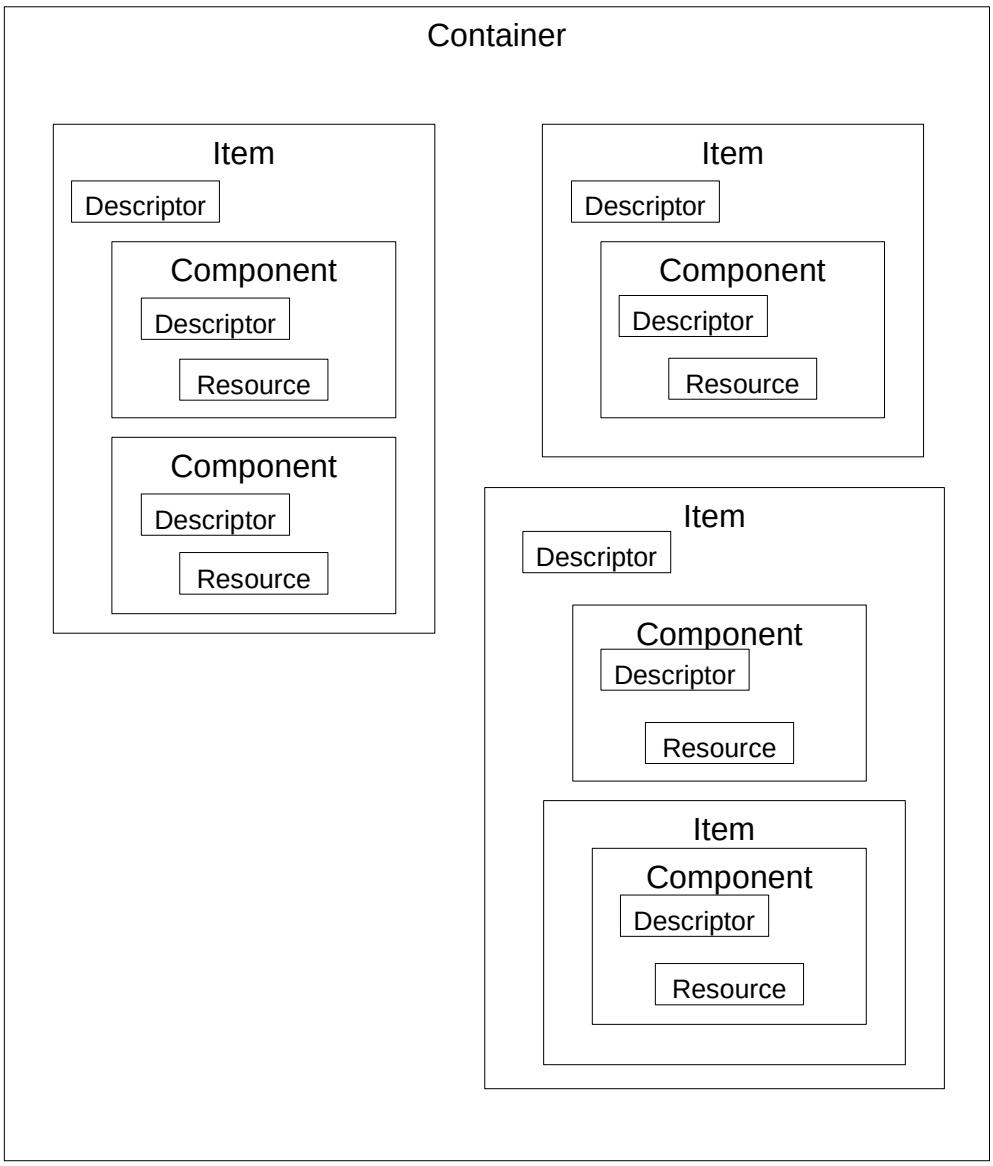
4.2.13 Statement

A *statement* is a literal textual value that contains information, but not an asset. Examples of likely *statements* include descriptive, control, revision tracking or identifying information.

4.2.14 Predicate

A *predicate* is an unambiguously identifiable Declaration that can be true, false or undecided.

The following diagram is an example showing the most important elements within this model, how they are related, and as such, the hierarchical structure of the Digital Item Declaration Model.



5 Digital Item Declaration Representation

5.1 Introduction

The purpose of this section is to describe the XML schema for declaring Digital Items. The goal of this schema is to be as flexible and general as possible, while providing the "hooks" for higher level functionality that will allow it to serve as a key foundation in the building of higher level schema in other MPEG-21 domains (such as Identification & Description or Rights Management).

5.1.1 Document Conventions

5.1.2 DIDL Overview

DIDL documents are XML 1.0 documents. The reader is assumed to be familiar with the terms and concepts of XML 1.0[1].

In addition, DIDL syntax is based on an abstract structure defined in the Digital Item Declaration Model (see section 4 above). The following abstract elements defined in the Model are each represented in DIDL by a like-named DIDL element:

- *Container*
- *Item*
- *Component*
- *Anchor*
- *Descriptor*
- *Choice*
- *Selection*
- *Condition*
- *Annotation*
- *Assertion*
- *Resource*
- *Statement*

For example, the abstract *descriptor* element in the Model is represented in DIDL by the DESCRIPTOR element. Therefore, the reader is likewise assumed to be familiar with the terms and concepts defined in the Model.

A DIDL document consists of a DIDL root element with a single ITEM child element or CONTAINER child element. Thus, a DIDL document can represent either an *item* or a *container*.

In addition, DIDL defines the following special element types that do not correspond to any of the Model elements: REFERENCE DECLARATIONS, and OVERRIDE. These special elements are used for specific purposes within DIDL.

References are used to logically duplicate the contents of an element inside another element. In other words, they allow an element to be instantiated “by reference”, rather than “by value.” References can be made to elements within a document, or to elements in a different document. The former type of reference is known as an internal reference; the latter is known as an external reference. An internal reference allows a single source to be maintained for an element that occurs in more than one place in a DIDL document. An external reference allows a DIDL document to be split up into multiple linked discrete documents. A reference is said to be “resolved” when the application software locates the target of the reference and performs the logical duplication.

---

[1] *Extensible Markup Language (XML) 1.0 Recommendation*, W3C, http://www.w3.org/TR/REC-xml

Declarations are used to define DIDL elements in a document without actually instantiating them. A declared element is not considered to be instantiated unless it is referenced.

DIDL makes broad use of XML's ID attribute type. Generally, attributes of this type are used to make an internal association between one DIDL element and another. For example, many DIDL elements have an 'ID' attribute, which makes them available as targets of internal references by REFERENCE elements, and, in limited cases, available for annotation by ANNOTATION elements. In addition, other attributes of type ID that are not named 'ID' are used to make specific kinds of associations between specific elements. For example, the SELECT_ID attribute of the SELECTION element allows CONDITION elements to be associated with specific SELECTIONs, and the CHOICE_ID attribute allows ASSERTION elements to be associated with specific CHOICEs. It is anticipated that ID values may need to be changed, for example, when DIDL documents are merged, in order to avoid ID collisions. In this way, ID values are very much like symbol references in program code.

Each element that has an ID attribute also has an optional REV attribute that can be used for revision tracking and management.

5.2 DIDL Definition

5.2.1 Validation

Validating a document against the DIDL schema is necessary, but not sufficient, to determine its validity with respect to DIDL. After a document is validated against the DIDL schema, it must also be subjected to additional validation rules. These additional rules are given below in the descriptions of the elements to which they pertain.

5.2.2 Canonicalization

Like any XML document, a single logical DIDL document may be manifested in a wide variety of syntactic representations. Although the various syntactic representations each contain a different sequence of characters, they are all logically equivalent. In certain applications, such as generating a digest value for a digital signature on all or part of a DIDL document, it is necessary to define a method for generating a single predictable (deterministic) syntactic representation. This single predictable syntactic representation is known as the Canonical Form.

DIDL Canonical Form is defined to be Canonical XML 1.0[2] with the following additional constraints:

- All internal references are syntactically resolved; that is, the logical replacement is reflected in the Canonical syntactic representation. The REFERENCE tags corresponding to internal references are removed in this process.
- All ID-type attribute values, except that of the NAME attribute of ANCHOR elements, are assigned according to a known (to be specified) algorithm. This assignment is done to all such attributes whether they were present in the original document or not. All remaining IDREF and IDREFS-type attributes must be fixed up to reflect the new values of the ID-type attributes they reference.

5.2.3 Element Descriptions

The following basic principles apply to all element types:

- Any element with an ID attribute may have an REFERENCE child, and must have an optional REV attribute which may be used in an application specific way to track and manage revisions.
- Wherever DESCRIPTOR children are allowed, they are always the first children.

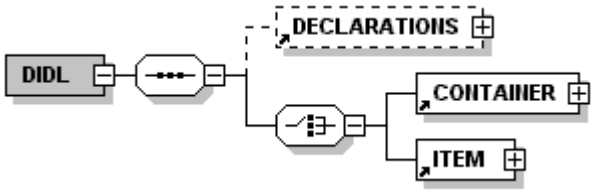
---

[2] *Canonical XML Version 1.0 Candidate Recommendation*, W3C, http://www.w3.org/TR/xml-c14n

- Elements that allow a REFERENCE child cannot have any required attributes. This is because an element containing aREFERENCE must be able to inherit attribute values from the reference target for any attributes that the referring element does not specify.
- In any element, aREFERENCE child may be preceded only by DESCRIPTOR (and possibly CONDITION) elements, and may not be followed by any elements.

5.2.4 <DIDL>

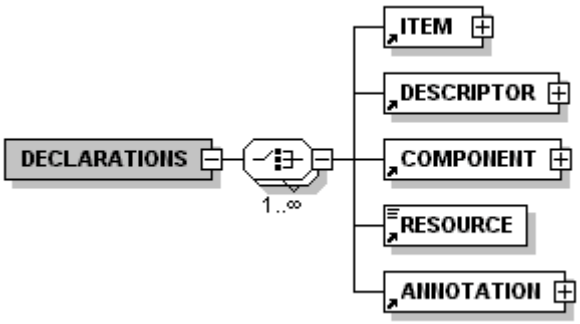
The DIDL element is the root element of a DIDL instance document. The DIDL root element may contain an optional DECLARATIONS element, followed a CONTAINER or an ITEM.

Diagram	
Children	<DECLARATIONS> <CONTAINER> <ITEM>

Source	`<xsd:element name="DIDL">`
	`  <xsd:complexType>`
	`  <xsd:sequence>`
	`  <xsd:element ref="DECLARATIONS" minOccurs="0"/>`
	`  <xsd:choice>`
	`  <xsd:element ref="CONTAINER"/>`
	`  <xsd:element ref="ITEM"/>`
	`  </xsd:choice>`
	`  </xsd:sequence>`
	`  </xsd:complexType>`
	`</xsd:element>`

5.2.5 <DECLARATIONS>

The DECLARATIONS element is used to define a set of DIDL elements - without instantiating them - for later use in a document via an internal reference (see <REFERENCE> element).

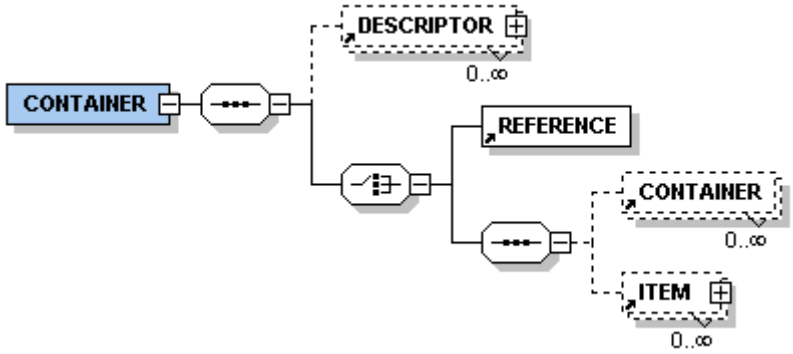
Diagram	
Children	<ITEM> <DESCRIPTOR> <COMPONENT> <RESOURCE> <ANNOTATION>
Used by	<DIDL>

Source	`<xsd:element name="DECLARATIONS">`
	`  <xsd:complexType>`
	`  <xsd:choice maxOccurs="unbounded">`
	`  <xsd:element ref="ITEM"/>`
	`  <xsd:element ref="DESCRIPTOR"/>`
	`  <xsd:element ref="COMPONENT"/>`
	`  <xsd:element ref="RESOURCE"/>`
	`  <xsd:element ref="ANNOTATION"/>`
	`  </xsd:choice>`
	`  </xsd:complexType>`
	`</xsd:element>`

5.2.6 <CONTAINER>

The CONTAINER element represents a *Container*. As such, it is a grouping of ITEMs and/or possibly other CONTAINERs, bound with a set of DESCRIPTORS that contain descriptive information about the *container*.

Diagram



Children <DESCRIPTOR> <REFERENCE> <CONTAINER> <ITEM>

Used by <CONTAINER> <DIDL>

Attributes

Name	Type	Description
ID	ID	A unique ID value.

Source

```
<xsd:element name="CONTAINER">
<xsd:complexType>
<xsd:sequence>
    <xsd:element ref="DESCRIPTOR" minOccurs="0" maxOccurs="unbounded"/>
    <xsd:choice>
    <xsd:element ref="REFERENCE"/>
        <xsd:sequence>
        <xsd:element ref="CONTAINER" minOccurs="0" maxOccurs="unbounded"/>
        <xsd:element ref="ITEM" minOccurs="0" maxOccurs="unbounded"/>
        </xsd:sequence>
    </xsd:choice>
</xsd:sequence>
<xsd:attributeGroup ref="ID_ATTRS"/>
</xsd:complexType>
</xsd:element>
```

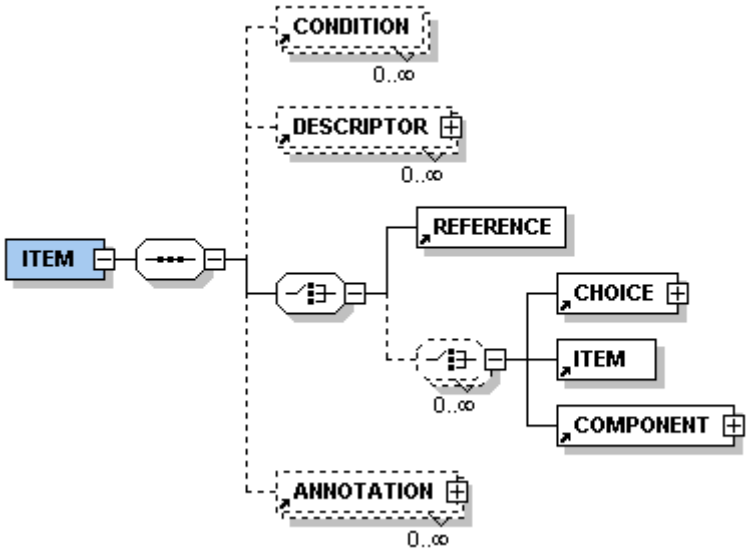
5.2.7 <ITEM>

An ITEM element represents an *Item*. As such, it is a grouping of possible sub-ITEMs and/or COMPONENTs, bound to a set of relevant DESCRIPTORs containing descriptive information about the *item*. In addition, an ITEM can be made conditional via a set of CONDITION child elements, made configurable via a set of CHOICE elements, and annotated via a set of ANNOTATION elements.

ITEMs are intended to be the lowest level of granularity visible to an end-user. In other words, a user interface would allow end-users to access the ITEMs within an ITEM, but not the COMPONENTs within an ITEM.

Validation Rules:

- An ITEM element cannot be conditional on any of its descendant SELECTION elements. In other words, an ITEM cannot contain a CONDITION element specifying a SELECT_ID value that identifies any descendant SELECTION element within the ITEM.

<table>
<tr><td>Diagram</td><td> 
</td></tr>
<tr><td>Children</td><td><CONDITION> <CHOICE> <DESCRIPTOR> <REFERENCE> <ITEM> <COMPONENT> <ANNOTATION></td></tr>
<tr><td>Used by</td><td><DECLARATIONS> <ITEM> <CONTAINER> <DIDL></td></tr>
<tr><td>Attributes</td><td>
<table>
<tr><th>Name</th><th>Type</th><th>Description</th></tr>
<tr><td>ID</td><td>ID</td><td>A unique ID value.</td></tr>
</table>
</td></tr>
</table>

Source

```
<xsd:element name="ITEM">
    <xsd:complexType>
        <xsd:sequence>
            <xsd:element ref="CONDITION" minOccurs="0" maxOccurs="unbounded"/>
            <xsd:element ref="DESCRIPTOR" minOccurs="0" maxOccurs="unbounded"/>
            <xsd:choice>
                <xsd:element ref="REFERENCE"/>
                <xsd:choice minOccurs=”0” maxOccurs="unbounded">
                    <xsd:element ref="CHOICE"/>
                    <xsd:element ref="ITEM"/>
                    <xsd:element ref="COMPONENT"/>
                </xsd:choice>
            </xsd:choice>
            <xsd:element ref="ANNOTATION" minOccurs="0" maxOccurs="unbounded"/>
        </xsd:sequence>
        <xsd:attributeGroup ref="ID_ATTRS"/>
    </xsd:complexType>
</xsd:element>
```

Example:

The following example illustrates how CONTAINERs and ITEMs can be used to represent a *container* of some kind (perhaps a shelf or a bin) that contains a single composite *item* – a “compilation.” The CONTAINER represents the shelf or bin, the outermost ITEM represents the composite *item* as a whole, and the inner ITEMs represent the individual *items* that make up the compilation.

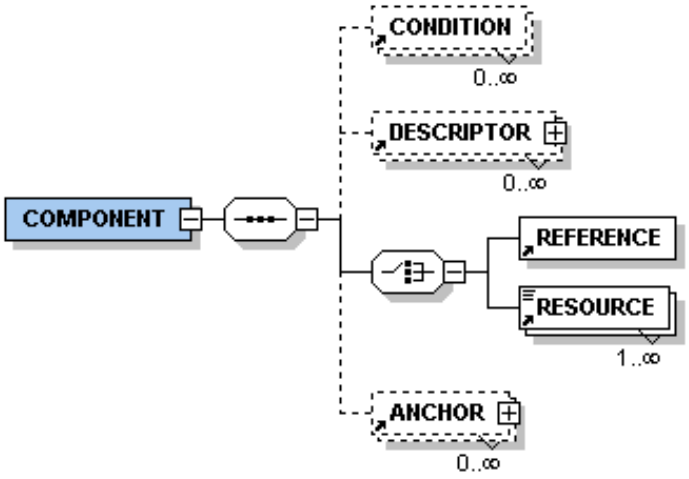
```
<DIDL>
  <CONTAINER>
    <ITEM>
      <ITEM>
        .
        .
        .
      </ITEM>
      <ITEM>
        .
        .
        .
      </ITEM>
    </ITEM>
  </CONTAINER>
</DIDL>
```

5.2.8 <COMPONENT>

A COMPONENT element represents a *Component*. As such, it groups a RESOURCE element with a set of DESCRIPTORs containing descriptive information about the *resource*, plus a set of ANCHORs specifying points or regions of interest in the *resource*. The COMPONENT, being a logical union of a *resource* with relevant descriptive data and *anchors*, is intended to be the basic building block of digital content within a DIDL document.

If multiple RESOURCE children are present, they are considered equivalent and any one of them may be used. An agent may discriminate between them using specific information it has about retrieval from these sources, or using such information present in a DESCRIPTOR.

Diagram



Children <CONDITION> <DESCRIPTOR> <REFERENCE> <RESOURCE> <ANCHOR>

Used by <DECLARATIONS> <DESCRIPTOR> <ITEM>

Attributes

Name	Type	Description
ID	ID	A unique XML identifier value.

Source

```
<xsd:element name="COMPONENT">
    <xsd:complexType>
        <xsd:sequence>
            <xsd:element ref="CONDITION" minOccurs="0" maxOccurs="unbounded"/>
            <xsd:element ref="DESCRIPTOR" minOccurs="0" maxOccurs="unbounded"/>
            <xsd:choice>
                <xsd:element ref="REFERENCE"/>
                <xsd:element ref="RESOURCE" minOccurs="1" maxOccurs="unbounded"/>
            </xsd:choice>
            <xsd:element ref="ANCHOR" minOccurs="0" maxOccurs="unbounded"/>
        </xsd:sequence>
        <xsd:attributeGroup ref="ID_ATTRS"/>
    </xsd:complexType>
</xsd:element>
```

5.2.9 <RESOURCE>

A RESOURCE element represents a *Resource*. As such, it defines an individually identifiable asset such as a video or audio clip, an image, an electronic ticket, or a textual work.

Normally, a *resource* is defined in a RESOURCE element by reference, by specifying the *resource*'s URI in the REF attribute. The URI identifies the *resource* and allows an application to retrieve the *resource*'s contents. The identification scheme covering this URI is given in ISO/IEC 21000-3 (Digital Item Identification and Description).

The type of the *resource* is identified by the TYPE attribute, which is a URI value. The specific URI values for data types defined by MPEG are given in ISO/IEC 21000-3 (Digital Item Identification and Description). In addition, other organizations may define their own data types, which would be identified by their own set of unique URI values.

The LOCAL_PATH attribute specifies the required location for a local copy of the *resource*. This is useful when there are location dependencies between *resource*s, such as an HTML file that references a set of JPEG images in some directory hierarchy.

It is also possible to define a *resource* by value, by including the *resource*'s data as CDATA within the RESOURCE element.

Validation Rules:

- If the REF attribute is specified, then the RESOURCE cannot contain CDATA, and vice-versa.

<table>
<tr><td>Used by</td><td colspan="3"><COMPONENT> <DECLARATIONS></td></tr>
<tr><td rowspan="4">Attributes</td><td>Name</td><td>Type</td><td>Description</td></tr>
<tr><td>TYPE</td><td>uriReference</td><td>A URI value indicating the type of the resource.</td></tr>
<tr><td>REF</td><td>uriReference</td><td>The URI value that identifies the resource. If the REF attribute is omitted, then the element must contain the resource inline as CDATA.</td></tr>
<tr><td>LOCAL_PATH</td><td>uriReference</td><td>Specifies the required location for a cached version of the resource.</td></tr>
<tr><td>Source</td><td colspan="3"><pre>
<xsd:element name="RESOURCE">
    <xsd:complexType mixed="true">
        <xsd:attribute name="TYPE" type="xsd:uriReference"/>
        <xsd:attribute name="REF" type="xsd:uriReference"/>
        <xsd:attribute name="LOCAL_PATH" type="xsd:uriReference"/>
    </xsd:complexType>
    <!-- "mixed" content model allows for embedded resources -->
</xsd:element>
</pre></td></tr>
</table>

Example:

We'll add COMPONENTs and RESOURCEs to the same example document as before to illustrate how they might be used. Each individual *item*, represented by each inner ITEM, contains a *component* that comprises a single photographic *resource*. Thus, this document could be used to represent a shelf (the CONTAINER) containing a photo album (the outermost ITEM) made up of two individual photographs (the two inner ITEMS).

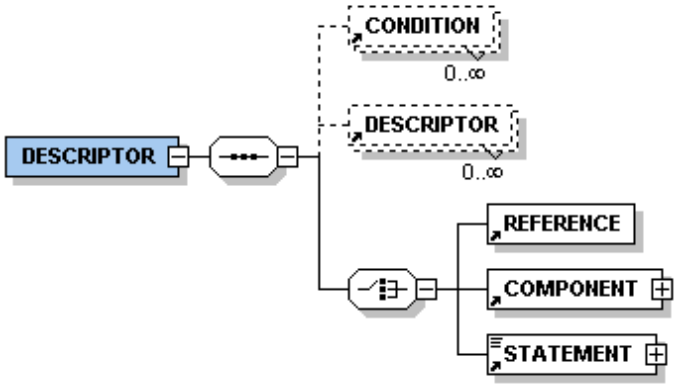
```
<DIDL>
  <CONTAINER>
    <ITEM>
      <ITEM>
         <COMPONENT>
           <RESOURCE REF="myFirstPicture.jpg" TYPE="<some preamble>/image/jpg" />
         </COMPONENT>
       </ITEM>
       <ITEM>
         <COMPONENT>
           <RESOURCE REF="mySecondPic.bmp" TYPE="<some preamble>/image/bmp" />
         </COMPONENT>
       </ITEM>
    </ITEM>
  </CONTAINER>
</DIDL>
```

5.2.10 <DESCRIPTOR>

A DESCRIPTOR represents a *Descriptor*. As such, it associates information with its parent element. This information may be contained in a COMPONENT element, or a STATEMENT element.

Typically, a DESCRIPTOR is used to associate descriptive data with a parent element. Descriptive data can take the form of a *component* or a *statement*. An example of a *component* containing descriptive data is that of a thumbnail version of a photographic image. An example of a *statement* containing descriptive data is that of a simple textual description, or meta-data, such as the title and author of a work.

Diagram



Children <CONDITION> <DESCRIPTOR> <REFERENCE> <COMPONENT> <STATEMENT>

Used by <ANCHOR> <ANNOTATION> <CHOICE> <COMPONENT> <CONTAINER> <DECLARATIONS> <DESCRIPTOR> <ITEM> <SELECTION>

Attributes

Name	Type	Description
ID	ID	A unique ID value.

Source

```
<xsd:element name="DESCRIPTOR">
    <xsd:complexType>
        <xsd:sequence>
            <xsd:element ref="CONDITION" minOccurs="0" maxOccurs="unbounded"/>
            <xsd:element ref="DESCRIPTOR" minOccurs="0" maxOccurs="unbounded"/>
            <xsd:choice>
                <xsd:element ref="REFERENCE"/>
                <xsd:element ref="COMPONENT"/>
                <xsd:element ref="STATEMENT"/>
            </xsd:choice>
        </xsd:sequence>
        <xsd:attributeGroup ref="ID_ATTRS"/>
    </xsd:complexType>
</xsd:element>
```

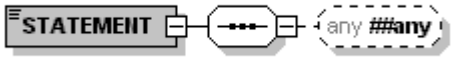
5.2.11 <STATEMENT>

A STATEMENT represents a *Statement*. As such, it defines a piece of information (but not an asset) pertaining to the parent element. Examples of likely STATEMENTs include descriptive, control, revision tracking or identifying information.

A STATEMENT can contain any data format, including plain text and various machine-readable formats such as well-formed XML. The format is identified by the value of the TYPE attribute, which is a URI. The specific URI values associated with each type defined by MPEG are given in ISO/IEC 21000-3 (Digital Item Identification and Description). In addition, other organizations may define their own data types, which would be identified by their own set of unique URI values.

A STATEMENT containing plain text can be used to associate a human-readable description with the parent element. A STATEMENT containing data in some machine-readable format (such as well-formed XML) can be used to express application-specific metadata in an application-specific form. The machine-readable type of STATEMENT is intended to preserve associations of application-specific meta-data with various elements, without requiring that all applications handling a document be able to process the meta-data. For example, a STATEMENT that binds a proprietary type of meta-data with an ITEM may be understandable only by a particular product of a particular company, but still any product that handles DIDL documents will preserve the association.

For STATEMENTs containing well-formed XML, the grammar (i.e. the schema) of the XML fragment contained within the *statement* is identified by the namespace of the fragment.

<table>
<tr><td>Diagram</td><td colspan="3"> 
</td></tr>
<tr><td>Used by</td><td colspan="3"><DESCRIPTOR></td></tr>
<tr><td rowspan="2">Attributes</td><td>Name</td><td>Type</td><td>Description</td></tr>
<tr><td>TYPE</td><td>uriReference</td><td>Identifies the format of descriptive information contained within.</td></tr>
<tr><td>Source</td><td colspan="3"><pre>
<xsd:element name="STATEMENT">
  <xsd:complexType mixed="true">
    <xsd:sequence>
      <xsd:any namespace="##any" processContents="skip" minOccurs="0"/>
    </xsd:sequence>
    <xsd:attribute name="TYPE" type="xsd:uriReference"/>
  </xsd:complexType>
</xsd:element>
</pre></td></tr>
</table>

Example:

We now add DESCRIPTORs with STATEMENTs to our example. The first DESCRIPTOR gives a human-readable description for the shelf. The second DESCRIPTOR gives a description for the photo album. The third and fourth DESCRIPTORs give descriptions for each of the individual photos in the album.

```
<DIDL>
  <CONTAINER>
    <DESCRIPTOR>
      <STATEMENT TYPE="<some preamble>/text/text">My Photo Albums</STATEMENT>
    </DESCRIPTOR>
```

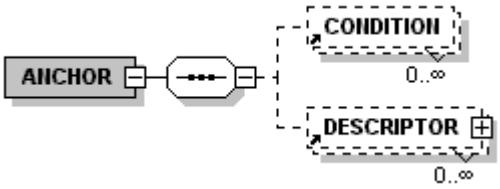
```
    <ITEM>
      <DESCRIPTOR>
        <STATEMENT TYPE="<some preamble>/text/text">Photo Album #1</STATEMENT>
      </DESCRIPTOR>
      <ITEM>
        <DESCRIPTOR>
          <STATEMENT TYPE="<some preamble>/text/text">
            Johnny's first day at school
          </STATEMENT>
        </DESCRIPTOR>
         <COMPONENT>
           <RESOURCE REF="myFirstPicture.jpg" TYPE="<some preamble>/image/jpg" />
         </COMPONENT>
       </ITEM>
       <ITEM>
        <DESCRIPTOR>
          <STATEMENT TYPE="<some preamble>/text/text">
            Jane's first day at school
          </STATEMENT>
        </DESCRIPTOR>
         <COMPONENT>
           <RESOURCE REF="mySecondPic.bmp" TYPE="<some preamble>/image/bmp" />
         </COMPONENT>
       </ITEM>
    </ITEM>
  </CONTAINER>
</DIDL>
```

5.2.12 <ANCHOR>

An ANCHOR element represents an *Anchor*. As such, it binds a set of DESCRIPTORs to a specific location or range within the *resource* identified by the RESOURCE element within the parent COMPONENT element. The *reference* part of the *anchor* element in the Model is represented in an ANCHOR element by the FRAGMENT attribute. The FRAGMENT attribute is a URI fragment which, when appended to the *resource* URI plus a '#' character, specifies the desired point or range of interest within the associated *resource*.

> Note: For future consideration, it may be desirable to add an element to ANCHOR that allows a more explicit media fragment specifier, such as an MPEG-7 MediaTime element.

The NAME attribute is used as a potential target for reference by an external *resource*, such as the *resource* with which the ANCHOR is associated (the RESOURCE element in the ANCHOR's parent COMPONENT element). This allows for a two-way linkage between an *anchor* and a *resource*. In practice, it is desirable that the value of this NAME attribute be made globally unique, like a GUID, so that it never needs to be changed. Since DIDL agents will not necessarily be able to edit any *resource*, this is the only way to guarantee that the two-way linkage is preserved.

<table>
<tr><td>Diagram</td><td colspan="3"> 
</td></tr>
<tr><td>Children</td><td colspan="3"><CONDITION> <DESCRIPTOR></td></tr>
<tr><td>Used by</td><td colspan="3"><ANNOTATION> <COMPONENT></td></tr>
<tr><td rowspan="4">Attributes</td><td>Name</td><td>Type</td><td>Description</td></tr>
<tr><td>PRECEDENCE</td><td>unsignedInt</td><td>A unsigned integer value indicating the relative ranking of this ANCHOR among the other anchors in the nearest ancestor ITEM. The ANCHOR with the highest precedence value is the default anchor for the ITEM.</td></tr>
<tr><td>FRAGMENT</td><td>uriReference</td><td>A URI fragment that, when appended to the value of the URI attribute of the associated RESOURCE element, followed by a pound sign (“#”), locates the point or range of interest within the associated resource.</td></tr>
<tr><td>NAME</td><td>ID</td><td>A unique ID value that can be referenced by an external resource.</td></tr>
<tr><td>Source</td><td colspan="3"><pre>
<xsd:element name="ANCHOR">
    <xsd:complexType>
        <xsd:sequence>
            <xsd:element ref="CONDITION" minOccurs="0" maxOccurs="unbounded"/>
            <xsd:element ref="DESCRIPTOR" minOccurs="0" maxOccurs="unbounded"/>
        </xsd:sequence>
        <xsd:attribute name="PRECEDENCE"
                       type="xsd:unsignedInt" use="default" value="0"/>
        <xsd:attribute name="FRAGMENT" type="xsd:uriReference"/>
        <xsd:attribute name=”NAME” type=”xsd:ID”/>
    </xsd:complexType>
</xsd:element>
</pre></td></tr>
</table>

Example:

This example is a single ITEM showing how multiple ANCHORs could be used on a single RESOURCE within a COMPONENT. The first *anchor* attaches a description “The whole session” to the beginning of the audio clip. The second *anchor* attaches a different description “Jim’s killer drum solo” to a time-point of 17 minutes and 30 seconds past the beginning of the clip (using a fictitious media_time() function as a URI fragment). The assigned PRECEDENCE values tell a user interface to display the first *anchor* before the second one when displaying the list of *anchor*s, and to make the first *anchor* the default.

```
<DIDL>
  <ITEM>
      <COMPONENT>
      <ANCHOR PRECEDENCE=”200”>
        <DESCRIPTOR>
          <STATEMENT TYPE=”<some preamble>/text/text”>The whole session</STATEMENT>
        </DESCRIPTOR>
      </ANCHOR>
      <ANCHOR PRECEDENCE=”100” FRAGMENT=”media_time(17:30)”>
        <DESCRIPTOR>
          <STATEMENT TYPE=”<some preamble>/text/text”>
            Jim’s killer drum solo
          </STATEMENT>
        </DESCRIPTOR>
      </ANCHOR>
      <RESOURCE REF="JimsGarageBand.mp3" TYPE="<some preamble>/audio/mp3" />
    </COMPONENT>
  </ITEM>
</DIDL>
```

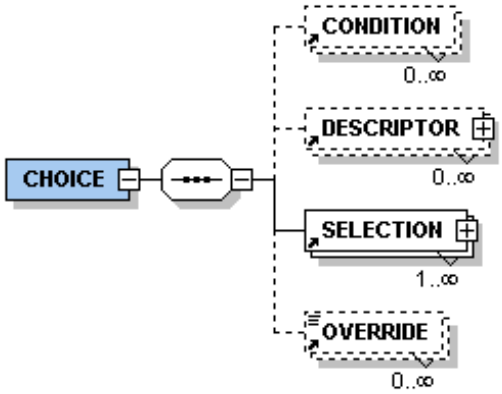
5.2.13 <CHOICE>

A CHOICE element represents a *Choice*. As such, it encapsulates a set of related SELECTIONs that can affect the configuration of an ITEM. The optional MIN_SELECTIONS and MAX_SELECTIONS attributes specify the number of SELECTIONs that must be made for a *choice* to be validly resolved. For example, if MIN_SELECTIONS and MAX_SELECTIONS are omitted, then the CHOICE is multiple, meaning that any number of SELECTIONs may be made, including zero. If the MIN_SELECTIONS and MAX_SELECTIONS attributes are both set to '1', then the CHOICE is single, meaning that exactly one SELECTION must be chosen.

Any CHOICE element can override one or more other CHOICE elements in the current document or in an external document by including one or more OVERRIDE child elements. Each OVERRIDE child element identifies another CHOICE element that is superseded by the OVERRIDE's parent CHOICE.

Validation Rules:

- The value of the MAX_SELECTIONS attribute must be no less than the value of the MIN_SELECTIONS attribute.
- The value of the MAX_SELECTIONS attribute must be nonzero.
- The value of the MIN_SELECTIONS attribute must be no larger than the number of SELECTION children.
- The values indicated in the DEFAULT attribute must only correspond to SELECT_IDs of the SELECTIONS within this CHOICE. The number of values in the DEFAULT attribute may not be less than the value of the MIN_SELECTIONS attribute, nor more than the value of the MAX_SELECTIONS attribute.

Diagram			
Children	<CONDITION> <DESCRIPTOR> <SELECTION> <OVERRIDE>		
Used by	<ITEM>		
Attributes	**Name**	**Type**	**Description**
	MIN_SELECTIONS	NonNegativeInteger	Minimum number of SELECTIONs that must be made. If not present, there is no minimum number.
	MAX _SELECTIONS	NonNegativeInteger	Maximum number of SELECTIONs that must be made. If not present, there is no maximum number.

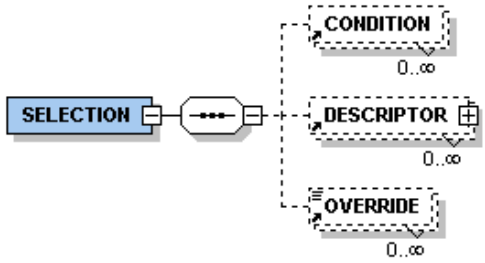
	DEFAULT	IDREFS	A list of ID values defined in SELECT_ID attributes of SELECTION elements, indicating the set of default selections for this choice.
	CHOICE_ID	ID	Serves as the target for an ASSERTION element.
Source	<xsd:element name="CHOICE"> <xsd:complexType> <xsd:sequence> <xsd:element ref="CONDITION" minOccurs="0" maxOccurs="unbounded"/> <xsd:element ref="DESCRIPTOR" minOccurs="0" maxOccurs="unbounded"/> <xsd:element ref="SELECTION" maxOccurs="unbounded"/> <xsd:element ref=”OVERRIDE” minOccurs=”0” maxOccurs = “unbounded”/> </xsd:sequence> <xsd:attribute name="MIN_SELECTIONS" type="xsd:nonNegativeInteger"/> <xsd:attribute name="MAX_SELECTIONS" type="xsd:nonNegativeInteger"/> <xsd:attribute name="DEFAULT" type="xsd:IDREFS"/> <xsd:attribute name="CHOICE_ID" type="xsd:ID"/> </xsd:complexType> </xsd:element>		

5.2.14 <SELECTION>

A SELECTION element represents a *Selection*. As such, it defines a specific decision about a particular CHOICE. The SELECT_ID attribute value identifies the *Predicate* embodied by the SELECTION, and relates it to one or more CONDITIONs somewhere within an ITEM. At configuration time*, if the *selection* is chosen, its *predicate* becomes True; if it is rejected, its *predicate* becomes False; if it is left unresolved, its *predicate* is left Undecided.

Note that SELECTIONs and entire CHOICEs may be made conditional (i.e. may have one or more CONDITION child elements). This makes it possible to implement complex decision trees in which certain selections may make certain subsequent CHOICEs or SELECTIONs redundant. For example, a DIDL document might contain a CHOICE on whether to include a supplemental video clip, followed by a CHOICE on the encoding preference of the video clip. If, during configuration time, the video clip SELECTION is rejected, then the encoding preference CHOICE can, and should be, skipped.

Any SELECTION element can override one or more other SELECTION elements in the current document or in an external document by including one or more OVERRIDE child elements. Each OVERRIDE child element identifies another SELECTION element that is superseded by the OVERRIDE's parent CHOICE.

<table>
<tr><td>Diagram</td><td> 
</td></tr>
<tr><td>Children</td><td><CONDITION> <DESCRIPTOR> <OVERRIDE></td></tr>
<tr><td>Used by</td><td><CHOICE></td></tr>
<tr><td>Attributes</td><td><table>
<tr><th>Name</th><th>Type</th><th>Description</th></tr>
<tr><td>SELECT_ID</td><td>ID</td><td>An ID value that can be referenced in a CONDITION element.</td></tr>
</table></td></tr>
<tr><td>Source</td><td><pre>
<xsd:element name="SELECTION">
  <xsd:complexType>
    <xsd:sequence>
      <xsd:element ref="CONDITION" minOccurs="0" maxOccurs="unbounded"/>
      <xsd:element ref="DESCRIPTOR" minOccurs="0" maxOccurs="unbounded"/>
      <xsd:element ref=”OVERRIDE” minOccurs=”0” maxOccurs = “unbounded”/>
      </xsd:sequence>
    <xsd:attribute name="SELECT_ID" type="xsd:ID" use="required"/>
  </xsd:complexType>
</xsd:element>
</pre></td></tr>
</table>

* The time when some software agent decides it is the appropriate time to make decisions on the SELECTIONs defined within a CHOICE

5.2.15 <CONDITION>

A CONDITION element represents a *Condition*. As such, it denotes the parent element as being conditional on a set of predicate tests. The REQUIRE attribute lists the set of *predicate*s that must become true, and the EXCEPT attribute lists the set of *predicate*s that must become false, in order for the condition to be satisfied. Each *predicate* is identified by the value of the SELECT_ID attribute in a SELECTION element.

A set of CONDITION elements defines a Boolean combination of predicate tests. Multiple tests within a CONDITION are combined as a conjunction (an AND relationship). Multiple CONDITION elements within a given parent are combined as a disjunction (an OR relationship).

Validation Rules:

- Each ID value specified in the REQUIRE and EXCEPT attributes must match a SELECT_ID attribute value defined in a SELECTION element located somewhere within an ITEM element that is an ancestor of the CONDITION.

Used by	<ANCHOR> <CHOICE> <COMPONENT> <DESCRIPTOR> <ITEM> <SELECTION>		
Attributes	**Name**	**Type**	**Description**
	REQUIRE	IDREFS	A list of ID values matching SELECT_ID attribute of SELECTION element(s), indicating the SELECTION(s) that must be asserted for this CONDITION to evaluate to True.
	EXCEPT	IDREFS	A list of ID values matching SELECT_ID attribute of SELECTION element(s), indicating the SELECTION(s) that must be asserted for this CONDITION to evaluate to False.
Source	<xsd:element name="CONDITION"> <xsd:complexType> <xsd:attribute name="REQUIRE" type="xsd:IDREFS"/> <xsd:attribute name="EXCEPT" type="xsd:IDREFS"/> </xsd:complexType> </xsd:element>		

Example:

This example shows a simple CHOICE. The CHOICE specifies two SELECTIONs and specifies that exactly one SELECTION must be chosen. The DESCRIPTOR for the CHOICE describes the *choice* in a human-readable format, and the DESCRIPTORs for the SELECTIONs do likewise. If the user chooses “I want MP3”, then the MP3_FORMAT *predicate* becomes true and the WMA_FORMAT *predicate* becomes false, so the first COMPONENT is retained and the second one is discarded. Likewise, if the user chooses “I want WMA”, then the WMA_FORMAT *predicate* becomes true and the MP3_FORMAT *predicate* becomes false, so the first is discarded and the second one is retained.

```
<DIDL>
  <ITEM>
    <CHOICE MIN_SELECTIONS=”1” MAX_SELECTIONS=”1”>
      <DESCRIPTOR>
        <STATEMENT TYPE=”<some preamble>/text/text”>
          What format would you prefer?
        </STATEMENT>
      </DESCRIPTOR>
      <SELECTION SELECT_ID=”MP3_FORMAT”>
        <DESCRIPTOR>
          <STATEMENT TYPE=”<some preamble>/text/text”>I want MP3</STATEMENT>
        </DESCRIPTOR>
      </SELECTION>
      <SELECTION SELECT_ID=”WMA_FORMAT”>
        <DESCRIPTOR>
          <STATEMENT TYPE=”<some preamble>/text/text”>I want WMA</STATEMENT>
        </DESCRIPTOR>
      </SELECTION>
    </CHOICE>
    <COMPONENT>
      <CONDITION REQUIRE=”MP3_FORMAT”/>
      <RESOURCE REF=”clip.mp3” TYPE=”<some preamble>/audio/mp3”/>
    </COMPONENT>
    <COMPONENT>
      <CONDITION REQUIRE=”WMA_FORMAT”/>
      <RESOURCE REF=”clip.wma” TYPE=”<some preamble>/audio/wma”/>
    </COMPONENT>
  </ITEM>
</DIDL>
```

5.2.16 <OVERRIDE>

The OVERRIDE element is used to identify a CHOICE or SELECTION that is superseded by the parent of the OVERRIDE.

The TARGET attribute identifies the CHOICE or SELECTION being overridden. The TARGET can identify a CHOICE or SELECTION within the parent document, or in an external document.

Validation Rules:

- The value given in the TARGET attribute must resolve to the same element type as the parent of the OVERRIDE. In other words, CHOICEs can only override CHOICEs; SELECTIONs can only override SELECTIONs.

Used by	<CHOICE> <SELECTION>		
Attributes	**Name**	**Type**	**Description**
	TARGET	uriReference	An XPointer expression identifying the CHOICE or SELECTION being overridden.
Source	<xsd:element name="OVERRIDE"> <xsd:complexType> <xsd:attribute name="TARGET" type="xsd:uriReference"/> </xsd:complexType> </xsd:element>		

Example:

In this example, the top-level ITEM (with the ID 'PISA_ALBUM') refers to three child ITEMs contained in files 'PisaItem1.xml', 'PisaItem2.xml' and 'PisaItem3.xml'. The top-level ITEM defines an image format CHOICE that overrides the like CHOICEs in the sub-ITEM documents. All of the image format CHOICEs in the sub-ITEMs can be overridden as wholes, because they are all alike. However, in the case of the compression ratio CHOICE, some of the CHOICEs in the sub-ITEMs contain SELECTIONs that are not common with the corresponding CHOICE in one or more of the other sub-ITEMs. So, the overriding compression ratio CHOICE will only override the SELECTIONs it matches.

```
<DIDL>
    <!-- ############################## PHOTO ALBUM ITEM ##############################-->
    <ITEM ID="PISA_ALBUM">
        <DESCRIPTOR>
            <STATEMENT> Photo Album: Journey to Pisa with music and script. </STATEMENT>
        </DESCRIPTOR>
        <!-- ################################## CHOICE ##################################-->
        <!-- ========================== PHOTO CONFIGURATION ==========================-->
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="IMAGE_FORMAT">
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> Select a proper Image Format for your Digital
                 Item Configuration. </STATEMENT>
            </DESCRIPTOR>
            <!-- ITEM1, ITEM2 and ITEM3 have CHOICE that includes the same SELECTIONS -->
            <OVERRIDE TARGET="PISAITEM1.XML#IMAGE_FORMAT"/>
            <OVERRIDE TARGET="PISAITEM2.XML#IMG_FORMAT"/>
            <OVERRIDE TARGET="PISAITEM3.XML#IMG_FORMAT"/>
            <SELECTION SELECT_ID="JPG_FORMAT">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> JPEG </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
            <SELECTION SELECT_ID="BMP_FORMAT">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> BMP </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
        </CHOICE>
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="JPG_COMPRESSION_RATIO">
            <CONDITION REQUIRE="JPG_FORMAT"/>
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> Select a proper Compression Ratio for your
                 Digital Item Configuration. </STATEMENT>
            </DESCRIPTOR>
            <SELECTION SELECT_ID="RATIO_1">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> RATIO 1 </STATEMENT>
                </DESCRIPTOR>
                <OVERRIDE REF="PISAITEM1.XML#RATIO_1"/>
                <OVERRIDE REF="PISAITEM2.XML#RATIO_1"/>
                <OVERRIDE REF="PISAITEM3.XML#RATIO_1"/>
            </SELECTION>
            <SELECTION SELECT_ID="RATIO_8">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> RATIO 8 </STATEMENT>
                </DESCRIPTOR>
                <OVERRIDE REF="PISAITEM1.XML#RATIO_8"/>
                <OVERRIDE REF="PISAITEM2.XML#RATIO_8"/>
                <OVERRIDE REF="PISAITEM3.XML#RATIO_8"/>
            </SELECTION>
        </CHOICE>
        <!-- ############################ REFERENCED PHOTO ITEMs ############################-->
        <ITEM>
            <REFERENCE URI="PISAITEM1.XML#PISA_PHOTO1"/>
        </ITEM>
        <ITEM>
```

```
            <REFERENCE URI="PISAITEM2.XML#PISA_PHOTO2"/>
        </ITEM>
        <ITEM>
            <REFERENCE URI="PISAITEM3.XML#PISA_PHOTO3"/>
        </ITEM>
    </ITEM>
</DIDL>



<DIDL>
    <!-- ################################### PISAITEM1 ###################################-->
    <ITEM ID="PISA_PHOTO1">
        <!-- ################################ CHOICE [PHOTO] ################################-->
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="IMAGE_FORMAT">
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> Select a proper Image Format for your Digital
                 Item Configuration. </STATEMENT>
            </DESCRIPTOR>
            <SELECTION SELECT_ID="JPG_FORMAT">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> JPEG </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
            <SELECTION SELECT_ID="BMP_FORMAT">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> BMP </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
        </CHOICE>
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="JPG_COMPRESSION_RATIO">
            <CONDITION REQUIRE="JPG_FORMAT"/>
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> Select a proper Compression Ratio for your
                 Digital Item Configuration. </STATEMENT>
            </DESCRIPTOR>
            <SELECTION SELECT_ID="RATIO_1">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> RATIO 1 </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
            <SELECTION SELECT_ID="RATIO_8">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> RATIO 8 </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
        </CHOICE>
        <!-- ################################### COMPONENT ###################################-->
        <!-- ================================== JPG ====================================-->
        <COMPONENT ID="MyPhoto1-1">
            <CONDITION REQUIRE="JPG_FORMAT RATIO_8 "/>
            <RESOURCE REF="DSCN0001-8-1600x1200.jpg" TYPE="image/jpg"/>
        </COMPONENT>
        <COMPONENT ID="MyPhoto1-2">
            <CONDITION REQUIRE="JPG_FORMAT RATIO_1 "/>
            <RESOURCE REF="DSCN0001-1-1600x1200.jpg" TYPE="image/jpg"/>
        </COMPONENT>
        <!-- ================================== BMP ====================================-->
        <COMPONENT ID="MyPhoto1-1b">
            <CONDITION REQUIRE="BMP_FORMAT "/>
            <RESOURCE REF="Windows-800x600-DSCN0001.bmp" TYPE="image/bmp"/>
        </COMPONENT>
    </ITEM>
</DIDL>


<DIDL>
```

```
    <!-- ################################### PISAITEM2 ###################################-->
    <ITEM ID="PISA_PHOTO2">
        <DESCRIPTOR>
            <STATEMENT TYPE="text/plain"> Duomo in Pisa  </STATEMENT>
        </DESCRIPTOR>
        <DESCRIPTOR>
<STATEMENT TYPE="text/plain"> Included music is Yuhki Kuramoto's Sonnet of the Sea.
</STATEMENT>
        </DESCRIPTOR>
        <!-- ################################ CHOICE [PHOTO] ################################-->
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="IMG_FORMAT">
            ...
            <SELECTION SELECT_ID="JPG_FORMAT"/>
            <SELECTION SELECT_ID="BMP_FORMAT"/>
        </CHOICE>
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="JPG_COMPRESS">
            <CONDITION REQUIRE="JPG_FORMAT"/>
            <SELECTION SELECT_ID="RATIO_1"/>
            <SELECTION SELECT_ID=”RATIO_4”/>
            <SELECTION SELECT_ID="RATIO_8"/>
        </CHOICE>
        <!-- ################################ COMPONENT ################################-->
        <!-- ================================== JPG ==================================-->
        <COMPONENT ID="MyPhoto2-1">
            <CONDITION REQUIRE="JPG_FORMAT RATIO_8 "/>
            <RESOURCE REF="DSCN0002-8-1600x1200.jpg" TYPE="image/jpg"/>
        </COMPONENT>
        <COMPONENT ID="MyPhoto2-2">
            <CONDITION REQUIRE="JPG_FORMAT RATIO_4 "/>
            <RESOURCE REF="DSCN0002-4-1600x1200.jpg" TYPE="image/jpg"/>
        </COMPONENT>
        <COMPONENT ID="MyPhoto2-3">
            <CONDITION REQUIRE="JPG_FORMAT RATIO_1"/>
            <RESOURCE REF="DSCN0002-1-1600x1200.jpg" TYPE="image/jpg"/>
        </COMPONENT>
        <!-- ================================== BMP ==================================-->
        <COMPONENT ID="MyPhoto2-1b">
            <CONDITION REQUIRE="BMP_FORMAT "/>
            <RESOURCE REF="Windows-800x600-DSCN0002.bmp" TYPE="image/bmp"/>
        </COMPONENT>
    </ITEM>
</DIDL>


<DIDL>
    <!-- ################################### PISAITEM3 ###################################-->
    <ITEM ID="PISA_PHOTO3">
        <DESCRIPTOR>
            <STATEMENT TYPE="text/plain">The Leaning tower of Pisa </STATEMENT>
        </DESCRIPTOR>
        <DESCRIPTOR>
            <STATEMENT TYPE="text/plain"> Included music is Yuhki Kuramoto's Nostalgia.
</STATEMENT>
        </DESCRIPTOR>
        <!-- ################################ CHOICE [PHOTO] ################################-->
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="IMG_FORMAT">
            <SELECTION SELECT_ID="JPG_FORMAT"/>
            <SELECTION SELECT_ID="BMP_FORMAT"/>
        </CHOICE>
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="JPG_COMPRESS">
            <CONDITION REQUIRE="JPG_FORMAT"/>
            <SELECTION SELECT_ID="RATIO_1"/>
            <SELECTION SELECT_ID="RATIO_8"/>
            <SELECTION SELECT_ID="RATIO_16"/>
        </CHOICE>
        <!-- ################################ COMPONENT ################################-->
        <!-- ================================== JPG ==================================-->
```

```
        <COMPONENT ID="MyPhoto3-1">
            <CONDITION REQUIRE="JPG_FORMAT RATIO_16"/>
            <RESOURCE REF="DSCN0003-16-1600x1200.jpg" TYPE="image/jpg"/>
        </COMPONENT>
        <COMPONENT ID="MyPhoto3-2">
            <CONDITION REQUIRE="JPG_FORMAT RATIO_8"/>
            <RESOURCE REF="DSCN0003-8-1600x1200.jpg" TYPE="image/jpg"/>
        </COMPONENT>
        <COMPONENT ID="MyPhoto3-3">
            <CONDITION REQUIRE="JPG_FORMAT RATIO_1"/>
            <RESOURCE REF="DSCN0003-1-1600x1200.jpg" TYPE="image/jpg"/>
        </COMPONENT>
        <!-- ================================== BMP ==================================-->
        <COMPONENT ID="MyPhoto3-1b">
            <CONDITION REQUIRE="BMP_FORMAT"/>
            <RESOURCE REF="Windows-800x600-DSCN0003.bmp" TYPE="image/bmp"/>
        </COMPONENT>
    </ITEM>
</DIDL>
```

5.2.17 <REFERENCE>

A REFERENCE represents a reference to one of the following DIDL elements: CONTAINER, ITEM, COMPONENT, DESCRIPTOR, ANCHOR, or ANNOTATION. It can represent an "internal reference" (i.e., a reference to another element located somewhere within the parent document), or an "external reference" (i.e., a reference to an element in an external DIDL document).

Semantically, a reference logically appends the contents of the referenced element (the element identified by the value of the REFERENCE's URI attribute) to the existing contents of the referring element (the REFERENCE's parent element). In addition, the values of any attributes not specified in the referring element are inherited from the referenced element.

When used for internal referencing, the REFERENCE allows a document author to maintain a single source for an element that occurs in more than one place within a single DIDL document. For example, in a document representing a photo album, an author may want to include identical authorship information for each of the individual photos within the album.

The use of REFERENCE as an external reference allows lengthy or complex DIDL documents to be split up into multiple discrete documents. This can be used, for example, for load-balancing or other techniques to make more efficient use of computing/network resources. Note that it is possible for an externally referenced element to contain internal references (i.e., reference within the referenced element) to elements declared in a DECLARATIONS element. In this situation, when resolving the reference, the required element declarations in the referenced document must be copied to the DECLARATIONS element within the root DIDL element of the referring element.

Note that the URI attribute is an XPointer expression that identifies the element being referenced. Since elements that can be referenced have an ID attribute, this XPointer expression will usually take the following form

http://abc.com/document1.didl#element_id

for an external reference, or

#element_id

for an internal reference.

Validation Rules:

- The name of the referenced element must match the name of the referring element. In other words, an ITEM can only reference an ITEM, and likewise for the other elements.
- The reference must be acyclic. In other words, the REFERENCE must not, either directly or indirectly (through a chain of references) reference its parent element.

Used by	<ANCHOR> <COMPONENT> <CONTAINER> <DESCRIPTOR> <ITEM> <ANNOTATION>		
Attributes	**Name**	**Type**	**Description**
	URI	uriReference	An XPointer expression identifying the element being referenced.
Source	<xsd:element name="REFERENCE"> <xsd:complexType> <xsd:attribute name="URI" type="xsd:uriReference" use="required"/> </xsd:complexType> </xsd:element>		

Example:

This example shows how REFERENCE elements are used to reference elements within the parent document (internal references). In this case, the referenced element (the target of the REFERENCE) is declared in a DECLARATIONS element. The declared element is a DESCRIPTOR, which is logically duplicated (via REFERENCEs) in each of the child ITEMs within the photo album ITEM.

```
<DIDL>
  <DECLARATIONS>
    <DESCRIPTOR ID=”PHOTO_INFO”>
      <STATEMENT TYPE=”<some preamble>/text/text”>
        Taken with my new SnazzyCam
      </STATEMENT>
    </DESCRIPTOR>
  </DECLARATIONS>
  <ITEM>
    <DESCRIPTOR>
      <STATEMENT TYPE=”<some preamble>/text/text”>Photo Album #1</STATEMENT>
    </DESCRIPTOR>
    <ITEM>
      <DESCRIPTOR><REFERENCE URI=”#PHOTO_INFO”/></DESCRIPTOR>
      <COMPONENT>
        <RESOURCE REF="myFirstPicture.jpg" TYPE="<some preamble>/image/jpg" />
      </COMPONENT>
    </ITEM>
    <ITEM>
      <DESCRIPTOR><REFERENCE URI=”#PHOTO_INFO”/></DESCRIPTOR>
      <COMPONENT>
        <RESOURCE REF="mySecondPic.bmp" TYPE="<some preamble>/image/bmp" />
      </COMPONENT>
    </ITEM>
  </ITEM>
</DIDL>
```

Example:

This example shows how REFERENCE elements can be used as external references, to create composite DIDL documents from two or more discrete documents. Note that the DESCRIPTORs in the root document are retained after the references are resolved. These DESCRIPTORs would probably not make sense in the context of item1.xml or item2.xml, but in the context of the root CONTAINER document, they make perfect sense.

root document:

```
<DIDL>
  <CONTAINER>
    <ITEM>
      <DESCRIPTOR>
        <STATEMENT TYPE="text/text">Item #1</STATEMENT>
      </DESCRIPTOR>
      <REFERENCE URI="item1.xml#ITEM1"/>
    </ITEM>
    <ITEM>
      <DESCRIPTOR>
        <STATEMENT TYPE="text/text">Item #2</STATEMENT>
      </DESCRIPTOR>
      <REFERENCE URI="item2.xml#ITEM2"/>
    </ITEM>
  </COMPONENT>
</DIDL>
```

item1.xml:

```
<DIDL>
  <ITEM ID="ITEM1">
    <COMPONENT>…</COMPONENT>
  </ITEM>
</DIDL>
```

item2.xml:

```
<DIDL>
  <ITEM ID="ITEM2">
    <COMPONENT>…</COMPONENT>
    <COMPONENT>…</COMPONENT>
  </ITEM>
</DIDL>
```

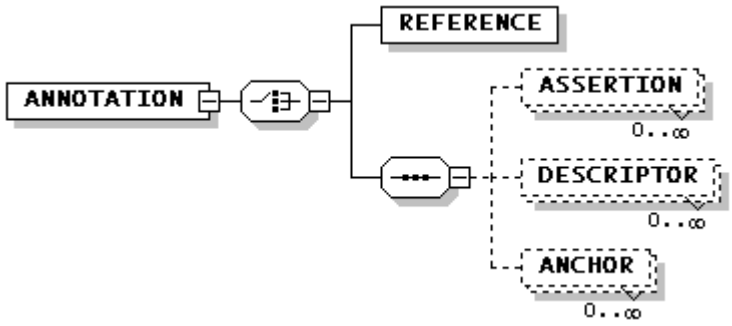
5.2.18 <ANNOTATION>

An ANNOTATION element represents an *Annotation*. As such, it allows additional DESCRIPTORs and/or ANCHORs to be logically added to an element in an ITEM or CONTAINER without affecting the original contents of the element. This allows, for example, an end-user to associate bookmarks and commentary to a digitally signed created work, without invalidating the signature. It also allows ASSERTIONs to be made on the *predicates* associated with the SELECTIONs of a given CHOICE.

Validation Rules:

- The value of the TARGET attribute must match the value of the ID attribute of any descendant element of the parent element, or that of the parent element itself.
- The contents of an ANNOTATION must conform to the content model of the targeted element. For example, ANCHORs can be included only if the TARGET attribute value matches the ID value of a COMPONENT.
- If an ANNOTATION contains an ASSERTION, then its TARGET attribute value must match the ID attribute value of an ITEM.

Diagram



Children <REFERENCE> <ASSERTION> <DESCRIPTOR> <ANCHOR>

Used by <ITEM> <DECLARATIONS>

Attributes

Name	Type	Description
TARGET	IDREF	Identifies the element being annotated.
ID	ID	A unique ID value, which can be referenced by an INTERNAL_REF element.

Source

```
<xsd:element name="ANNOTATION">
    <xsd:complexType>
        <xsd:choice>
            <xsd:element ref="REFERENCE"/>
            <xsd:sequence>
                <xsd:element ref="ASSERTION" minOccurs="0" maxOccurs="unbounded"/>
                <xsd:element ref="DESCRIPTOR" minOccurs="0" maxOccurs="unbounded"/>
                <xsd:element ref="ANCHOR" minOccurs="0" maxOccurs="unbounded"/>
            </xsd:sequence>
        </xsd:choice>
        <xsd:attribute name="TARGET" type="xsd:IDREF" use="required"/>
        <xsd:attributeGroup ref="ID_ATTRS"/>
    </xsd:complexType>
</xsd:element>
```

Example:

This example shows how an ANNOTATION element can be used to logically add elements to an ITEM without actually modifying its contents. In this case, the element being annotated is the first child ITEM of the outermost ITEM. At rendering time, the application software would logically add the DESCRIPTOR to the display of the ITEM.

```
<DIDL>
  <ITEM>
    <ITEM ID=”PHOTO_1”>
      <COMPONENT>
        <RESOURCE SRC="myFirstPicture.jpg" TYPE="image/jpg" />
      </COMPONENT>
```

```
    </ITEM>
    <ITEM>
      <COMPONENT>
        <RESOURCE SRC="mySecondPic.bmp" TYPE="image/bmp" />
      </COMPONENT>
    </ITEM>
    <ANNOTATION TARGET=”PHOTO_1”>
      <DESCRIPTOR>
        <STATEMENT TYPE=”text/text”>This photo is really cool!</STATEMENT>
      </DESCRIPTOR>
    </ANNOTATION>
  </ITEM>
</DIDL>
```

5.2.19 <ASSERTION>

An ASSERTION element represents an *Assertion*. As such, it allows a set of *predicates* in a particular CHOICE to be asserted as true or false. This captures a particular state of a set of SELECTIONs within a CHOICE to be instantiated without modifying the original document. ASSERTIONS are always part of an ANNOTATION to an ITEM. The TARGET attribute identifies the affected CHOICE.

ASSERTIONs may either fully or partially resolve the given CHOICE. If all of the CHOICE's SELECTIONs are referenced (i.e. the corresponding SELECT_ID values are present) in either the TRUE or FALSE attributes of the ASSERTION, then the ASSERTION "fully resolves" the CHOICE. If there are any SELECTIONs in the given CHOICE that are not referenced in either the TRUE or FALSE attributes, then the ASSERTION "partially resolves" the CHOICE. The *predicates* represented by the missing SELECT_ID values are left undecided. It is possible to continue resolving a partially resolved CHOICE by simply assigning true or false values to some or all of the undecided *predicates* to arrive at a new ASSERTION.

Validation Rules:

- The associated CHOICE element (the CHOICE whose CHOICE_ID attribute value matches the ASSERTION's TARGET attribute value) must be a descendant of the ITEM whose ID attribute value matches the parent ANNOTATION's TARGET attribute value.
- The number of true *predicates* (i.e. the number of SELECT_ID values listed in the TRUE attribute) must be less than or equal to the MAX_SELECTIONS attribute value in the associated CHOICE.
- The total number of SELECT_ID values defined in the associated CHOICE, minus the number of SELECT_ID values listed in the FALSE attribute, must be greater than or equal to the MIN_SELECTIONS attribute value in the associated CHOICE.

Used by	<ANNOTATION>		
Attributes	**Name**	**Type**	**Description**
	TARGET	IDREF	Identifies the CHOICE that this ASSERTION affects. Must contain an ID value that matches a CHOICE_ID attribute within the descendants of the parent of the ANNOTATION that contains this ASSERTION.
	TRUE	IDREFS	The set of ID values corresponding to the SELECT_ID attributes of SELECTIONS that are to be asserted as true.
	FALSE	IDREFS	The set of ID values corresponding to the SELECT_ID attributes of SELECTIONS that are to be asserted as false.
Source	<xsd:element name="ASSERTION"> <xsd:complexType> <xsd:attribute name="TARGET" type="xsd:IDREF" use="required"/> <xsd:attribute name="TRUE" type="xsd:IDREFS" use="optional"/> <xsd:attribute name="FALSE" type="xsd:IDREFS" use="optional"/> </xsd:complexType> </xsd:element>		

Example:

This example shows an ASSERTION can be used to "save" a configuration within a document. In this case, the ASSERTION is targeting the format CHOICE, and is asserting the MP3_FORMAT selection. Since the CHOICE specifies a MAX_SELECTIONS value of 1, the application software can completely resolve the CHOICE with the given ASSERTION.

```
<DIDL>
  <ITEM ID=”THE_ITEM”>
    <CHOICE CHOICE_ID=”FORMAT_CHOICE” MIN_SELECTIONS=”1” MAX_SELECTIONS=”1”>
      <DESCRIPTOR>
        <STATEMENT TYPE=”text/text”>What format would you prefer?</STATEMENT>
      </DESCRIPTOR>
      <SELECTION SELECT_ID=”MP3_FORMAT”>
        <DESCRIPTOR>
          <STATEMENT TYPE=”text/text”>I want MP3</STATEMENT>
        </DESCRIPTOR>
      </SELECTION>
      <SELECTION SELECT_ID=”WMA_FORMAT”>
        <DESCRIPTOR>
          <STATEMENT TYPE=”text/text”>I want WMA</STATEMENT>
        </DESCRIPTOR>
      </SELECTION>
    </CHOICE>
    …
    <ANNOTATION TARGET=”THE_ITEM”>
      <ASSERTION TARGET=”FORMAT_CHOICE” TRUE=”MP3_FORMAT”/>
    </ANNOTATION>
  </ITEM>
</DIDL>
```

6 The Digital Item Declaration XML Schema Definition

```
<?xml version="1.0"?>
<!--============================================================-->
<!--============================================================-->
<!--                                                            -->
<!--           Schema for DIDL XML Document Type                -->
<!--                                                            -->
<!--============================================================-->
<!--============================================================-->
<xsd:schema xmlns:xsd="http://www.w3.org/2000/10/XMLSchema" version="0.01">
   <!--============================================================

    Basic Principles that apply to all element types:

    1) Any element with an attribute named 'ID' of type ID may
       have a REFERENCE child.

    2) Any element with an attribute of type ID may have DESCRIPTOR
       children, and where they are allowed, they are always
       the first children.

    3) Elements with an attribute of type ID *may not* have any
       attributes which are required.  This is because
       attributes should be inheritable from a REFERENCE
       if they are not specified, which is not possible
       if they are required.

    4) If an element has a REFERENCE child
       then only DESCRIPTOR (and possibly CONDITION) elements may
       precede it, and no elements may follow it.

   ============================================================-->
   <xsd:attributeGroup name="ID_ATTRS">
      <xsd:attribute name="ID" type="xsd:ID" use="optional"/>
   </xsd:attributeGroup>

   <!--============================================================

    DIDL element may contain one of the top level
    (EXTERNAL_REFable) elements: CONTAINER or ITEM.

   ============================================================-->
   <xsd:element name="DIDL">
      <xsd:complexType>
         <xsd:sequence>
            <xsd:element ref="DECLARATIONS" minOccurs="0"/>
            <xsd:choice>
               <xsd:element ref="CONTAINER"/>
               <xsd:element ref="ITEM"/>
            </xsd:choice>
         </xsd:sequence>
      </xsd:complexType>
   </xsd:element>

   <!--============================================================
```

```
 A DECLARATIONS element contains any number of ITEMs, DESCRIPTORs,
 COMPONENTs, and RESOURCEs, in any order.

=============================================================-->
<xsd:element name="DECLARATIONS">
   <xsd:complexType>
      <xsd:choice maxOccurs="unbounded">
         <xsd:element ref="ITEM"/>
         <xsd:element ref="DESCRIPTOR"/>
         <xsd:element ref="COMPONENT"/>
         <xsd:element ref="RESOURCE"/>
         <xsd:element ref="ANNOTATION"/>
      </xsd:choice>
   </xsd:complexType>
</xsd:element>

<!--=============================================================

 CONTAINER element may contain any number of CONTAINER elements
 followed by any number of ITEMS.

=============================================================-->
<xsd:element name="CONTAINER">
<xsd:complexType>
   <xsd:sequence>
   <xsd:element ref="DESCRIPTOR" minOccurs="0" maxOccurs="unbounded"/>
   <xsd:choice>
      <xsd:element ref="REFERENCE"/>
      <xsd:sequence>
         <xsd:element ref="CONTAINER" minOccurs="0" maxOccurs="unbounded"/>
         <xsd:element ref="ITEM" minOccurs="0" maxOccurs="unbounded"/>
      </xsd:sequence>
   </xsd:choice>
   </xsd:sequence>
   <xsd:attributeGroup ref="ID_ATTRS"/>
</xsd:complexType>
</xsd:element>

<!--=============================================================

 ITEM element contains any number CHOICE elements,
 followed by at least one ITEM or COMPONENT element.
 An ITEM can be conditional.

=============================================================-->
<xsd:element name="ITEM">
   <xsd:complexType>
      <xsd:sequence>
         <xsd:element ref="CONDITION" minOccurs="0" maxOccurs="unbounded"/>
         <xsd:element ref="DESCRIPTOR" minOccurs="0" maxOccurs="unbounded"/>
         <xsd:choice>
            <xsd:element ref="REFERENCE"/>
            <xsd:choice minOccurs=”0” maxOccurs="unbounded">
               <xsd:element ref="CHOICE"/>
               <xsd:element ref="ITEM"/>
               <xsd:element ref="COMPONENT"/>
            </xsd:choice>
         </xsd:choice>
         <xsd:element ref="ANNOTATION" minOccurs="0" maxOccurs="unbounded"/>
```

```
        </xsd:sequence>
        <xsd:attributeGroup ref="ID_ATTRS"/>
    </xsd:complexType>
</xsd:element>

<!--============================================================

 A DESCRIPTOR contains descriptive data about its parent
 element.

 The DESCRIPTOR can be resource-based (comprised of a single
 COMPONENT), or text-based (comprised of a single STATEMENT).
 A DESCRIPTOR can be conditional.

============================================================-->
<xsd:element name="DESCRIPTOR">
    <xsd:complexType>
        <xsd:sequence>
            <xsd:element ref="CONDITION" minOccurs="0" maxOccurs="unbounded"/>
            <xsd:element ref="DESCRIPTOR" minOccurs="0" maxOccurs="unbounded"/>
            <xsd:choice>
                <xsd:element ref="REFERENCE"/>
                <xsd:element ref="COMPONENT"/>
                <xsd:element ref="STATEMENT"/>
            </xsd:choice>
        </xsd:sequence>
        <xsd:attributeGroup ref="ID_ATTRS"/>
    </xsd:complexType>
</xsd:element>

<!--============================================================

 A STATEMENT contains textual descriptive data within a
 DESCRIPTOR.

 Attribs:
 TYPE     - A string identifying the type of metadata

============================================================-->
<xsd:element name="STATEMENT">
    <xsd:complexType mixed="true">
        <xsd:sequence>
            <xsd:any namespace="##any" processContents="skip" minOccurs="0"/>
        </xsd:sequence>
        <xsd:attribute name="TYPE" type="xsd:uriReference"/>
    </xsd:complexType>
</xsd:element>

<!--============================================================

 COMPONENT element contains a RESOURCE element, followed by any
 number of ANCHOR elements.
 A COMPONENT can be conditional.

============================================================-->
<xsd:element name="COMPONENT">
    <xsd:complexType>
        <xsd:sequence>
            <xsd:element ref="CONDITION" minOccurs="0" maxOccurs="unbounded"/>
            <xsd:element ref="DESCRIPTOR" minOccurs="0" maxOccurs="unbounded"/>
```

```
            <xsd:choice>
               <xsd:element ref="REFERENCE"/>
               <xsd:element ref="RESOURCE" minOccurs="1" maxOccurs="unbounded"/>
            </xsd:choice>
            <xsd:element ref="ANCHOR" minOccurs="0" maxOccurs="unbounded"/>
         </xsd:sequence>
         <xsd:attributeGroup ref="ID_ATTRS"/>
      </xsd:complexType>
   </xsd:element>

   <!--============================================================

    An ANCHOR element indicates a point of interest in the
    resource of the parent COMPONENT.
    An ANCHOR can be conditional.

    Attribs:
    PRECEDENCE  - An unsigned integer value indicating the position
                  that this start point should occupy relative to the
                  other start points in this title.  The highest
                  precedence start file is the default entry
                  point.

    FRAGMENT    - The fragment identifier that locates the start
                  point position within the parent file. This
                  string, when appended to the SRC attribute
                  of the parent, plus a '#', becomes the full
                  URI for the start point.

   ============================================================-->
   <xsd:element name="ANCHOR">
      <xsd:complexType>
         <xsd:sequence>
            <xsd:element ref="CONDITION" minOccurs="0" maxOccurs="unbounded"/>
            <xsd:element ref="DESCRIPTOR" minOccurs="0" maxOccurs="unbounded"/>
         </xsd:sequence>
         <xsd:attribute name="PRECEDENCE"
                        type="xsd:unsignedInt" use="default" value="0"/>
         <xsd:attribute name="FRAGMENT" type="xsd:uriReference"/>
         <xsd:attribute name=”NAME” type=”xsd:ID”/>
      </xsd:complexType>
   </xsd:element>

   <!--============================================================

    CONDITION element contains no children.  It indicates a
    selection condition for the parent file.  Multiple CONDITION
    tags indicate an 'OR' relationship, in that only one CONDITION
    needs to be satisfied for the parent element to be retrieved,
    included, etc.  The individual IDs in the SELECT attribute of
    a CONDITION tag have an 'AND' relationship in that selection
    of all of the IDs referenced are required to satisfy that
    CONDITION.

    Attribs:
    REQUIRE   - Indicates the SELECTION(s) that must be affirmed
                for this CONDITION to be "satisfied".

    EXCEPT    - Indicates the SELECTION(s) that must be denied
                  for this CONDITION to be "satisfied".
```

```
   ============================================================-->
   <xsd:element name="CONDITION">
      <xsd:complexType>
         <xsd:attribute name="REQUIRE" type="xsd:IDREFS"/>
         <xsd:attribute name="EXCEPT" type="xsd:IDREFS"/>
      </xsd:complexType>
   </xsd:element>

   <!--============================================================

    CHOICE element contains one or more SELECTIONs.
    A CHOICE can be conditional.

    Attribs:

    MIN_SELECTIONS  -  Minimum  number  of  SELECTIONs  that  must  be  made.  If  not
present,
  there is no minimum.

    MAX_SELECTIONS  -  Maximum  number  of  SELECTIONs  that  can  be  made.   If  not
present,
there is no maximum.

    DEFAULT     - Indicates one or more default selections to use in the absence
of info   to make a more specific decision.  Must conform to the
requirements of the MIN_SELECTIONS and/or MAX_SELECTIONS
attributes if present.

    CHOICE_ID   - Serves as a TARGET for ASSERTION elements.

   ============================================================-->
   <xsd:element name="CHOICE">
      <xsd:complexType>
         <xsd:sequence>
            <xsd:element ref="CONDITION" minOccurs="0" maxOccurs="unbounded"/>
            <xsd:element ref="DESCRIPTOR" minOccurs="0" maxOccurs="unbounded"/>
            <xsd:element ref="SELECTION" maxOccurs="unbounded"/>
            <xsd:element ref=”OVERRIDE” minOccurs=”0” maxOccurs = “unbounded”/>
         </xsd:sequence>
         <xsd:attribute name="MIN_SELECTIONS" type="xsd:nonNegativeInteger"/>
         <xsd:attribute name="MAX_SELECTIONS" type="xsd:nonNegativeInteger"/>
         <xsd:attribute name="DEFAULT" type="xsd:IDREFS"/>
         <xsd:attribute name="CHOICE_ID" type="xsd:ID"/>
      </xsd:complexType>
   </xsd:element>

   <!--============================================================

    SELECTION element contains no children.
    A SELECTION can be conditional.

    Attrib: SELECT_ID - Uniquely identifies the SELECTION

   ============================================================-->

   <xsd:element name="SELECTION">
      <xsd:complexType>
         <xsd:sequence>
            <xsd:element ref="CONDITION" minOccurs="0" maxOccurs="unbounded"/>
```

```
            <xsd:element ref="DESCRIPTOR" minOccurs="0" maxOccurs="unbounded"/>
            <xsd:element ref=”OVERRIDE” minOccurs=”0” maxOccurs = “unbounded”/>
         </xsd:sequence>
         <xsd:attribute name="SELECT_ID" type="xsd:ID" use="required"/>
      </xsd:complexType>
   </xsd:element>

   <!--============================================================

    OVERRIDE element identifies a CHOICE or SELECTION that is
    superseded by the OVERRIDE’s parent.

    Attribs:
    TARGET – An XPointer identifying the CHOICE or SELECTION being overridden

   ============================================================-->

   <xsd:element name="OVERRIDE">
      <xsd:complexType>
         <xsd:attribute name="TARGET" type="xsd:uriReference"/>
      </xsd:complexType>
   </xsd:element>

   <!--============================================================

    RESOURCE element contains or points to binary data. The
    contained data can be binary or any valid XML element.

    Attribs:
    TYPE   - An identifier of a recognized scheme indicating the type of the resource
    REF    - A URI from which the resource data can be obtained
    LOCAL_PATH - Specifies the required location for a cached version

   ============================================================-->
   <xsd:element name="RESOURCE">
      <xsd:complexType mixed="true">
         <xsd:attribute name="TYPE" type="xsd:uriReference"/>
         <xsd:attribute name="REF" type="xsd:uriReference"/>
         <xsd:attribute name="LOCAL_PATH" type="xsd:uriReference"/>
      </xsd:complexType>
      <!-- "mixed" content model allows for embedded resources -->
   </xsd:element>

   <!--============================================================

    REFERENCE contains no child elements

    Attrib: URI - Points to the referenced element

   ============================================================-->
   <xsd:element name="REFERENCE">
      <xsd:complexType>
         <xsd:attribute name="URI" type="xsd:uriReference" use="required"/>
      </xsd:complexType>
   </xsd:element>

   <!--============================================================

    ANNOTATION contains any number of ASSERTIONs followed by
    any number of DESCRIPTORs followed by any number of ANCHORs
```

```
    Attrib: TARGET - Points to the element being annotated

    Restrictions:
      1. The TARGET must reference an element within the
         parent ITEM, or can reference the parent ITEM itself.
      2. The contents of an ANNOTATION must conform with the
         content model of the targeted element. For example,
         ANCHORs can be included only if the TARGET references
         a COMPONENT.

   ============================================================-->
   <xsd:element name="ANNOTATION">
      <xsd:complexType>
         <xsd:choice>
            <xsd:element ref="REFERENCE"/>
            <xsd:sequence>
               <xsd:element ref="ASSERTION" minOccurs="0" maxOccurs="unbounded"/>
               <xsd:element ref="DESCRIPTOR" minOccurs="0" maxOccurs="unbounded"/>
               <xsd:element ref="ANCHOR" minOccurs="0" maxOccurs="unbounded"/>
            </xsd:sequence>
         </xsd:choice>
         <xsd:attribute name="TARGET" type="xsd:IDREF" use="required"/>
         <xsd:attributeGroup ref="ID_ATTRS"/>
      </xsd:complexType>
   </xsd:element>

   <!--============================================================

    ASSERTION contains no child elements

    Attribs:

       TRUE  - The set of selection IDs which are asserted as true
       FALSE  - The set of selection IDs which are asserted as false

   ============================================================-->
   <xsd:element name="ASSERTION">
      <xsd:complexType>
         <xsd:attribute name="TARGET" type="xsd:IDREF" use="required"/>
         <xsd:attribute name="TRUE" type="xsd:IDREFS" use="optional"/>
         <xsd:attribute name="FALSE" type="xsd:IDREFS" use="optional"/>
      </xsd:complexType>
   </xsd:element>
</xsd:schema>
```

7 Referencing abstract works in DIDL

In many cases, a Digital Item expressed in DIDL may represent a digital manifestation of an abstract work. For example, a musical work (an abstract work comprising a musical score) can be manifested as an MPEG-21 Digital Item expressed in DIDL. Such an abstract work could also be manifested as a track on a traditional music CD, or as some other physical manifestation.

In such cases, the author of the Digital Item may want to reference the abstract work within the DIDL document so that, for example, the original creator of the work receives due attribution.

Within DIDL, assuming the abstract work can be unambiguously identified with an MPEG-21 Identifier (see ISO/IEC 21000-3), such a reference can be constructed by inserting a DESCRIPTOR containing a COMPONENT with a RESOURCE identifying the abstract work. Furthermore, the desired attribution (original author's name, original title, copyrights, etc.) can be included directly with the reference to the abstract work by inserting one or more sub-DESCRIPTORs inside the main DESCRIPTOR. This scenario is illustrated in the following example:

```
<DIDL>
   <ITEM>
      <!-- fill in here -->
   </ITEM>
</DIDL>
```

8 Example Digital Items expressed in DIDL (non-normative)

8.1 Example 1: A digital music album

This example shows how a digital music album might be expressed in DIDL. It shows, among other things, how multiple instances of metadata of various formats can coexist within a single Digital Item, and how a single Digital Item can be made configurable in various ways.

```
<!-- This is a Digital Item Declaration for the 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:cr="http://www.mpeg.org/mpeg7/Content-Ratings-Scheme"
       xmlns:xsi="http://www.w3.org/2000/10/XMLSchema-instance"
       xmlns:profile="http://www.mpeg.org/mpeg21/Profile-Specs"
       xsi:noNamespaceSchemaLocation="http://www.mpeg.org/mpeg21/schemas/didl.xsd">

   <DECLARATIONS>
       <DESCRIPTOR ID="ALBUM_RATING">
           <DESCRIPTOR>
               <!-- A Descriptor always says something about its parent. In this
                case, the Descriptor is describing the parent Descriptor. -->
               <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/plain">
                   Content ratings provided by Parents of Teens, Inc.
               </STATEMENT>
           </DESCRIPTOR>
           <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/xml">
               <cr:violence>None</cr:violence>
               <cr:explicit-language>None</cr:explicit-language>
               <cr:sex>None</cr:sex>
           </STATEMENT>
       </DESCRIPTOR>
   </DECLARATIONS>


   <CONTAINER>

       <!-- This Container is acting as a delivery package for a particular
            consumer. The package contains information about the package, in
```

```
         this case, the recipient's name and the distributor's name. -->

    <DESCRIPTOR>
        <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/plain">
            This is a package for John Q. Consumer. This package was provided
            by Digital Music Unlimited.
        </STATEMENT>
    </DESCRIPTOR>


    <ITEM>

        <!-- This is the outermost Item, which represents the musical album
             as a whole. -->

        <CHOICE CHOICE_ID="PLATFORM_CHOICE" TYPE="single">

            <!-- This choice allows the item to be configured for a specific
                 target platform: Windows, Linux, or Mac. -->

            <SELECTION SELECT_ID="PLATFORM_WINDOWS">
                <DESCRIPTOR>
                    <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/xml">
                        <profile:operating-system>Win32</profile:operating-system>
                    </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>

            <SELECTION SELECT_ID="PLATFORM_LINUX">
                <DESCRIPTOR>
                    <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/xml">
                        <profile:operating-system>Linux</profile:operating-system>
                    </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>

            <SELECTION SELECT_ID="PLATFORM_MAC">
                <DESCRIPTOR>
                    <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/xml">
                        <profile:operating-system>MacOS</profile:operating-system>
                </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
        </CHOICE>

        <CHOICE CHOICE_ID="ALL_SONGS" TYPE="multiple">

            <!-- This choice allows the user to decide whether to filter out
                 some of the songs on the album. The plain-text statements
                 contain text that can be used in GUI dialogs. -->

            <SELECTION SELECT_ID="PICK_SONGS">
                <DESCRIPTOR>
                <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/plain">
                        I want to choose among the individual songs.
                    </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>

        </CHOICE>

        <CHOICE CHOICE_ID="SONG_PICKER" DEFAULT="SONG1 SONG2 SONG3 SONG4
                TYPE="multiple">

            <!-- This choice presents the user with the list of songs to choose
                 from. It is conditional upon the PICK_SONGS selection from the
                 previous choice, so it will be processed only if the PICK_SONGS
```

```
                selection is made. -->

            <CONDITION REQUIRE="PICK_SONGS"/>
            <DESCRIPTOR>
                <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/plain">
                    Choose the songs you would like:
                </STATEMENT>
            </DESCRIPTOR>
            <SELECTION SELECT_ID="SONG1">
                <DESCRIPTOR>
                    <!-- This descriptor contains a reference to another
                         descriptor. The effect is that the contents of the
                         referenced descriptor (which defines the title of the
                         first song) are logically duplicated within this,
                         the referring descriptor. This allows the actual value
                         of the title to be kept in a single location within
                         the document. -->
                    <REFERENCE URI="#SONG1_TITLE"/>
                </DESCRIPTOR>
            </SELECTION>
            <SELECTION SELECT_ID="SONG2">
                <DESCRIPTOR>
                    <REFERENCE URI="#SONG2_TITLE"/>
                </DESCRIPTOR>
            </SELECTION>
            <SELECTION SELECT_ID="SONG3">
                <DESCRIPTOR>
                    <REFERENCE URI="#SONG3_TITLE"/>
                </DESCRIPTOR>
            </SELECTION>
            <SELECTION SELECT_ID="SONG4">
                <DESCRIPTOR>
                    <REFERENCE URI="#SONG4_TITLE"/>
                </DESCRIPTOR>
            </SELECTION>
        </CHOICE>

        <CHOICE CHOICE_ID="BITRATE_CHOICE" DEFAULT="LOW_BITRATE" TYPE="single">
            <DESCRIPTOR>
                <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/plain">
                    Please select the fidelity you would prefer.
                </STATEMENT>
            </DESCRIPTOR>
            <SELECTION SELECT_ID="LOW_BITRATE">
                <DESCRIPTOR>
                    <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/plain">
                        Low (128 Kbits/sec, $10.00).
                    </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
            <SELECTION SELECT_ID="HIGH_BITRATE">
                <DESCRIPTOR>
                    <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/plain">
                        High (192 Kbits/sec, $15.00).
                    </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
        </CHOICE>

        <CHOICE CHOICE_ID="EXTRA_CONTENT_CHOICE" TYPE="single">
            <DESCRIPTOR>
                <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/plain">
                    Would you like to get supplemental content for this album?
                </STATEMENT>
            </DESCRIPTOR>
            <SELECTION SELECT_ID="WANT_EXTRA_CONTENT">
                <DESCRIPTOR>
```

```
                    <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/plain">
                        Yes, get all of the supplemental content.
                    </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
            <SELECTION SELECT_ID="ASK_EXTRA_CONTENT">
                <DESCRIPTOR>
                    <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/plain">
                        Yes, but let me choose which items to get.
                    </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
            <SELECTION SELECT_ID="DONT_ASK_ABOUT_CONTENT">
                <DESCRIPTOR>
                    <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/plain">
                        No, I don't want any of the extra stuff.
                    </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
        </CHOICE>

        <CHOICE CHOICE_ID="COVER_ART_CHOICE" TYPE="multiple">
            <CONDITION REQUIRE="ASK_EXTRA_CONTENT"/>
            <DESCRIPTOR>
                <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/plain">
                    Supplemental content:
                </STATEMENT>
            </DESCRIPTOR>
            <SELECTION SELECT_ID="GET_ART">
                <DESCRIPTOR>
                    <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/plain">
                        Include the cover art.
                    </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
            <SELECTION SELECT_ID="GET_LYRICS">
                <DESCRIPTOR>
                    <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/plain">
                        Include the song lyrics.
                    </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
            <SELECTION SELECT_ID="GET_VIDEO">
                <CONDITION REQUIRE="PLATFORM_WINDOWS"/>
                <CONDITION REQUIRE="PLATFORM_MAC"/>
                <DESCRIPTOR>
                    <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/plain">
                        Include video footage from the latest concert.
                    </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>

            <SELECTION SELECT_ID="GET_REVIEWS">
                <DESCRIPTOR>
                    <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/plain">
                        Include press reviews.
                    </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>

        </CHOICE>

        <CHOICE CHOICE_ID="IMAGE_FORMAT_CHOICE" DEFAULT="JPEG_IMAGE">

            <!-- This choice allows the package to be configured for platforms
                 that support specific image formats. -->
```

```
            <CONDITION REQUIRE="GET_ART"/>
            <CONDITION REQUIRE="WANT_EXTRA_CONTENT"/>

            <SELECTION SELECT_ID="JPEG_IMAGE">
                <DESCRIPTOR>
                    <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/xml">
                        <profile:image-type>JPEG</profile:image-type>
                    </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
            <SELECTION SELECT_ID="GIF_IMAGE">
                <DESCRIPTOR>
                    <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/xml">
                        <profile:image-type>GIF</profile:image-type>
                    </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
            <SELECTION SELECT_ID="BMP_IMAGE">
                <CONDITION REQUIRE="PLATFORM_WINDOWS"/>
                <DESCRIPTOR>
                    <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/xml">
                        <profile:image-type>Windows-BMP</profile:image-type>
                    </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
        </CHOICE>

        <CHOICE CHOICE_ID="IMAGE_SIZE_CHOICE" DEFAULT="LARGE_IMAGE">

            <!-- This choice allows the user to decide what size the cover image
                 should be. However, since we only have one size of the BMP version
                 of the image, the choice is made conditional on the Windows BMP
                 selection *not* being made in the previous choice. -->

            <CONDITION REQUIRE="GET_ART" EXCEPT="BMP_IMAGE"/>
            <CONDITION REQUIRE="WANT_EXTRA_CONTENT" EXCEPT="BMP_IMAGE"/>

            <DESCRIPTOR>
                <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/plain">
                    Please select the image size you would like:
                </STATEMENT>
            </DESCRIPTOR>

            <SELECTION SELECT_ID="LARGE_IMAGE">
                <DESCRIPTOR>
                    <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/plain">
                        Large (301x300)
                    </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
            <SELECTION SELECT_ID="SMALL_IMAGE">
                <DESCRIPTOR>
                    <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/plain">
                        Small (130x130)
                    </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
        </CHOICE>


        <!-- Now we have a set of descriptive information associated with the
             outermost item - the album as a whole. -->

        <DESCRIPTOR>
            <!-- The following statement is an example of an application-specific
                 data instance that can be included, in this case, a format
                 specific to the Digital Music Unlimited service. This example
```

```
                    happens to be encoded in plain text, but it is possible to encode
                    such data in any format compatible with well-formed XML. -->
                <STATEMENT TYPE="http://www.dmu.com/content-organizer-hints">
                    DMU 9876:: Item Type="Music Album";
                </STATEMENT>
            </DESCRIPTOR>

            <DESCRIPTOR>
                <REFERENCE URI="#ALBUM_RATING"/>
            </DESCRIPTOR>

            <DESCRIPTOR ID="PERFORMING_GROUP">
                <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/xml">
                    <rdf:RDF>
                        <rdf:Description>
                            <dc:creator>Once Blue</dc:creator>
                        </rdf:Description>
                    </rdf:RDF>
                </STATEMENT>
            </DESCRIPTOR>

            <DESCRIPTOR>
                <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/xml">
                    <rdf:RDF>
                        <rdf:Description>
                            <dc:title>Always Red</dc:title>
                            <dc:creator>Jack Jake (vocals)</dc:creator>
                            <dc:creator>Jane Juno (vocals, tambourine, finger snaps)
                            </dc:creator>
                            <dc:contributor>Joe Jump (acoustic &amp;amp; electric guitars, piano)
                            </dc:contributor>
                            <dc:contributor>Jeff Jelly (acoustic bass)  </dc:contributor>
                            <dc:contributor>Jim Jinks (drums, marimba, shaker, carob pods)
</dc:contributor>
                            <dc:subject>Record Album: Always Red by Always Red </dc:subject>
                            <dc:publisher>Acme Records </dc:publisher>
                            <dc:identifier>CD-ID: a409c80c</dc:identifier>
                            <dc:source>ASIN: B000002U0A</dc:source>
                            <dc:date>1995-10-24</dc:date>
                        </rdf:Description>
                    </rdf:RDF>
                </STATEMENT>
            </DESCRIPTOR>

            <DESCRIPTOR ID="RIGHTS">
                <STATEMENT TYPE="urn:mpeg:mpeg21:did/statement-types/text/xml">
                    <rdf:RDF>
                        <rdf:Description>
                            <dc:rights>Copyright 1995, Acme Records, All Rights Reserved.
                                       Unauthorized duplication is a violation of
                                       applicable laws.</dc:rights>
                        </rdf:Description>
                    </rdf:RDF>
                </STATEMENT>
            </DESCRIPTOR>

            <DESCRIPTOR ID="ICON_FILE">
                <DESCRIPTOR>
                    <STATEMENT TYPE="http://www.dmu.com/content-organizer-hints">
                        DMU 9876:: Descriptor Type="Item Icon";
                    </STATEMENT>
                </DESCRIPTOR>
                <COMPONENT>
                    <RESOURCE REF=”http://www.dmu.com/always_red/always_red/B000002U0A.t.jpg”
                              TYPE="image/jpeg"/>
                </COMPONENT>
            </DESCRIPTOR>
```

```
<!-- The components listed here pertain to the album as a whole. The
     first two components contain anchors. An anchor is a point (or
     range) of interest in a resource. The result of the arrangement
     of the given three anchors is that the application can present three
     different "entry points" into the content. The default "entry point"
     will be the first anchor, since it has the highest precedence value. -->

<COMPONENT>
    <CONDITION EXCEPT="PICK_SONGS"/>
    <CONDITION REQUIRE="SONG1 SONG2 SONG3 SONG4 SONG5 SONG6 SONG7 SONG8/>
    <RESOURCE REF="http://www.dmu.com/always_red/always_red/always_red.m3u"
              TYPE="audio/x-mpegurl"/>
    <ANCHOR PRECEDENCE="1000">
        <!-- This anchor does not specify a fragment, so it is denoting
             the beginning of the M3U file as its "entry point" -->
        <DESCRIPTOR>
            <STATEMENT TYPE="text/text">
                Play Entire Album
            </STATEMENT>
        </DESCRIPTOR>
    </ANCHOR>
</COMPONENT>

<COMPONENT>
    <RESOURCE REF="http://www.dmu.com/always_red/always_red/always_red.html"
              TYPE="text/html"/>
    <ANCHOR PRECEDENCE="500">
        <!-- This anchor does not specify a fragment, so it is denoting
             the beginning of the HTML file as its "entry point" -->
        <DESCRIPTOR>
            <STATEMENT TYPE="text/text">
                View Table of Contents
            </STATEMENT>
        </DESCRIPTOR>
    </ANCHOR>
    <ANCHOR FRAGMENT="credits" PRECEDENCE="100">
        <!-- This anchor specifies a fragment value of "credits", so its
             entry point is determined by appending "#credits" onto the
             URI specified in the REF attribute of the resource (above). -->
        <DESCRIPTOR>
            <STATEMENT TYPE="text/text">
                View Credits
            </STATEMENT>
        </DESCRIPTOR>
    </ANCHOR>
</COMPONENT>

<COMPONENT>
    <CONDITION REQUIRE="GIF_IMAGE LARGE_IMAGE"/>
    <DESCRIPTOR ID="COVER_ART_DESC">
        <STATEMENT TYPE="http://www.dmu.com/content-organizer-hints">
            DMU 9876:: Descriptor Type="Album Cover Art";
        </STATEMENT>
    </DESCRIPTOR>
    <RESOURCE REF="http://www.dmu.com/always_red/always_red/B000002U0A.l.gif"
              TYPE="image/gif" LOCAL_PATH="cover.img" SIZE="90860"/>
</COMPONENT>
<COMPONENT>
    <CONDITION REQUIRE="JPEG_IMAGE LARGE_IMAGE"/>
    <CONDITION REQUIRE="WANT_EXTRA_CONTENT"/>
    <DESCRIPTOR>
        <REFERENCE URI="#COVER_ART_DESC"/>
    </DESCRIPTOR>
    <RESOURCE REF="http://www.dmu.com/always_red/always_red/B000002U0A.l.jpg"
              TYPE="image/jpeg" LOCAL_PATH="cover.img" SIZE="13171"/>
</COMPONENT>
```

```
            <COMPONENT>
                <CONDITION REQUIRE="BMP_IMAGE LARGE_IMAGE"/>
                <DESCRIPTOR>
                    <REFERENCE URI="#COVER_ART_DESC"/>
                </DESCRIPTOR>
                <RESOURCE REF="http://www.dmu.com/always_red/always_red/B000002U0A.l.bmp"
                          TYPE="image/bmp" LOCAL_PATH="cover.img" SIZE="92278"/>
            </COMPONENT>
            <COMPONENT>
                <CONDITION REQUIRE="GIF_IMAGE SMALL_IMAGE"/>
                <DESCRIPTOR>
                    <REFERENCE URI="#COVER_ART_DESC"/>
                </DESCRIPTOR>
                <RESOURCE REF="http://www.dmu.com/always_red/always_red/B000002U0A.m.gif"
                          TYPE="image/gif" LOCAL_PATH="cover.img" SIZE="19792"/>
            </COMPONENT>
            <COMPONENT>
                <CONDITION REQUIRE="JPEG_IMAGE SMALL_IMAGE"/>
                <DESCRIPTOR>
                    <REFERENCE URI="#COVER_ART_DESC"/>
                </DESCRIPTOR>
                <RESOURCE REF="http://www.dmu.com/always_red/always_red/B000002U0A.m.jpg"
                          TYPE="image/jpeg" LOCAL_PATH="cover.img" SIZE="4246"/>
            </COMPONENT>
            <COMPONENT>
                <RESOURCE REF="http://www.dmu.com/always_red/always_red/B000002U0A.t.gif"
                          TYPE="image/gif" SIZE="6396"/>
            </COMPONENT>
            <COMPONENT>
                <CONDITION REQUIRE="GET_VIDEO"/>
                <CONDITION REQUIRE="WANT_EXTRA_CONTENT"/>
                <RESOURCE REF="http://www.dmu.com/always_red/always_red/obliv.mov"
                          TYPE="video/mov" SIZE="1334396"/>
            </COMPONENT>
            <COMPONENT>
                <CONDITION REQUIRE="GET_REVIEWS"/>
                <CONDITION REQUIRE="WANT_EXTRA_CONTENT"/>
                <DESCRIPTOR ID="#REVIEW_DESC">
                    <STATEMENT TYPE="http://www.dmu.com/content-organizer-hints">
                        DMU 9876:: Component Type="Press Review";
                    </STATEMENT>
                </DESCRIPTOR>
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/xml">
                        <rdf:RDF>
                            <rdf:Description>
                                <dc:creator>Jeff Bateman</dc:creator>
                                <dc:source>http://www.amazon.com/exec/obidos/ts/music-
reviews/B000002U0A/qid=917565083/002-0159784-2912610</dc:source>
                            </rdf:Description>
                        </rdf:RDF>
                    </STATEMENT>
                </DESCRIPTOR>
                <RESOURCE REF="http://www.dmu.com/always_red/always_red/review1.txt"
                          TYPE="text/text"/>
            </COMPONENT>
            <COMPONENT>
                <CONDITION REQUIRE="GET_REVIEWS"/>
                <CONDITION REQUIRE="WANT_EXTRA_CONTENT"/>
                <DESCRIPTOR>
                    <REFERENCE URI="#REVIEW_DESC"/>
                </DESCRIPTOR>
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/xml">
                        <rdf:RDF>
                            <rdf:Description>
                                <dc:creator>Anonymous</dc:creator>
```

```
                            <dc:source>http://www.amazon.com/exec/obidos/ts/music-customer-
reviews/B000002U0A/qid=917565083/002-0159784-2912610</dc:source>
                        </rdf:Description>
                    </rdf:RDF>
                </STATEMENT>
            </DESCRIPTOR>
            <RESOURCE REF="http://www.dmu.com/always_red/always_red/review2.txt"
                      TYPE="text/text"/>
        </COMPONENT>
        <COMPONENT>
            <CONDITION REQUIRE="GET_REVIEWS"/>
            <CONDITION REQUIRE="WANT_EXTRA_CONTENT"/>
            <DESCRIPTOR>
                <RESOURCE URI="#REVIEW_DESC"/>
            </DESCRIPTOR>
            <DESCRIPTOR>
                <STATEMENT TYPE="text/xml">
                    <rdf:RDF>
                        <rdf:Description>
                            <dc:creator>Sander Wolf</dc:creator>
                            <dc:source>
   http://www.bostonphoenix.com/alt1/archive/music/reviews/03-14-96/OTR/ALWAYS_RED.html
                            </dc:source>
                        </rdf:Description>
                    </rdf:RDF>
                </STATEMENT>
            </DESCRIPTOR>
            <RESOURCE REF="http://www.dmu.com/always_red/always_red/review3.txt"
                      TYPE="text/text"/>
        </COMPONENT>


        <!-- Each of the following items represents a single song on the album -->
        <ITEM>
            <CONDITION REQUIRE="SONG1"/>
            <DESCRIPTOR>
                <STATEMENT TYPE="http://www.dmu.com/content-organizer-hints">
                    DMU 9876:: Item Type="Song";
                </STATEMENT>
            </DESCRIPTOR>
            <DESCRIPTOR ID="SONG1_TITLE">
                <STATEMENT TYPE="text/xml">
                    <rdf:RDF>
                        <rdf:Description>
                            <dc:title>Save It</dc:title>
                        </rdf:Description>
                    </rdf:RDF>
                </STATEMENT>
            </DESCRIPTOR>
            <DESCRIPTOR>
                <STATEMENT TYPE="text/xml">
                    <rdf:RDF>
                        <rdf:Description>
                            <dc:coverage>233</dc:coverage>
                        </rdf:Description>
                    </rdf:RDF>
                </STATEMENT>
            </DESCRIPTOR>
            <DESCRIPTOR>
                <REFERENCE URI="#RIGHTS"/>
            </DESCRIPTOR>
            <DESCRIPTOR>
                <REFERENCE URI="#ALBUM_RATING"/>
            </DESCRIPTOR>
            <COMPONENT>
                <CONDITION REQUIRE="LOW_BITRATE"/>
                <RESOURCE REF="http://www.dmu.com/always_red/always_red/01_Save_It.mp3"
```

```
                        TYPE="audio/mp3"/>
                <ANCHOR PRECEDENCE="50">
                    <DESCRIPTOR>
                        <STATEMENT TYPE="text/text">
                            Play Song
                        </STATEMENT>
                    </DESCRIPTOR>
                </ANCHOR>
            </COMPONENT>
            <COMPONENT>
                <CONDITION REQUIRE="HIGH_BITRATE"/>
                <RESOURCE REF="http://www.dmu.com/always_red/always_red/01_Save_It_192.mp3"
                          TYPE="audio/mp3" LOCAL_PATH="01_Save_Me.mp3"/>
                <ANCHOR PRECEDENCE="100">
                    <DESCRIPTOR>
                        <STATEMENT TYPE="text/text">
                            Play Song
                        </STATEMENT>
                    </DESCRIPTOR>
                </ANCHOR>
            </COMPONENT>
            <COMPONENT>
                <CONDITION REQUIRE="GET_LYRICS"/>
                <CONDITION REQUIRE="WANT_EXTRA_CONTENT"/>
                <RESOURCE REF=”http://www.dmu.com/always_red/always_red/Save_It.txt”
                          TYPE="text/text" MODE="text"/>
                <ANCHOR PRECEDENCE="25">
                    <DESCRIPTOR>
                        <STATEMENT TYPE="text/text">
                            View Lyrics
                        </STATEMENT>
                    </DESCRIPTOR>
                </ANCHOR>
            </COMPONENT>
        </ITEM>

        <ITEM>
            <CONDITION REQUIRE="SONG2"/>
            <DESCRIPTOR>
                <STATEMENT TYPE="http://www.dmu.com/content-organizer-hints">
                    DMU 9876:: Item Type="Song";
                </STATEMENT>
            </DESCRIPTOR>
            <DESCRIPTOR ID="SONG2_TITLE">
                <STATEMENT TYPE="text/xml">
                    <rdf:RDF>
                        <rdf:Description>
                            <dc:title>I Haven’t been Anywhere</dc:title>
                        </rdf:Description>
                    </rdf:RDF>
                </STATEMENT>
            </DESCRIPTOR>
            <DESCRIPTOR>
                <STATEMENT TYPE="text/xml">
                    <rdf:RDF>
                        <rdf:Description>
                            <dc:coverage>193</dc:coverage>
                        </rdf:Description>
                    </rdf:RDF>
                </STATEMENT>
            </DESCRIPTOR>
            <DESCRIPTOR>
                <REFERENCE URI="#RIGHTS"/>
            </DESCRIPTOR>
            <DESCRIPTOR>
                <REFERENCE URI="#ALBUM_RATING "/>
            </DESCRIPTOR>
```

```
                <COMPONENT>
                    <CONDITION REQUIRE="LOW_BITRATE"/>
                    <RESOURCE
                REF=”http://www.dmu.com/always_red/always_red/02_I_Haven't_been_Anywhere.mp3”
                        TYPE="audio/mp3"/>
                    <ANCHOR PRECEDENCE="50">
                        <DESCRIPTOR>
                            <STATEMENT TYPE="text/text">
                                Play Song
                            </STATEMENT>
                        </DESCRIPTOR>
                    </ANCHOR>
                </COMPONENT>
                <COMPONENT>
                    <CONDITION REQUIRE="HIGH_BITRATE"/>
                    <RESOURCE
           REF=”http://www.dmu.com/always_red/always_red/02_I_Haven't_been_Anywhere_192.mp3”
                        TYPE="audio/mp3" LOCAL_PATH="02_I_Haven't_been_Anywhere.mp3" />
                    <ANCHOR PRECEDENCE="100">
                        <DESCRIPTOR>
                            <STATEMENT TYPE="text/text">
                                Play Song
                            </STATEMENT>
                        </DESCRIPTOR>
                    </ANCHOR>
                </COMPONENT>
                <COMPONENT>
                    <CONDITION REQUIRE="WANT_EXTRA_CONTENT"/>
                    <CONDITION REQUIRE="GET_LYRICS"/>
                    <RESOURCE
           REF=”http://www.dmu.com/always_red/always_red/I_Havent_been_Anywhere.txt”
TYPE="text/text"/>
                    <ANCHOR PRECEDENCE="25">
                        <DESCRIPTOR>
                            <STATEMENT TYPE="text/text">
                                View Lyrics
                            </STATEMENT>
                        </DESCRIPTOR>
                    </ANCHOR>
                </COMPONENT>
            </ITEM>

            <ITEM>
                <CONDITION REQUIRE="SONG3"/>
                <DESCRIPTOR>
                    <STATEMENT TYPE="http://www.dmu.com/content-organizer-hints">
                        DMU 9876:: Item Type="Song";
                    </STATEMENT>
                </DESCRIPTOR>
                <DESCRIPTOR ID="SONG3_TITLE">
                    <STATEMENT TYPE="text/xml">
                        <rdf:RDF>
                            <rdf:Description>
                                <dc:title>Sawdust and Sticks</dc:title>
                            </rdf:Description>
                        </rdf:RDF>
                    </STATEMENT>
                </DESCRIPTOR>
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/xml">
                        <rdf:RDF>
                            <rdf:Description>
                                <dc:coverage>209</dc:coverage>
                            </rdf:Description>
                        </rdf:RDF>
                    </STATEMENT>
```

```
            </DESCRIPTOR>
            <DESCRIPTOR>
                <REFERENCE URI="#ALBUM_RATING"/>
            </DESCRIPTOR>
            <DESCRIPTOR>
                <REFERENCE_URI IDREF="#RIGHTS"/>
            </DESCRIPTOR>
            <COMPONENT>
                <CONDITION REQUIRE="LOW_BITRATE"/>
                <RESOURCE
REF=”http://www.dmu.com/always_red/always_red/03_Sawdust_and_Sticks.mp3”
                    TYPE="audio/mp3"/>
                <ANCHOR PRECEDENCE="50">
                    <DESCRIPTOR>
                        <STATEMENT TYPE="text/text">
                            Play Song
                        </STATEMENT>
                    </DESCRIPTOR>
                </ANCHOR>
            </COMPONENT>
            <COMPONENT>
                <CONDITION REQUIRE="HIGH_BITRATE"/>
                <RESOURCE
REF="http://www.dmu.com/always_red/always_red/03_Sawdust_and_Sticks_192.mp3"
                    TYPE="audio/mp3" LOCAL_PATH="03_Sawdust_and_Sticks.mp3"/>
                <ANCHOR PRECEDENCE="100">
                    <DESCRIPTOR>
                        <STATEMENT TYPE="text/text">
                            Play Song
                        </STATEMENT>
                    </DESCRIPTOR>
                </ANCHOR>
            </COMPONENT>
            <COMPONENT>
                <CONDITION REQUIRE="GET_LYRICS"/>
                <CONDITION REQUIRE="WANT_EXTRA_CONTENT"/>
                <RESOURCE
                    REF=”http://www.dmu.com/always_red/always_red/Sawdust_and_Sticks.txt”
                    TYPE="text/text"/>
                <ANCHOR PRECEDENCE="25">
                    <DESCRIPTOR>
                        <STATEMENT TYPE="text/text">
                            View Lyrics
                        </STATEMENT>
                    </DESCRIPTOR>
                </ANCHOR>
            </COMPONENT>
        </ITEM>

        <ITEM>
            <CONDITION REQUIRE="SONG4"/>
            <DESCRIPTOR>
                <STATEMENT TYPE="http://www.dmu.com/content-organizer-hints">
                    DMU 9876:: Item Type="Song";
                </STATEMENT>
            </DESCRIPTOR>
            <DESCRIPTOR ID="SONG4_TITLE">
                <STATEMENT TYPE="text/xml">
                    <rdf:RDF>
                        <rdf:Description>
                            <dc:title>When the Thistle Blooms</dc:title>
                        </rdf:Description>
                    </rdf:RDF>
                </STATEMENT>
            </DESCRIPTOR>
            <DESCRIPTOR>
                <STATEMENT TYPE="text/xml">
                    <rdf:RDF>
```

```
                        <rdf:Description>
                            <dc:coverage>235</dc:coverage>
                        </rdf:Description>
                    </rdf:RDF>
                </STATEMENT>
            </DESCRIPTOR>
            <DESCRIPTOR>
                <REFERENCE URI="#ALBUM_RATING"/>
            </DESCRIPTOR>
            <DESCRIPTOR>
                <REFERENCE URI="#RIGHTS"/>
            </DESCRIPTOR>
            <COMPONENT>
                <CONDITION REQUIRE="LOW_BITRATE"/>
                <RESOURCE
REF=”http://www.dmu.com/always_red/always_red/04_When_the_Thistle_Blooms.mp3”
                    TYPE="audio/mp3"/>
                <ANCHOR PRECEDENCE="50">
                    <DESCRIPTOR>
                        <STATEMENT TYPE="text/text">
                            Play Song
                        </STATEMENT>
                    </DESCRIPTOR>
                </ANCHOR>
            </COMPONENT>
            <COMPONENT>
                <CONDITION REQUIRE="HIGH_BITRATE"/>
                <RESOURCE

REF=”http://www.dmu.com/always_red/always_red/04_When_the_Thistle_Blooms_192.mp3”
                    TYPE="audio/mp3" LOCAL_PATH="04_When_the_Thistle_Blooms.mp3"/>
                <ANCHOR PRECEDENCE="100">
                    <DESCRIPTOR>
                        <STATEMENT TYPE="text/text">
                            Play Song
                        </STATEMENT>
                    </DESCRIPTOR>
                </ANCHOR>
            </COMPONENT>
            <COMPONENT>
                <CONDITION REQUIRE="GET_LYRICS"/>
                <CONDITION REQUIRE="WANT_EXTRA_CONTENT"/>
                <RESOURCE
            REF=”http://www.dmu.com/always_red/always_red/When_the_Thistle_Blooms.txt”
                    TYPE="text/text"/>
                <ANCHOR PRECEDENCE="25">
                    <DESCRIPTOR>
                        <STATEMENT TYPE="text/text">
                            View Lyrics
                        </STATEMENT>
                    </DESCRIPTOR>
                </ANCHOR>
            </COMPONENT>
        </ITEM>

    </ITEM>
</CONTAINER>
</DIDL>
```

8.2 Example 2: Using OVERRIDE to simplify Item configuration

Consider the following scenario: Joe wants to create a photo album that contains photos with some beautiful music and text describing the photo content, to share it with his friends. Fortunately, he found several photos and music as well as text describing the photos that support a variety of formats (JPEG, BMP, MP3, WAV, text, MS Word*, etc.). Now, he would like to prepare a DIDL document in order to provide a configurable photo album considering his friends' computer or network environments. The photo album that Joe wants to provide contains three kinds of multimedia types: images (photos), audio (music) and text. In the case of photos, he has six different versions of the resources: JPEG format with resolutions 1600x1200 and 800x600, each with compression ratios 1 and 8, and BMP format with resolution 800x600 formatted for OS/2* and for Windows* tools. In case of music, there are seven different versions of resources: MP3 format with sampling rates of 128, 56, 32 and 16 KHz, and WAV format with telephone, radio and CD quality levels. For the text, there are two different versions of the resources: plain text and MS Word. Now, he is to create and configure a multimedia photo album (a kind of composite ITEM) using the OVERRIDE element that is defined in the CHOICE and SELECTION of the MPEG-21 Digital Item Declaration.

The top-level ITEM titled 'PISA_ALBUM' refers to three sub-ITEMs contained in the discrete DIDL files 'PisaItem1.xml', 'PisaItem2.xml' and 'PisaItem3.xml'. First, the top-level ITEM uses the OVERRIDE in the image format CHOICE. Since the CHOICEs of the child ITEMs contain all the same SELECTION_ID values such as "JPG_FORMAT" and "BMP_FORMAT", it makes sense to OVERRIDE the entire CHOICE in each sub-ITEM, rather than explicitly overriding each individual SELECTION. However, in the case of the compression ratio CHOICE, since the corresponding CHOICE in each child ITEM uses different SELECTION_ID values such as "RATIO_1", "RATIO1" and "R1", the OVERRIDE should apply to the individual SELECTIONs. In cases of the decoding format and resolution CHOICEs, the SELECTIONs employ the OVERRIDEs to configure the 'PISA_ALBUM' using the existing configuration information from the three child ITEMs. The music and script of the 'PISA_ALBUM' use the OVERRIDEs in the SELECTION levels to configure them.

```
<DIDL>
    <!-- ############################## PHOTO ALBUM ITEM ##############################-->
    <ITEM ID="PISA_ALBUM">
        <DESCRIPTOR>
            <STATEMENT> Photo Album: Journey to Pisa with music and script. </STATEMENT>
        </DESCRIPTOR>
        <!-- ################################ CHOICE ################################-->
        <!-- ========================= PHOTO CONFIGURATION =========================-->
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="IMAGE_FORMAT">
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> Select a proper Image Format for your Digital
                 Item Configuration. </STATEMENT>
            </DESCRIPTOR>
            <!-- ITEM1, ITEM2 and ITEM3 have CHOICE that includes the same SELECTIONS -->
            <OVERRIDE REF="PISAITEM1.XML#IMAGE_FORMAT"/>
            <OVERRIDE REF="PISAITEM2.XML#IMG_FORMAT"/>
            <OVERRIDE REF="PISAITEM3.XML#IMG_FORMAT"/>
            <SELECTION SELECT_ID="JPG_FORMAT">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> JPEG </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
            <SELECTION SELECT_ID="BMP_FORMAT">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> BMP </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
        </CHOICE>
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="JPG_COMPRESSION_RATIO">
            <CONDITION REQUIRE="JPG_FORMAT"/>
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> Select a proper Compression Ratio for your
                 Digital Item Configuration. </STATEMENT>
            </DESCRIPTOR>
```

* Brands, trademarks and trade names used in this document are the property of their respective owners.

```
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> Low Ratio Value: High quality/file size.
                </STATEMENT>
            </DESCRIPTOR>
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> High Ratio Value: Low quality/file size.
                </STATEMENT>
            </DESCRIPTOR>
            <SELECTION SELECT_ID="RATIO_1">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> RATIO 1 </STATEMENT>
                </DESCRIPTOR>
                <OVERRIDE REF="PISAITEM1.XML#RATIO_1"/>
                <OVERRIDE REF="PISAITEM2.XML#RATIO1"/>
                <OVERRIDE REF="PISAITEM3.XML#R1"/>
            </SELECTION>
            <SELECTION SELECT_ID="RATIO_8">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> RATIO 8 </STATEMENT>
                </DESCRIPTOR>
                <OVERRIDE REF="PISAITEM1.XML#RATIO_8"/>
                <OVERRIDE REF="PISAITEM2.XML#RATIO8"/>
                <OVERRIDE REF="PISAITEM3.XML#R8"/>
            </SELECTION>
        </CHOICE>
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="BMP_DECODING_FORMAT">
            <CONDITION REQUIRE="BMP_FORMAT"/>
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> Select a proper BMP Decoding Tool for your
                 Digital Item Configuration. </STATEMENT>
            </DESCRIPTOR>
            <SELECTION SELECT_ID="OS2_FORMAT">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> OS/2 </STATEMENT>
                </DESCRIPTOR>
                <OVERRIDE REF="PISAITEM1.XML#OS2_FORMAT"/>
                <OVERRIDE REF="PISAITEM2.XML#OS2"/>
                <OVERRIDE REF="PISAITEM3.XML#OS2_FORMAT"/>
            </SELECTION>
            <SELECTION SELECT_ID="WINDOWS_FORMAT">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> WINDOWS </STATEMENT>
                </DESCRIPTOR>
                <OVERRIDE REF="PISAITEM1.XML#WINDOWS_FORMAT"/>
                <OVERRIDE REF="PISAITEM2.XML#WINDOWS"/>
                <OVERRIDE REF="PISAITEM3.XML#WIN_FORMAT"/>
            </SELECTION>
        </CHOICE>
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="RESOLUTION">
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> Select a proper Resolution for your Digital Item
                 Configuration. </STATEMENT>
            </DESCRIPTOR>
            <SELECTION SELECT_ID="HIGH_1600x1200">
                <CONDITION REQUIRE="JPG_FORMAT"/>
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> 1600(W) x 1200(H) </STATEMENT>
                </DESCRIPTOR>
                <OVERRIDE REF="PISAITEM1.XML#H1600x1200"/>
                <OVERRIDE REF="PISAITEM2.XML#HIGH"/>
                <OVERRIDE REF="PISAITEM3.XML#HIGH_RES"/>
            </SELECTION>
            <SELECTION SELECT_ID="MEDIUM_800x600">
                <CONDITION REQUIRE="JPG_FORMAT"/>
                <CONDITION REQUIRE="BMP_FORMAT"/>
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> 800(W) x 600(H) </STATEMENT>
```

```
            </DESCRIPTOR>
            <OVERRIDE REF="PISAITEM1.XML#M800x600"/>
            <OVERRIDE REF="PISAITEM2.XML#MEDIUM"/>
            <OVERRIDE REF="PISAITEM3.XML#MEDIUM_RES"/>
        </SELECTION>
    </CHOICE>
    <!-- ========================= MUSIC CONFIGURATION ==========================-->
    <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="MUSIC_FORMAT">
        <DESCRIPTOR>
            <STATEMENT TYPE="text/plain"> Select a proper Music Format for your Digital
             Item Configuration. </STATEMENT>
        </DESCRIPTOR>
        <SELECTION SELECT_ID="MP3_FORMAT">
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> MP3 </STATEMENT>
            </DESCRIPTOR>
            <OVERRIDE REF="PISAITEM1.XML#MP3_FORMAT"/>
            <OVERRIDE REF="PISAITEM2.XML#MP3"/>
            <OVERRIDE REF="PISAITEM3.XML#MP3FORMAT"/>
        </SELECTION>
        <SELECTION SELECT_ID="WAV_FORMAT">
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> WAV </STATEMENT>
            </DESCRIPTOR>
            <OVERRIDE REF="PISAITEM1.XML#WAV_FORMAT"/>
            <OVERRIDE REF="PISAITEM2.XML#WAVE"/>
            <OVERRIDE REF="PISAITEM3.XML#WAVEFORMAT"/>
        </SELECTION>
    </CHOICE>
    <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="MP3_SAMPLING_RATE">
        <CONDITION REQUIRE="MP3_FORMAT"/>
        <DESCRIPTOR>
            <STATEMENT TYPE="text/plain"> Select a proper MP3 Sampling Rate for your
             Digital Item Configuration. </STATEMENT>
        </DESCRIPTOR>
        <SELECTION SELECT_ID="SAMPLING_128KHz">
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> 128 KHz </STATEMENT>
            </DESCRIPTOR>
            <OVERRIDE REF="PISAITEM1.XML#SAMPLING_128KHz"/>
            <OVERRIDE REF="PISAITEM2.XML#Khz128"/>
            <OVERRIDE REF="PISAITEM3.XML#Khz_128"/>
        </SELECTION>
        <SELECTION SELECT_ID="SAMPLING_56KHz">
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> 56 KHz </STATEMENT>
            </DESCRIPTOR>
            <OVERRIDE REF="PISAITEM1.XML#SAMPLING_56KHz"/>
            <OVERRIDE REF="PISAITEM2.XML#Khz56"/>
            <OVERRIDE REF="PISAITEM3.XML#Khz_56"/>
        </SELECTION>
        <SELECTION SELECT_ID="SAMPLING_32KHz">
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> 32 KHz </STATEMENT>
            </DESCRIPTOR>
            <OVERRIDE REF="PISAITEM1.XML#SAMPLING_32KHz"/>
            <OVERRIDE REF="PISAITEM2.XML#Khz32"/>
            <OVERRIDE REF="PISAITEM3.XML#Khz_32"/>
        </SELECTION>
        <SELECTION SELECT_ID="SAMPLING_16KHz">
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> 16 KHz </STATEMENT>
            </DESCRIPTOR>
            <OVERRIDE REF="PISAITEM1.XML#SAMPLING_16KHz"/>
            <OVERRIDE REF="PISAITEM2.XML#Khz16"/>
            <OVERRIDE REF="PISAITEM3.XML#Khz_16"/>
        </SELECTION>
```

```
        </CHOICE>
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="WAV_QUALITY">
            <CONDITION REQUIRE="WAV_FORMAT"/>
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> Select a proper WAV Quality for your Digital Item
                Configuration. </STATEMENT>
            </DESCRIPTOR>
            <SELECTION SELECT_ID="TELEPHONE_QUALITY">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> Telephone Quality </STATEMENT>
                </DESCRIPTOR>
                <OVERRIDE REF="PISAITEM1.XML#TELEPHONE_QUALITY"/>
                <OVERRIDE REF="PISAITEM2.XML#TELEPHONE"/>
                <OVERRIDE REF="PISAITEM3.XML#PHONE_QTY"/>
            </SELECTION>
            <SELECTION SELECT_ID="RADIO_QUALITY">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> Radio Quality </STATEMENT>
                </DESCRIPTOR>
                <OVERRIDE REF="PISAITEM1.XML#RADIO_QUALITY"/>
                <OVERRIDE REF="PISAITEM2.XML#RADIO"/>
                <OVERRIDE REF="PISAITEM3.XML#RADIO_QTY"/>
            </SELECTION>
            <SELECTION SELECT_ID="CD_QUALITY">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> CD Quality </STATEMENT>
                </DESCRIPTOR>
                <OVERRIDE REF="PISAITEM1.XML#CD_QUALITY"/>
                <OVERRIDE REF="PISAITEM2.XML#CD"/>
                <OVERRIDE REF="PISAITEM3.XML#CD_QTY"/>
            </SELECTION>
        </CHOICE>
        <!-- ========================= SCRIPT CONFIGURATION =========================-->
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="SCRIPT">
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> Select a proper Script Format for your Digital
                Item Configuration. </STATEMENT>
            </DESCRIPTOR>
            <SELECTION SELECT_ID="TEXT_FORMAT">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> Plain text </STATEMENT>
                </DESCRIPTOR>
                <OVERRIDE REF="PISAITEM1.XML#TEXT_FORMAT"/>
                <OVERRIDE REF="PISAITEM2.XML#TEXT"/>
                <OVERRIDE REF="PISAITEM3.XML#TEXTFORMAT"/>
            </SELECTION>
            <SELECTION SELECT_ID="MS-WORD_FORMAT">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> MS-WORD </STATEMENT>
                </DESCRIPTOR>
                <OVERRIDE REF="PISAITEM1.XML#MSWORD_FORMAT"/>
                <OVERRIDE REF="PISAITEM2.XML#MSWORD"/>
                <OVERRIDE REF="PISAITEM3.XML#WORDFORMAT"/>
            </SELECTION>
        </CHOICE>
        <!-- ############################## REFERENCED PHOTO ITEMs ##############################-->
        <ITEM>
            <REFERENCE URI="PISAITEM1.XML#PISA_PHOTO1"/>
        </ITEM>
        <ITEM>
            <REFERENCE URI="PISAITEM2.XML#PISA_PHOTO2"/>
        </ITEM>
        <ITEM>
            <REFERENCE URI="PISAITEM3.XML#PISA_PHOTO3"/>
        </ITEM>
    </ITEM>
</DIDL>
```

```
<DIDL>
    <!-- ################################### PISAITEM1 ###################################-->
    <ITEM ID="PISA_PHOTO1">
        <DESCRIPTOR>
            <STATEMENT TYPE="text/plain"> Riverside way in Pisa. </STATEMENT>
        </DESCRIPTOR>
        <DESCRIPTOR>
            <STATEMENT TYPE="text/plain"> Included music is Yuhki Kuramoto's Calming Island.
            </STATEMENT>
        </DESCRIPTOR>
        <!-- ################################ CHOICE [PHOTO] ################################-->
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="IMAGE_FORMAT">
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> Select a proper Image Format for your Digital
                 Item Configuration. </STATEMENT>
            </DESCRIPTOR>
            <SELECTION SELECT_ID="JPG_FORMAT">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> JPEG </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
            <SELECTION SELECT_ID="BMP_FORMAT">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> BMP </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
        </CHOICE>
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="JPG_COMPRESSION_RATIO">
            <CONDITION REQUIRE="JPG_FORMAT"/>
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> Select a proper Compression Ratio for your
                 Digital Item Configuration. </STATEMENT>
            </DESCRIPTOR>
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> Low Ratio Value: High quality/file size.
                </STATEMENT>
            </DESCRIPTOR>
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> High Ratio Value: Low quality/file size.
                </STATEMENT>
            </DESCRIPTOR>
            <SELECTION SELECT_ID="RATIO_1">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> RATIO 1 </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
            <SELECTION SELECT_ID="RATIO_8">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> RATIO 8 </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
        </CHOICE>
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="BMP_DECODING_FORMAT">
            <CONDITION REQUIRE="BMP_FORMAT"/>
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> Select a proper BMP Decoding Tool for your
                 Digital Item Configuration. </STATEMENT>
            </DESCRIPTOR>
            <SELECTION SELECT_ID="OS2_FORMAT">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> OS/2 </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
            <SELECTION SELECT_ID="WINDOWS_FORMAT">
```

```
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> WINDOWS </STATEMENT>
            </DESCRIPTOR>
        </SELECTION>
    </CHOICE>
    <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="RESOLUTION">
        <DESCRIPTOR>
            <STATEMENT TYPE="text/plain"> Select a proper Resolution for your Digital Item
             Configuration. </STATEMENT>
        </DESCRIPTOR>
        <SELECTION SELECT_ID="H1600x1200">
            <CONDITION REQUIRE="JPG_FORMAT"/>
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> 1600(W) x 1200(H) </STATEMENT>
            </DESCRIPTOR>
        </SELECTION>
        <SELECTION SELECT_ID="M800x600">
            <CONDITION REQUIRE="JPG_FORMAT"/>
            <CONDITION REQUIRE="BMP_FORMAT"/>
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> 800(W) x 600(H) </STATEMENT>
            </DESCRIPTOR>
        </SELECTION>
    </CHOICE>
    <!-- ========================== MUSIC CONFIGURATION ==========================-->
    <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="MUSIC_FORMAT">
        <DESCRIPTOR>
            <STATEMENT TYPE="text/plain"> Select a proper Music Format for your Digital
             Item Configuration. </STATEMENT>
        </DESCRIPTOR>
        <SELECTION SELECT_ID="MP3_FORMAT">
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> MP3 </STATEMENT>
            </DESCRIPTOR>
        </SELECTION>
        <SELECTION SELECT_ID="WAV_FORMAT">
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> WAV </STATEMENT>
            </DESCRIPTOR>
        </SELECTION>
    </CHOICE>
    <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="MP3_SAMPLING_RATE">
        <CONDITION REQUIRE="MP3_FORMAT"/>
        <DESCRIPTOR>
            <STATEMENT TYPE="text/plain"> Select a proper MP3 Sampling Rate for your
             Digital Item Configuration.  </STATEMENT>
        </DESCRIPTOR>
        <SELECTION SELECT_ID="SAMPLING_128KHz">
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> 128 KHz </STATEMENT>
            </DESCRIPTOR>
        </SELECTION>
        <SELECTION SELECT_ID="SAMPLING_56KHz">
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> 56 KHz </STATEMENT>
            </DESCRIPTOR>
        </SELECTION>
        <SELECTION SELECT_ID="SAMPLING_32KHz">
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> 32 KHz </STATEMENT>
            </DESCRIPTOR>
        </SELECTION>
        <SELECTION SELECT_ID="SAMPLING_16KHz">
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> 16 KHz </STATEMENT>
            </DESCRIPTOR>
        </SELECTION>
```

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        </CHOICE>
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="WAV_QUALITY">
            <CONDITION REQUIRE="WAV_FORMAT"/>
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> Select a proper WAV Quality for your Digital Item
                 Configuration. </STATEMENT>
            </DESCRIPTOR>
            <SELECTION SELECT_ID="TELEPHONE_QUALITY">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> Telephone Quality </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
            <SELECTION SELECT_ID="RADIO_QUALITY">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> Radio Quality </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
            <SELECTION SELECT_ID="CD_QUALITY">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> CD Quality </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
        </CHOICE>
        <!-- ========================== SCRIPT CONFIGURATION ==========================-->
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="SCRIPT">
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> Select a proper Script Format for your Digital
                 Item Configuration. </STATEMENT>
            </DESCRIPTOR>
            <SELECTION SELECT_ID="TEXT_FORMAT">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> Plain text </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
            <SELECTION SELECT_ID="MSWORD_FORMAT">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> MS-WORD </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
        </CHOICE>
        <!-- ################################### COMPONENT ###################################-->
        <!-- ================================== JPG ==================================-->
        <COMPONENT ID="MyPhoto1-1">
            <CONDITION REQUIRE="JPG_FORMAT RATIO_8 H1600x1200"/>
            <RESOURCE REF="DSCN0001-8-1600x1200.jpg" TYPE="image/jpg"/>
        </COMPONENT>
        <COMPONENT ID="MyPhoto1-2">
            <CONDITION REQUIRE="JPG_FORMAT RATIO_1 H1600x1200"/>
            <RESOURCE REF="DSCN0001-1-1600x1200.jpg" TYPE="image/jpg"/>
        </COMPONENT>
        <COMPONENT ID="MyPhoto1-3">
            <CONDITION REQUIRE="JPG_FORMAT RATIO_8 M800x600"/>
            <RESOURCE REF="DSCN0001-8-800x600.jpg" TYPE="image/jpg"/>
        </COMPONENT>
        <COMPONENT ID="MyPhoto1-4">
            <CONDITION REQUIRE="JPG_FORMAT RATIO_1 M800x600"/>
            <RESOURCE REF="DSCN0001-1-800x600.jpg" TYPE="image/jpg"/>
        </COMPONENT>
        <!-- ================================== BMP ==================================-->
        <COMPONENT ID="MyPhoto1-1b">
            <CONDITION REQUIRE="BMP_FORMAT WINDOWS M800x600"/>
            <RESOURCE REF="Windows-800x600-DSCN0001.bmp" TYPE="image/bmp"/>
        </COMPONENT>
        <COMPONENT ID="MyPhoto1-2b">
            <CONDITION REQUIRE="BMP_FORMAT OS2 M800x600"/>
            <RESOURCE REF="OS2-800x600-DSCN0001.bmp" TYPE="image/bmp"/>
        </COMPONENT>
```

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        <!-- ================================== MP3 ==================================-->
        <COMPONENT ID="Music2-16-mp3">
            <CONDITION REQUIRE="MP3_FORMAT SAMPLING_16KHz"/>
            <RESOURCE REF="myMusic1-16KHz.mp3" TYPE="audio/mp3"/>
        </COMPONENT>
        <COMPONENT ID="Music2-32-mp3">
            <CONDITION REQUIRE="MP3_FORMAT SAMPLING_32KHz"/>
            <RESOURCE REF="myMusic1-32KHz.mp3" TYPE="audio/mp3"/>
        </COMPONENT>
        <COMPONENT ID="Music2-56-mp3">
            <CONDITION REQUIRE="MP3_FORMAT SAMPLING_56KHz"/>
            <RESOURCE REF="myMusic1-56KHz.mp3" TYPE="audio/mp3"/>
        </COMPONENT>
        <COMPONENT ID="Music2-128-mp3">
            <CONDITION REQUIRE="MP3_FORMAT SAMPLING_128KHz"/>
            <RESOURCE REF="myMusic1-128KHz.mp3" TYPE="audio/mp3"/>
        </COMPONENT>
        <!-- ================================== WAV ==================================-->
        <COMPONENT ID="Music2-TELEPHONE_QUALITY_wav">
            <CONDITION REQUIRE="WAV_FORMAT TELEPHONE_QUALITY"/>
            <RESOURCE REF="myMusic1-11-8-MONO.wav" TYPE="audio/wav"/>
        </COMPONENT>
        <COMPONENT ID="Music2-RADIO_QUALITY_wav">
            <CONDITION REQUIRE="WAV_FORMAT RADIO_QUALITY"/>
            <RESOURCE REF="myMusic1-22-8-MONO.wav" TYPE="audio/wav"/>
        </COMPONENT>
        <COMPONENT ID="Music2-CD_QUALITY_wav">
            <CONDITION REQUIRE="WAV_FORMAT CD_QUALITY"/>
            <RESOURCE REF="myMusic1-44-16-STEREO.wav" TYPE="audio/wav"/>
        </COMPONENT>
        <!-- ================================== SCRIPT ==================================-->
        <COMPONENT ID="Script-text">
            <CONDITION REQUIRE="TEXT_FORMAT"/>
            <RESOURCE REF="TextScript-DSCN0001.txt" TYPE="text/plain"/>
        </COMPONENT>
        <COMPONENT ID="Script-doc">
            <CONDITION REQUIRE="MSWORD_FORMAT"/>
            <RESOURCE REF="TextScript-DSCN0001.doc" TYPE="application/msword"/>
        </COMPONENT>
    </ITEM>
</DIDL>
```

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<DIDL>
    <!-- ################################### PISAITEM2 ###################################-->
    <ITEM ID="PISA_PHOTO2">
        <DESCRIPTOR>
            <STATEMENT TYPE="text/plain"> Duomo in Pisa  </STATEMENT>
        </DESCRIPTOR>
        <DESCRIPTOR>
<STATEMENT TYPE="text/plain"> Included music is Yuhki Kuramoto's Sonnet of the Sea.
</STATEMENT>
        </DESCRIPTOR>
        <!-- ################################ CHOICE [PHOTO] ################################-->
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="IMG_FORMAT">
            ...
            <SELECTION SELECT_ID="JPG_FORMAT"/>
            <SELECTION SELECT_ID="BMP_FORMAT"/>
        </CHOICE>
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="JPG_COMPRESS">
            <CONDITION REQUIRE="JPG_FORMAT"/>
            <SELECTION SELECT_ID="RATIO1"/>
            <SELECTION SELECT_ID="RATIO8"/>
        </CHOICE>
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="BMP_DEC_FORMAT">
            <CONDITION REQUIRE="BMP_FORMAT"/>
            <SELECTION SELECT_ID="OS2"/>
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            <SELECTION SELECT_ID="WINDOWS"/>
        </CHOICE>
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="RESOLUTION">
            <SELECTION SELECT_ID="HIGH">
                <CONDITION REQUIRE="JPG_FORMAT"/>
            </SELECTION>
            <SELECTION SELECT_ID="MEDIUM">
                <CONDITION REQUIRE="JPG_FORMAT"/>
                <CONDITION REQUIRE="BMP_FORMAT"/>
</SELECTION>
        </CHOICE>
        <!-- ========================= MUSIC CONFIGURATION ==========================-->
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="MUSIC_FORMAT">
            <SELECTION SELECT_ID="MP3"/>
            <SELECTION SELECT_ID="WAVE"/>
        </CHOICE>
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="MP3_SAMPLING_RATE">
            <CONDITION REQUIRE="MP3"/>
            <SELECTION SELECT_ID="Khz128"/>
            <SELECTION SELECT_ID="Khz56"/>
            <SELECTION SELECT_ID="Khz32"/>
            <SELECTION SELECT_ID="Khz16"/>
        </CHOICE>
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="WAV_QUALITY">
            <CONDITION REQUIRE="WAVE"/>
            <SELECTION SELECT_ID="TELEPHONE"/>
            <SELECTION SELECT_ID="RADIO"/>
            <SELECTION SELECT_ID="CD"/>
        </CHOICE>
        <!-- ========================= SCRIPT CONFIGURATION ==========================-->
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="SCRIPT">
            <SELECTION SELECT_ID="TEXT"/>
            <SELECTION SELECT_ID="MSWORD"/>
        </CHOICE>
        <!-- ################################## COMPONENT ##################################-->
        <!-- ================================== JPG ===================================-->
        <COMPONENT ID="MyPhoto2-1">
            <CONDITION REQUIRE="JPG_FORMAT RATIO8 HIGH"/>
            <RESOURCE REF="DSCN0002-8-1600x1200.jpg" TYPE="image/jpg"/>
        </COMPONENT>
        <COMPONENT ID="MyPhoto2-2">
            <CONDITION REQUIRE="JPG_FORMAT RATIO1 HIGH"/>
            <RESOURCE REF="DSCN0002-1-1600x1200.jpg" TYPE="image/jpg"/>
        </COMPONENT>
        <COMPONENT ID="MyPhoto2-3">
            <CONDITION REQUIRE="JPG_FORMAT RATIO8 MEDIUM"/>
            <RESOURCE REF="DSCN0002-8-800x600.jpg" TYPE="image/jpg"/>
        </COMPONENT>
        <COMPONENT ID="MyPhoto2-4">
            <CONDITION REQUIRE="JPG_FORMAT RATIO1 MEDIUM"/>
            <RESOURCE REF="DSCN0002-1-800x600.jpg" TYPE="image/jpg"/>
        </COMPONENT>
        <!-- ================================== BMP ===================================-->
        <COMPONENT ID="MyPhoto2-1b">
            <CONDITION REQUIRE="BMP_FORMAT WINDOWS MEDIUM"/>
            <RESOURCE REF="Windows-800x600-DSCN0002.bmp" TYPE="image/bmp"/>
        </COMPONENT>
        <COMPONENT ID="MyPhoto2-2b">
            <CONDITION REQUIRE="BMP_FORMAT OS2 MEDIUM"/>
            <RESOURCE REF="OS2-800x600-DSCN0002.bmp" TYPE="image/bmp"/>
        </COMPONENT>
        <!-- ================================== MP3 ===================================-->
        <COMPONENT ID="Music2-16-mp3">
            <CONDITION REQUIRE="MP3 Khz16"/>
            <RESOURCE REF="myMusic2-16KHz.mp3" TYPE="audio/mp3"/>
        </COMPONENT>
        <COMPONENT ID="Music2-32-mp3">
```

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            <CONDITION REQUIRE="MP3 Khz32"/>
            <RESOURCE REF="myMusic2-32KHz.mp3" TYPE="audio/mp3"/>
        </COMPONENT>
        <COMPONENT ID="Music2-56-mp3">
            <CONDITION REQUIRE="MP3 Khz56"/>
            <RESOURCE REF="myMusic2-56KHz.mp3" TYPE="audio/mp3"/>
        </COMPONENT>
        <COMPONENT ID="Music2-128-mp3">
            <CONDITION REQUIRE="MP3 Khz128"/>
            <RESOURCE REF="myMusic2-128KHz.mp3" TYPE="audio/mp3"/>
        </COMPONENT>
        <!-- ================================== WAV ====================================-->
        <COMPONENT ID="Music2-TELEPHONE_QUALITY_wav">
            <CONDITION REQUIRE="WAVE TELEPHONE"/>
            <RESOURCE REF="myMusic2-11-8-MONO.wav" TYPE="audio/wav"/>
        </COMPONENT>
        <COMPONENT ID="Music2-RADIO_QUALITY_wav">
            <CONDITION REQUIRE="WAVE RADIO"/>
            <RESOURCE REF="myMusic2-22-8-MONO.wav" TYPE="audio/wav"/>
        </COMPONENT>
        <COMPONENT ID="Music2-CD_QUALITY_wav">
            <CONDITION REQUIRE="WAVE CD"/>
            <RESOURCE REF="myMusic2-44-16-STEREO.wav" TYPE="audio/wav"/>
        </COMPONENT>
        <!-- ================================= SCRIPT ==================================-->
        <COMPONENT ID="Script-text">
            <CONDITION REQUIRE="TEXT"/>
            <RESOURCE REF="TextScript-DSCN0002.txt" TYPE="text/plain"/>
        </COMPONENT>
        <COMPONENT ID="Script-doc">
            <CONDITION REQUIRE="MSWORD"/>
            <RESOURCE REF="TextScript-DSCN0002.doc" TYPE="application/msword"/>
        </COMPONENT>
    </ITEM>
</DIDL>
```

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<DIDL>
    <!-- ################################### PISAITEM3 ###################################-->
    <ITEM ID="PISA_PHOTO3">
        <DESCRIPTOR>
            <STATEMENT TYPE="text/plain">The Leaning tower of Pisa </STATEMENT>
        </DESCRIPTOR>
        <DESCRIPTOR>
            <STATEMENT TYPE="text/plain"> Included music is Yuhki Kuramoto's Nostalgia.
</STATEMENT>
        </DESCRIPTOR>
        <!-- ################################ CHOICE [PHOTO] ################################-->
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="IMG_FORMAT">
            <SELECTION SELECT_ID="JPG_FORMAT"/>
            <SELECTION SELECT_ID="BMP_FORMAT"/>
        </CHOICE>
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="JPG_COMPRESS">
            <CONDITION REQUIRE="JPG_FORMAT"/>
            <SELECTION SELECT_ID="R1"/>
            <SELECTION SELECT_ID="R8"/>
        </CHOICE>
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="BMP_DEC_FORMAT">
            <CONDITION REQUIRE="BMP_FORMAT"/>
            <SELECTION SELECT_ID="OS2_FORMAT"/>
            <SELECTION SELECT_ID="WIN_FORMAT"/>
        </CHOICE>
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="RESOLUTION">
            <SELECTION SELECT_ID="HIGH_RES">
                <CONDITION REQUIRE="JPG_FORMAT"/>
            </SELECTION>
            <SELECTION SELECT_ID="MEDIUM_RES">
```

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            <CONDITION REQUIRE="JPG_FORMAT"/>
            <CONDITION REQUIRE="BMP_FORMAT"/>
</SELECTION>
    </CHOICE>
    <!-- ========================= MUSIC CONFIGURATION ==========================-->
    <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="MUSIC_FORMAT">
        <SELECTION SELECT_ID="MP3FORMAT"/>
        <SELECTION SELECT_ID="WAVEFORMAT"/>
    </CHOICE>
    <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="MP3_SAMPLING_RATE">
        <CONDITION REQUIRE="MP3FORMAT"/>
        <SELECTION SELECT_ID="Khz_128"/>
        <SELECTION SELECT_ID="Khz_56"/>
        <SELECTION SELECT_ID="Khz_32"/>
        <SELECTION SELECT_ID="Khz_16"/>
    </CHOICE>
    <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="WAV_QUALITY ">
        <CONDITION REQUIRE="WAVEFORMAT"/>
        <SELECTION SELECT_ID="PHONE_QTY"/>
        <SELECTION SELECT_ID="RADIO_QTY"/>
        <SELECTION SELECT_ID="CD_QTY"/>
    </CHOICE>
    <!-- ========================= SCRIPT CONFIGURATION ==========================-->
    <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="SCRIPT">
        <SELECTION SELECT_ID="TEXTFORMAT"/>
        <SELECTION SELECT_ID="WORDFORMAT"/>
    </CHOICE>
    <!-- ################################## COMPONENT ###################################-->
    <!-- ================================== JPG ====================================-->
    <COMPONENT ID="MyPhoto3-1">
        <CONDITION REQUIRE="JPG_FORMAT R8 HIGH_RES"/>
        <RESOURCE REF="DSCN0003-8-1600x1200.jpg" TYPE="image/jpg"/>
    </COMPONENT>
    <COMPONENT ID="MyPhoto3-2">
        <CONDITION REQUIRE="JPG_FORMAT R1 HIGH_RES"/>
        <RESOURCE REF="DSCN0003-1-1600x1200.jpg" TYPE="image/jpg"/>
    </COMPONENT>
    <COMPONENT ID="MyPhoto3-3">
        <CONDITION REQUIRE="JPG_FORMAT R8 MEDIUM_RES"/>
        <RESOURCE REF="DSCN0003-8-800x600.jpg" TYPE="image/jpg"/>
    </COMPONENT>
    <COMPONENT ID="MyPhoto3-4">
        <CONDITION REQUIRE="JPG_FORMAT R1 MEDIUM_RES"/>
        <RESOURCE REF="DSCN0003-1-800x600.jpg" TYPE="image/jpg"/>
    </COMPONENT>
    <!-- ================================== BMP ====================================-->
    <COMPONENT ID="MyPhoto3-1b">
        <CONDITION REQUIRE="BMP_FORMAT WIN_FORMAT MEDIUM_RES"/>
        <RESOURCE REF="Windows-800x600-DSCN0003.bmp" TYPE="image/bmp"/>
    </COMPONENT>
    <COMPONENT ID="MyPhoto3-2b">
        <CONDITION REQUIRE="BMP_FORMAT OS2_FORMAT MEDIUM_RES"/>
        <RESOURCE REF="OS2-800x600-DSCN0003.bmp" TYPE="image/bmp"/>
    </COMPONENT>
    <!-- ================================== MP3 ====================================-->
    <COMPONENT ID="Music2-16-mp3">
        <CONDITION REQUIRE="MP3FORMAT Khz_16"/>
        <RESOURCE REF="myMusic2-16KHz.mp3" TYPE="audio/mp3"/>
    </COMPONENT>
    <COMPONENT ID="Music2-32-mp3">
        <CONDITION REQUIRE="MP3FORMAT Khz_32"/>
        <RESOURCE REF="myMusic2-32KHz.mp3" TYPE="audio/mp3"/>
    </COMPONENT>
    <COMPONENT ID="Music2-56-mp3">
        <CONDITION REQUIRE="MP3FORMAT Khz_56"/>
        <RESOURCE REF="myMusic2-56KHz.mp3" TYPE="audio/mp3"/>
    </COMPONENT>
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        <COMPONENT ID="Music2-128-mp3">
            <CONDITION REQUIRE="MP3FORMAT Khz_128"/>
            <RESOURCE REF="myMusic2-128KHz.mp3" TYPE="audio/mp3"/>
        </COMPONENT>
        <!-- ================================== WAV ==================================-->
        <COMPONENT ID="Music2-TELEPHONE_QUALITY_wav">
            <CONDITION REQUIRE="WAVEFORMAT PHONE_QTY"/>
            <RESOURCE REF="myMusic3-11-8-MONO.wav" TYPE="audio/wav"/>
        </COMPONENT>
        <COMPONENT ID="Music2-RADIO_QUALITY_wav">
            <CONDITION REQUIRE="WAVEFORMAT RADIO_QTY"/>
            <RESOURCE REF="myMusic3-22-8-MONO.wav" TYPE="audio/wav"/>
        </COMPONENT>
        <COMPONENT ID="Music2-CD_QUALITY_wav">
            <CONDITION REQUIRE="WAVEFORMAT CD_QTY"/>
            <RESOURCE REF="myMusic3-44-16-STEREO.wav" TYPE="audio/wav"/>
        </COMPONENT>
        <!-- ================================ SCRIPT ================================-->
        <COMPONENT ID="Script-text">
            <CONDITION REQUIRE="TEXTFORMAT"/>
            <RESOURCE REF="TextScript-DSCN0003.txt" TYPE="text/plain"/>
        </COMPONENT>
        <COMPONENT ID="Script-doc">
            <CONDITION REQUIRE="WORDFORMAT"/>
            <RESOURCE REF="TextScript-DSCN0003.doc" TYPE="application/msword"/>
        </COMPONENT>
    </ITEM>
</DIDL>
```

8.3 Example 3: Implementing numeric comparisons in Item configuration

This example shows how to implement more sophisticated kinds of selection criteria than that which has been shown in the previous configuration examples. In the following example, the first CHOICE is to determine the communication speed. In the CHOICE_ID=”SPPED”, there are three sets of speeds to select such as “HIGH_SPEED”, “MED_SPPED” and “LOW_SPEED”. The “HIGH_SPEED” corresponds to the communication line speed exceeding 8Mbps. The “MED_SPEED” corresponds to the communication line speed between 128Kbps and 8Mbps. The “LOW_SPEED” corresponds to the communication line speed less than 128Kbps. These relational criteria can be expressed in custom STATEMENTs within each SELECTION. In this example, these comparisons are expressed in a short script fragment. The second CHOICE with CHOICE_ID=”VIDEO_FORMAT” contains three SELECTION_IDs like ”MPEG2_FORMAT”, “MPEG4_FORMAT” and “QTIME_FORMAT” as described in the XML document example. Each SELECTION is connected by CONDITION REQUIRE=”HIGH_SPEED”, MED_SPEED ”, or “LOW_SPEED”, respectively. Hence, if some end-user who has a 2 Mbps communication line tries to configure the Digital Item using the following XML example, the MED_SPEED can be selected. This selection, in turn, would allow the end-user to select one of the two components such as MPEG4_FORMAT and QTIME_FORMAT that are located in the “movie1-mpg4-mpl2.asf” and “movie1.mov”, respectively.

```
<DIDL>
    <ITEM ID="MOVIE_ITEM1">
        <DESCRIPTOR>
            <STATEMENT TYPE="text/plain"> The Terminator. </STATEMENT>
        </DESCRIPTOR>
        <!-- ################################### CHOICE ###################################-->
        <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="SPEED">
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> Select a proper communication line for your
 Digital Item Configuration. </STATEMENT>
            </DESCRIPTOR>
            <!-- This choice uses an application-specific format. The format identifier
 "http://www.acme.com/app-x/script" identifies a software module that can interpret
 the script fragments, which can help the application make the appropriate
 selection. -->
            <DESCRIPTOR>
                <STATEMENT TYPE="http://www.acme.com/app-x/script">
                    var speed = system.connectionSpeed();
                </STATEMENT>
            </DESCRIPTOR>
            <SELECTION SELECT_ID="HIGH_SPEED">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> ADSL </STATEMENT>
                </DESCRIPTOR>
                <DESCRIPTOR>
                    <STATEMENT TYPE="http://www.acme.com/app-x/script">
                        (speed >= 8000 ? 1 : 0);
                    </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
            <SELECTION SELECT_ID="MED_SPEED">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> ISDN </STATEMENT>
                </DESCRIPTOR>
                <DESCRIPTOR>
                    <STATEMENT TYPE="http://www.acme.com/app-x/script">
                        (((speed >= 128) && (speed < 8000)) ? 1 : 0);
                    </STATEMENT>
                </DESCRIPTOR>
            </SELECTION>
            <SELECTION SELECT_ID="LOW_SPEED">
                <DESCRIPTOR>
                    <STATEMENT TYPE="text/plain"> MODEM </STATEMENT>
                </DESCRIPTOR>
                <DESCRIPTOR>
                    <STATEMENT TYPE="http://www.acme.com/app-x/script">
```

```
                    (speed < 128 ? 1 : 0);
                </STATEMENT>
            </DESCRIPTOR>
        </SELECTION>
    </CHOICE>
    <CHOICE MIN_SELECTIONS="1" MAX_SELECTIONS="1" CHOICE_ID="VIDEO_FORMAT">
        <DESCRIPTOR>
            <STATEMENT TYPE="text/plain"> Select a proper Video Format for your Digital
 Item Configuration. </STATEMENT>
        </DESCRIPTOR>
        <SELECTION SELECT_ID="MPEG2_FORMAT">
            <CONDITION REQUIRE="HIGH_SPEED"/>
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> MPEG-2 </STATEMENT>
            </DESCRIPTOR>
        </SELECTION>
        <SELECTION SELECT_ID="MPEG4_FORMAT">
            <CONDITION REQUIRE="LOW_SPEED"/>
            <CONDITION REQUIRE="MED_SPEED"/>
                <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> MPEG-4 </STATEMENT>
            </DESCRIPTOR>
        </SELECTION>
        <SELECTION SELECT_ID="QTIME_FORMAT">
            <CONDITION REQUIRE="LOW_SPEED"/>
            <DESCRIPTOR>
                <STATEMENT TYPE="text/plain"> QuickTime </STATEMENT>
            </DESCRIPTOR>
        </SELECTION>
    </CHOICE>
    <!-- ################################## COMPONENT ###################################-->
    <COMPONENT ID="MyMovie1-MPEG2-MPML">
        <CONDITION REQUIRE="HIGH_SPEED MPEG2_FORMAT"/>
        <RESOURCE REF="movie1-mpg2-mpml.mpg" TYPE="video/mpeg"/>
    </COMPONENT>
    <COMPONENT ID="MyMovie1-MPEG4-SPL2">
        <CONDITION REQUIRE="LOW_SPEED MPEG4_FORMAT"/>
        <RESOURCE REF="movie1-mpg4-spl2.asf" TYPE="video/x-la-asf"/>
    </COMPONENT>
    <COMPONENT ID="MyMovie1-MPEG4-MPL2">
        <CONDITION REQUIRE="MED_SPEED MPEG4_FORMAT"/>
        <RESOURCE REF="movie1-mpg4-mpl2.asf" TYPE="video/x-la-asf"/>
    </COMPONENT>
    <COMPONENT ID="MyMovie1-QTIME">
        <CONDITION REQUIRE="LOW_SPEED QTIME_FORMAT"/>
        <RESOURCE REF="movie1.mov" TYPE="video/qtime"/>
    </COMPONENT>
  </ITEM>
</DIDL>
```