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Information Technology — Multimedia Framework — Part 5: Rights Expression Language — Working Draft

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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.

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Attention is drawn to the possibility that some of the elements of this part of ISO/IEC 15938 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 15938-5 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 consists of the following parts, under the general title *Information Technology — Multimedia Framework*:

Part 1: Proposed Draft Technical Report - Vision, Technologies and Strategy

Part 2: Digital Item Declaration

Part 3: Digital Item Identification & Description

Part 4: IPMP

Part 5: Rights Expression Language

Part 6: Rights Data Dictionary

Introduction

This standard, also known as "Multimedia Framework," standardizes ...

Editor's Note: THIS DOCUMENT IS NOT COMPLETE.

This document is a very early release of the working draft. Many sections need further development and expansion.

This section should be harmonized across MPEG-21 parts.

Information Technology — Multimedia Framework — Part 5: Rights Expression Language — Working Draft (WD)

1 Scope

1.1 Organization of the document

Editor's Note: This section needs to be developed.

1.2 Conventions

Fixed-width font is used for sequences of characters that are not to be interpreted as natural language. Type names are camel-case with an initial capital. Element names are camel-case with an initial lower.

Fixed-width italic font is used for sequences of characters identifying the conceptual entity which is declared by the corresponding type or element.

1.3 Namespace

The namespace for the REL will be `urn:mpeg:mpeg21:2002:REL-NS-01`. The "01" represents a serial number that is expected to change as the REL schema evolves along with this part of ISO/IEC 21000.

2 Normative references

Editor's Note: This section needs to be developed.

3 Terms and definitions

3.1 Terminology

Editor's Note: This section needs to be developed.

4 Rights Expression Language (REL)

4.1 Architecture of the REL

The working assumption for the architecture of the REL is that this architecture will be based on the specification of m7640.

4.2 Rights

4.2.1 Semantics

| Right | Semantics |
|--------------|--|
| Play | Represents the right to render the work into a transient form, as appropriate to the resource type. Depending on the content type, exercising this right might result in displaying a book, playing a video or audio clip, or playing a computer game. |
| Print | Represents the right to make a permanent rendered copy of the work outside the control of a repository. Renders and helpers may be used during the exercise. Exercising this right might result in a printing a hard copy of a book, creating a bitmap image on a removable disk, or creating an audio recording on a magnetic tape. |
| Export | Represents the right to make a source copy of the work outside of the secure repository. |
| Edit | Represents the right to make changes to a work to create a new work based on the original. |
| Extract | Represents the right to use a portion of the work to create a new work. |
| Embed | Represents the right to include the work as part of a composite work. An Embed operation places a copy of the work inside the composite work. |
| Copy | Represents the right to copy a work. |
| Transfer | Represents the right to transfer a work to another repository, removing the work from the original location. |
| Loan | Represents the right to lend a work to another principal for a specific period of time. While the work is on loan, the original copy cannot be used. |
| Read | Represents the right to read the work from the repository. |
| Write | Represents the right to write or save the work in the secure repository. |
| Execute | Represents the right to execute a resource from a secure repository. |
| Delete | Represents the right to delete a copy of a work from the repository. |
| Backup | Represents the right to create a backup copy of the work. |
| Restore | Represents the right to restore a work from a backup copy, converting the backup copy to usable form. |
| Verify | Represents the right to check the authenticity of the work in the repository. |
| ManageFolder | Represents the right to create and name subfolders and configure folders by moving files |

| | |
|---|---|
| | and subfolders among them. |
| AccessFolderInfo | Represents the right to obtain information about the works within folders in a repository. |
| Install | Represents the right to make software runnable on the repository, including, for example, checking that the software is certified, that it has not been tampered with, and that it is compatible with the repository. |
| Uninstall | Represents the right to disable software from running, restoring it to the state it was in before it was installed. Exercising an uninstall right does not remove the files for the program from the repository. |
| Editor's Note: Consider harmonizing the above definitions with semantically-equivalent references to the RDD. | |

Each of the elements `play`, `print`, `export`, `edit`, `extract`, `embed`, `copy`, `transfer`, `loan`, `read`, `write`, `execute`, `delete`, `backup`, `restore`, `verify`, `manageFolder`, `accessFolderInfo`, `install`, and `uninstall` does not modify the semantics of its content's type.

4.2.2 XML Syntax

The schema in Annex B normatively defines the XML Syntax for each of the elements and types defined in the preceeding section. The diagrams in Annex C informatively describe the XML Syntac for each of the elements and types defined in the preceeding section.

4.3 Resources

4.3.1 Semantics

4.3.1.1 DigitalWork

A *DigitalWork* is a sequence of bits that can be a resource. It represents the content to which rights and conditions are being applied. The *DigitalWork* type is composed of four different kinds of elements: *description*, *metadata*, *locator*, and *parts*. The *description* *describes* the *DigitalWork*, but does not *define* it. That is to say that two *DigitalWork* instances that are identical – except for their *description* elements – declare the same *DigitalWork*.

On the other hand, the *metadata*, *locator*, and *parts* elements *define* the *DigitalWork*. The *DigitalWork* declared by the *DigitalWork* instance is that *DigitalWork* that

- 1) can be shown to have all the *metadata* declared by the *metadata* elements in the *DigitalWork* instance,
- 2) is the sequence of bits identified by the *locator* element in the *DigitalWork* instance, and
- 3) contains subsequences of bits that are equal to each child *DigitalWork* declared within the *parts* element of the *DigitalWork* instance.

Editor's Note: Consider replacing the above definition of *DigitalWork* with some form of *diid:identification* to reference digital items and their components. Issues to be thought about include: defining the semantics of assigning rights to a digital item, defining the semantics of assigning rights to a component (vs. a resource).

The *digitalWork* element does not modify the semantics of its content's type.

4.3.1.2 SecurityLevel

An abstract indication of the security level that a principal has. Specified as the resource in a grant that also specifies the `possessProperty` right. The `SecurityLevel` type has no semantics; it is simply a syntactic construct.

The `securityLevel` element does not modify the semantics of its content's type.

4.3.2 XML Syntax

The schema in Annex B normatively defines the XML Syntax for each of the elements and types defined in the preceeding section. The diagrams in Annex C informatively describe the XML Syntax for each of the elements and types defined in the preceeding section.

4.4 Conditions

4.4.1 Semantics

4.4.1.1 Source

Indicates the source secured repository or device to use when exercising a right. Used with all rights except for render rights.

The `source` element does not modify the semantics of its content's type.

4.4.1.2 Destination

Indicates the repositories to which a work can be moved. Used with rights that involve movement of digital works (all rights except render rights).

The `destination` element does not modify the semantics of its content's type.

4.4.1.3 Helper

Indicates the software that can be used to exercise a right.

The `helper` element does not modify the semantics of its content's type.

4.4.1.4 Renderer

Identifies the device that can be used to render a work. Used with render rights.

The `renderer` element does not modify the semantics of its content's type.

4.4.1.5 Watermark

A list of information to be embedded in a copy of the work by a device while producing this copy.

The `Watermark` type is composed of three different kinds of elements: `string`, watermark token, and `object`. The `string` element declares the textual information. Each watermark token declares the corresponding information shown in the table below. The `object` element declares the information declared by its content's type (`DigitalWork`, by default).

| Token | Information |
|-------------------------|---|
| <code>all-rights</code> | The <code>License</code> instance in which the <code>Watermark</code> instance appears. Followed by any other <code>License</code> instances that the implementation can find and |

| | |
|----------------------|--|
| | determines are appropriate to include. |
| render-rights | The <code>Grant</code> or <code>GrantGroup</code> instance that is both the direct child of a <code>License</code> instance and the ancestor of the <code>Watermark</code> instance. Followed by any other <code>Grant</code> or <code>GrantGroup</code> instances that the implementation can find and determines are appropriate to include. |
| User-name | The user's name. |
| User-id | The user's ID. |
| User-location | The user's location. |
| institution-name | The institution's name that owns the rendering service or rendering device. |
| institution-id | The institution's id that owns the rendering service or rendering device. |
| institution-location | The institution's location that owns the rendering service or rendering device. |
| render-name | The rendering device's name. |
| render-id | The rendering device's id. |
| render-location | The rendering device's location. |
| render-time | The time and date that the work was rendered. |
| Copy-number | The number of copies of the work. |

The `watermark` element does not modify the semantics of its content's type.

4.4.2 XML Syntax

The schema in Annex B normatively defines the XML Syntax for each of the elements and types defined in the preceeding section. The diagrams in Annex C informatively describe the XML Syntax for each of the elements and types defined in the preceeding section.

Annex A
(informative)
Patent Statements

Annex B

(normative)

XML Schema

```

<?xml version="1.0" encoding="UTF-8"?>
<!-- Copyright (C) 2001 ContentGuard Holdings, Inc. All rights reserved. -->
<xsd:schema targetNamespace="urn:mpeg:mpeg21:REL-NS-01"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:dsig="http://www.w3.org/2000/09/xmldsig#"
xmlns:r="http://www.xrml.org/schema/2001/11/xrml2core"
xmlns:sx="http://www.xrml.org/schema/2001/11/xrml2sx"
xmlns:mx="urn:mpeg:mpeg21:2002:REL-NS-01" elementFormDefault="qualified"
attributeFormDefault="unqualified">
  <!--Rights-->
  <xsd:complexType name="Play">
    <xsd:complexContent>
      <xsd:extension base="r:Right"/>
    </xsd:complexContent>
  </xsd:complexType>
  <xsd:complexType name="Print">
    <xsd:complexContent>
      <xsd:extension base="r:Right"/>
    </xsd:complexContent>
  </xsd:complexType>
  <xsd:complexType name="Export">
    <xsd:complexContent>
      <xsd:extension base="r:Right"/>
    </xsd:complexContent>
  </xsd:complexType>
  <xsd:complexType name="Edit">
    <xsd:complexContent>
      <xsd:extension base="r:Right"/>
    </xsd:complexContent>
  </xsd:complexType>
  <xsd:complexType name="Extract">
    <xsd:complexContent>
      <xsd:extension base="r:Right"/>
    </xsd:complexContent>
  </xsd:complexType>
  <xsd:complexType name="Embed">
    <xsd:complexContent>
      <xsd:extension base="r:Right"/>
    </xsd:complexContent>
  </xsd:complexType>
  <xsd:complexType name="Copy">
    <xsd:complexContent>
      <xsd:extension base="r:Right"/>
    </xsd:complexContent>
  </xsd:complexType>
  <xsd:complexType name="Transfer">
    <xsd:complexContent>
      <xsd:extension base="r:Right"/>
    </xsd:complexContent>
  </xsd:complexType>
  <xsd:complexType name="Loan">
    <xsd:complexContent>

```

```

        <xsd:extension base="r:Right"/>
    </xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="Read">
    <xsd:complexContent>
        <xsd:extension base="r:Right"/>
    </xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="Write">
    <xsd:complexContent>
        <xsd:extension base="r:Right"/>
    </xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="Execute">
    <xsd:complexContent>
        <xsd:extension base="r:Right"/>
    </xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="Delete">
    <xsd:complexContent>
        <xsd:extension base="r:Right"/>
    </xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="Backup">
    <xsd:complexContent>
        <xsd:extension base="r:Right"/>
    </xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="Restore">
    <xsd:complexContent>
        <xsd:extension base="r:Right"/>
    </xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="Verify">
    <xsd:complexContent>
        <xsd:extension base="r:Right"/>
    </xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="ManageFolder">
    <xsd:complexContent>
        <xsd:extension base="r:Right"/>
    </xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="AccessFolderInfo">
    <xsd:complexContent>
        <xsd:extension base="r:Right"/>
    </xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="Install">
    <xsd:complexContent>
        <xsd:extension base="r:Right"/>
    </xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="Uninstall">
    <xsd:complexContent>
        <xsd:extension base="r:Right"/>
    </xsd:complexContent>
</xsd:complexType>
<xsd:element name="play" type="mx:Play" substitutionGroup="r:right"/>
<xsd:element name="print" type="mx:Print" substitutionGroup="r:right"/>

```

```

<xsd:element name="export" type="mx:Export" substitutionGroup="r:right"/>
<xsd:element name="edit" type="mx:Edit" substitutionGroup="r:right"/>
<xsd:element name="extract" type="mx:Extract" substitutionGroup="r:right"/>
<xsd:element name="embed" type="mx:Embed" substitutionGroup="r:right"/>
<xsd:element name="copy" type="mx:Copy" substitutionGroup="r:right"/>
<xsd:element name="transfer" type="mx:Transfer" substitutionGroup="r:right"/>
<xsd:element name="loan" type="mx:Loan" substitutionGroup="r:right"/>
<xsd:element name="read" type="mx:Read" substitutionGroup="r:right"/>
<xsd:element name="write" type="mx:Write" substitutionGroup="r:right"/>
<xsd:element name="execute" type="mx:Execute" substitutionGroup="r:right"/>
<xsd:element name="delete" type="mx>Delete" substitutionGroup="r:right"/>
<xsd:element name="backup" type="mx:Backup" substitutionGroup="r:right"/>
<xsd:element name="restore" type="mx:Restore" substitutionGroup="r:right"/>
<xsd:element name="verify" type="mx:Verify" substitutionGroup="r:right"/>
<xsd:element name="manageFolder" type="mx:ManageFolder"
substitutionGroup="r:right"/>
  <xsd:element name="accessFolderInfo" type="mx:AccessFolderInfo"
substitutionGroup="r:right"/>
  <xsd:element name="install" type="mx:Install" substitutionGroup="r:right"/>
  <xsd:element name="uninstall" type="mx:Uninstall" substitutionGroup="r:right"/>
  <!--Resources-->
  <xsd:complexType name="DigitalWork">
    <xsd:complexContent>
      <xsd:extension base="r:Resource">
        <xsd:sequence minOccurs="0">
          <xsd:element name="description" type="r:LinguisticString"
minOccurs="0" maxOccurs="unbounded"/>
          <xsd:element name="metadata" type="r:DigitalResource" minOccurs="0"
maxOccurs="unbounded"/>
          <xsd:element name="locator" type="r:DigitalResource" minOccurs="0"/>
          <xsd:element name="parts" minOccurs="0">
            <xsd:complexType>
              <xsd:sequence>
                <xsd:element ref="mx:digitalWork" minOccurs="0"
maxOccurs="unbounded"/>
              </xsd:sequence>
            </xsd:complexType>
          </xsd:element>
        </xsd:sequence>
      </xsd:extension>
    </xsd:complexContent>
  </xsd:complexType>
  <xsd:complexType name="SecurityLevel" abstract="true">
    <xsd:complexContent>
      <xsd:extension base="r:Resource">
        <xsd:sequence minOccurs="0">
          <xsd:element name="value" type="xsd:integer"/>
        </xsd:sequence>
      </xsd:extension>
    </xsd:complexContent>
  </xsd:complexType>
  <xsd:element name="digitalWork" type="mx:DigitalWork"
substitutionGroup="r:resource"/>
  <xsd:element name="securityLevel" type="mx:SecurityLevel"
substitutionGroup="r:resource"/>
  <!--Conditions-->
  <xsd:complexType name="Source">
    <xsd:complexContent>
      <xsd:extension base="r:Condition">
        <xsd:sequence minOccurs="0">

```

```

        <xsd:element ref="r:principal"/>
      </xsd:sequence>
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="Destination">
  <xsd:complexContent>
    <xsd:extension base="r:Condition">
      <xsd:sequence minOccurs="0">
        <xsd:element ref="r:principal"/>
      </xsd:sequence>
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="Helper">
  <xsd:complexContent>
    <xsd:extension base="r:Condition">
      <xsd:sequence minOccurs="0">
        <xsd:element ref="r:principal"/>
      </xsd:sequence>
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="Renderer">
  <xsd:complexContent>
    <xsd:extension base="r:Condition">
      <xsd:sequence minOccurs="0">
        <xsd:element ref="r:principal"/>
      </xsd:sequence>
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="Watermark">
  <xsd:complexContent>
    <xsd:extension base="r:Condition">
      <xsd:choice minOccurs="0" maxOccurs="unbounded">
        <xsd:element name="string" type="r:LinguisticString"/>
        <xsd:group ref="mx:WatermarkToken"/>
        <xsd:element name="object" type="mx:DigitalWork"/>
      </xsd:choice>
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
<xsd:group name="WatermarkToken">
  <xsd:choice>
    <xsd:element name="all-rights"/>
    <xsd:element name="render-rights"/>
    <xsd:element name="user-name"/>
    <xsd:element name="user-id"/>
    <xsd:element name="user-location"/>
    <xsd:element name="institution-name"/>
    <xsd:element name="institution-id"/>
    <xsd:element name="institution-location"/>
    <xsd:element name="render-id"/>
    <xsd:element name="render-name"/>
    <xsd:element name="render-location"/>
    <xsd:element name="render-time"/>
    <xsd:element name="copy-number"/>
  </xsd:choice>
</xsd:group>

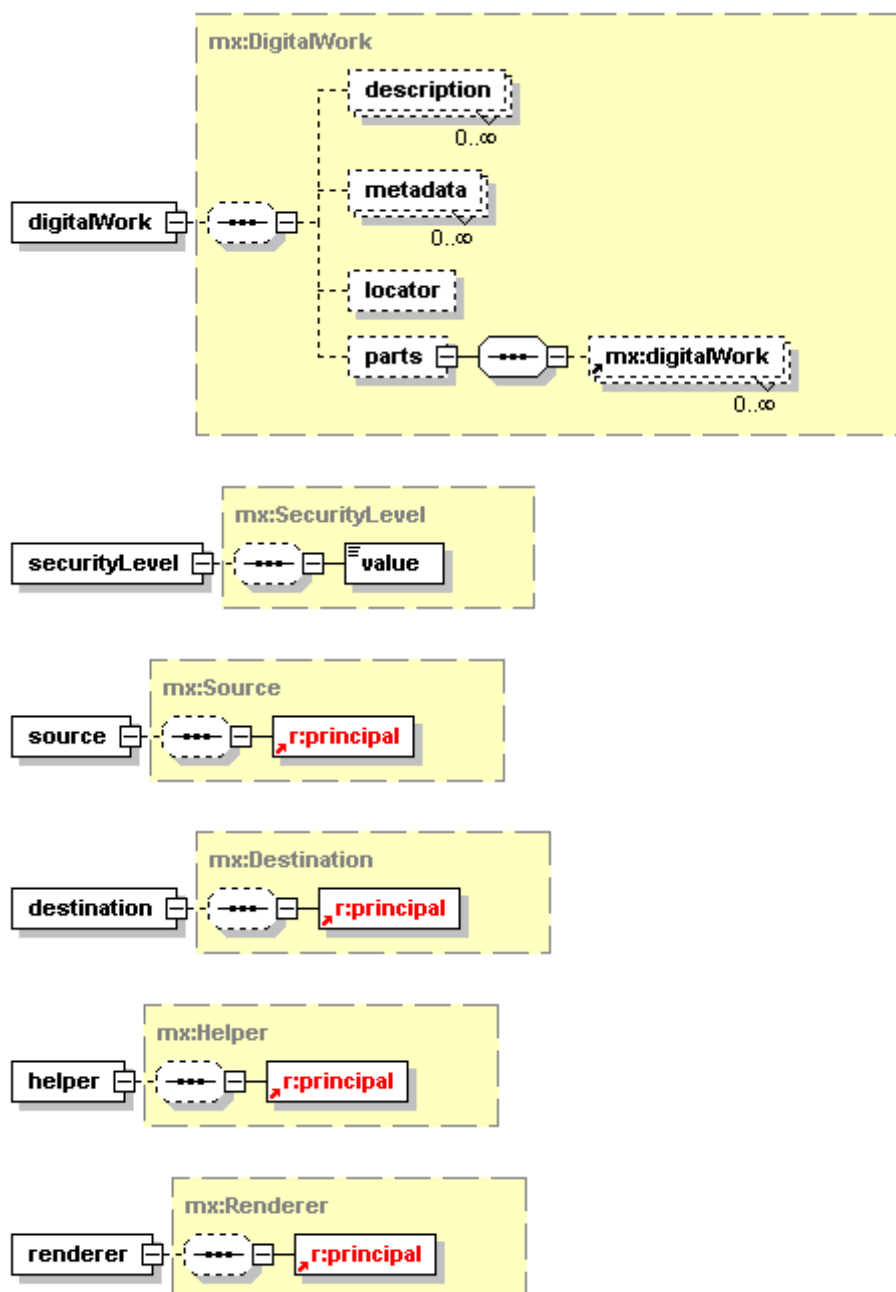
```

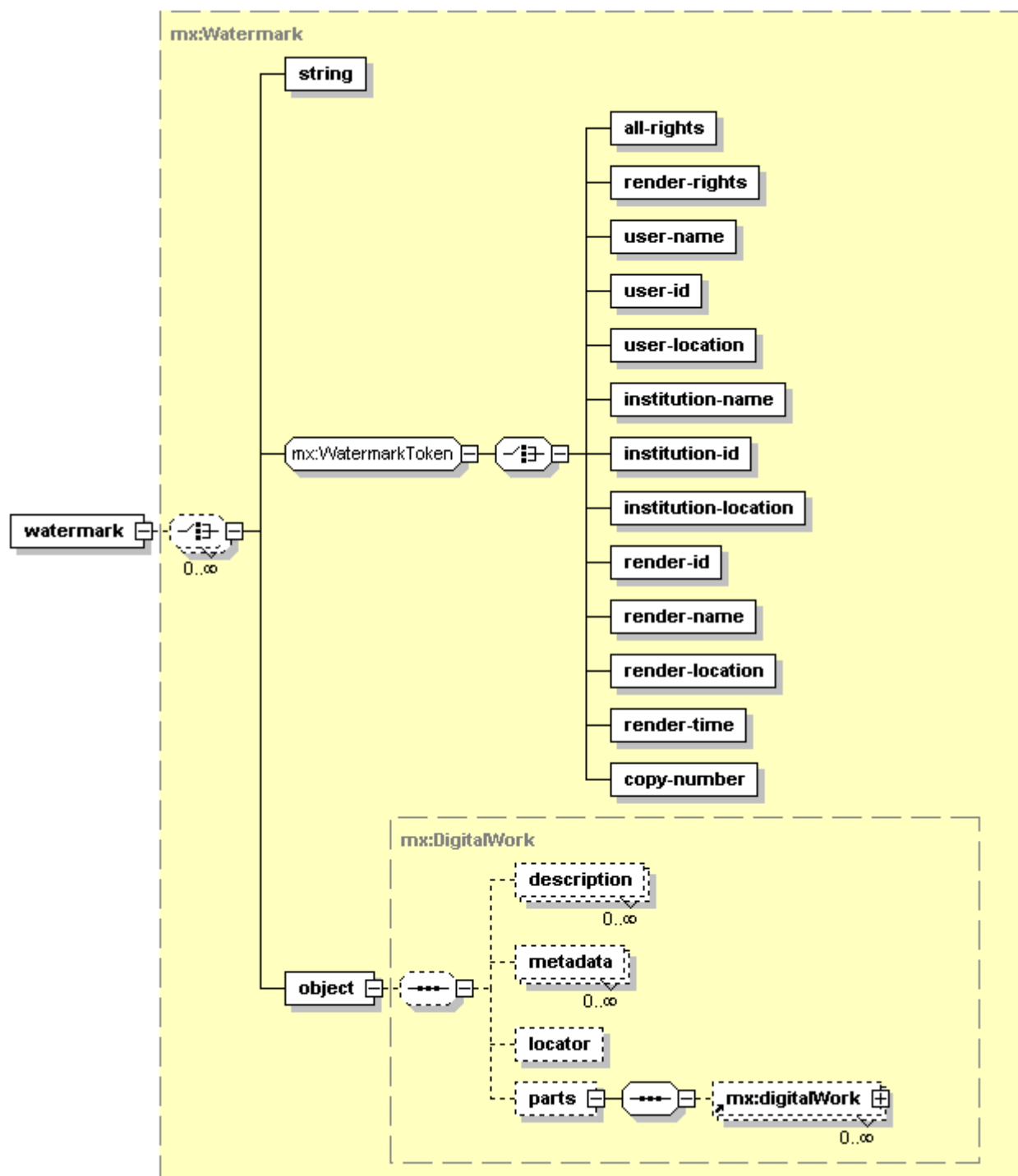
```
<xsd:element name="source" type="mx:Source" substitutionGroup="r:condition"/>
<xsd:element name="destination" type="mx:Destination"
substitutionGroup="r:condition"/>
<xsd:element name="helper" type="mx:Helper" substitutionGroup="r:condition"/>
<xsd:element name="renderer" type="mx:Renderer" substitutionGroup="r:condition"/>
<xsd:element name="watermark" type="mx:Watermark"
substitutionGroup="r:condition"/>
</xsd:schema>
```

Annex C

(informative)

Diagrams





Annex D

(informative)

Experiment Record

| No. | Requirement Name | Requirement Description | Core Experiment | Location of Results | Further work required | Leader | Finish date |
|-------|---|--|-----------------|---------------------|-----------------------|--------|-------------|
| 2.1 | General Requirements | | | | | | |
| 2.1.1 | Support of Multiple Usage/Business Models | The RDD-REL shall be used to express multiple Usage/Business Models utilising Permissions, Conditions and Obligations. | 1,3 | M8062 | y | | |
| 2.1.2 | Articulation of Roles | The RDD-REL shall support the articulation of Roles undertaken by Users | 1,3 | M8062 | y | | |

| | | | | | | |
|---------------------------------------|--|-----|-------|---|------------|------------|
| 2.1.3 Definition of Terms | The RDD-REL shall support the identification and definition of the semantics without syntactical encodings. | 1,3 | M8062 | y | | |
| 2.1.4 Standard Identification Systems | The RDD-REL shall support open standard identification systems | 1,3 | M8062 | y | | |
| 2.1.5 Interoperability | The RDD-REL shall support complete Interoperability for the management and protection of Expressions associated with Digital Items across IPMP Systems | 1,3 | M8062 | N | BWW | 10/03/2002 |
| 2.1.6 Extensibility | The RDD-REL shall provide extensibility | 1,3 | M8062 | y | | |
| 2.1.7 Customisability | The RDD-REL shall be flexible to enable subsets of Expressions to meet different purposes and needs. | | | y | | |
| 2.1.8 Expressiveness | The RDD-REL shall provide mechanisms for all Users of Digital Items to express their rights and interests in, and contractual agreements related to the Digital Items according to a variety of usage and business models. | 1,3 | M8062 | y | | |

| | | | | | | |
|---|--|-----|-------|---|------------|------------|
| 2.1.9 Machine Readable Language | The RDD-REL shall be machine-readable | 1,3 | M8062 | N | BWW | 10/03/2002 |
| 2.1.10 Adding New and Modifying Existing Expressions | The RDD-REL shall provide mechanisms to introduce new and modify existing Expressions. | 1,3 | M8062 | y | | |
| 2.1.11 Identification and Description of Rights Expressions | The RDD-REL shall provide mechanisms to unambiguously identify Expressions written in the language, as well as supply descriptive information about these Expressions. | 1,3 | M8062 | y | | |
| 2.1.12 Authentication of Expressions | The RDD-REL shall enable authentication of Expressions and descriptions written in the language. | 1,3 | M8062 | y | | |
| 2.1.13 Verification of Expressions | The RDD-REL shall provide mechanisms for verification of Expressions. | 3 | | y | | |

| | | | | | |
|--|--|-----|-------|---|--|
| 2.1.14 Multiple Expressions Conflict | The RDD-REL shall provide a mechanism to resolve conflicts between multiple Expressions | | y | | |
| 2.1.15 Permission by Contract and/or Legislation | The RDD-REL shall support expression of Permission by contract and/or legislation. | | y | | |
| 2.1.16 Expression Language Support of Dictionary Terms | The REL shall support all of the terms defined in the RDD. | 1,3 | M8062 | y | |
| 2.1.17 Written in Open, Standard Meta-Language | The RDD-REL shall be defined in open, standard meta-language. | 1,3 | M8062 | y | |
| 2.1.18 Well-Defined Semantics | The RDD-REL shall have unambiguous, and understandable semantics. | 1,3 | M8062 | y | |
| 2.1.19 A Core Set of Primitives | The RDD-REL shall provide a minimal core set of primitive constructs from which all Expressions can be constructed or derived. | 1,3 | M8062 | y | |

| | | | | | | |
|--------------------------------------|--|-----|-------|---|--|--|
| 2.1.20 Sequencing | The RDD-REL shall allow for the specification of Expressions that must be fulfilled in a total or partial temporal ordering. | | | y | | |
| 2.1.21 Inheritance Semantics | The RDD-REL shall enable an hierarchy of Permissions via an inheritance mechanism. | 2 | | y | | |
| 2.1.22 Minimising Overheads | The RDD-REL must be expressed in an efficient manner to ensure the minimal impact upon content payload | 1,3 | M8062 | y | | |
| 2.2 Digital Item Requirements | | | | | | |
| 2.2.1 Digital Item Description | The RDD-REL shall provide mechanisms to reference Digital Item Descriptions as part of the language, make reference to external content descriptions, and include existing content descriptions. | 2,3 | | y | | |

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|----------------------------------|---|-------|-------|---|--|--|
| 2.2.2 Creation Types | The RDD-REL shall support the creation of Expressions associated with all creation types. | | | y | | |
| 2.2.3 Composite Digital Items | The RDD-REL shall provide mechanisms to associate Expressions with composite Digital Items. | 1,2,3 | M8062 | y | | |
| 2.2.4 Fragments of Digital Items | The RDD-REL shall provide mechanisms to reference fragments of Digital Items that are not pre-declared as Digital Items themselves. | | | y | | |
| 2.2.5 Digital Item Aggregations | The RDD-REL shall provide mechanisms to reference Containers or other aggregations of Digital Items. | | | y | | |

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| 2.2.6 Digital Item Protection | The RDD-REL shall support mechanisms to protect Expressions from being altered or removed. | | y | | |
| 2.2.7 Digital Item Authentication | The RDD-REL shall provide mechanisms to reference authentication schemes. | | y | | |
| 2.2.8 Digital Item Confidentiality | The RDD-REL shall support mechanisms to indicate types and levels of protection against unauthorised Users accessing Expressions. | | y | | |
| 2.2.9 Digital Item Availability | The RDD-REL shall support mechanisms to indicate where Digital Items are available for retrieval or access. | | y | | |

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|--|---|-----|-------|---|--|--|
| 2.2.10 Life Cycle of Digital Items | The RDD-REL shall support all operations throughout the entire Life Cycle of Digital Items | 1,3 | M8062 | y | | |
| 2.2.11 Format and Delivery Independence | The RDD-REL shall provide mechanisms to ensure that the interpretation of Expressions is independent of the format or delivery channel of Digital Items. | 1,3 | M8062 | y | | |
| 2.3 Usage Permissions Element Semantics | | | | | | |
| 2.3.1 Specification of Usage Permissions | Usage Permissions expressed in the RDD-REL shall cover all types and modes of operations and activities that happen to Digital Items during their Life Cycle. | 1,3 | M8062 | y | | |

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|---|--|-----|-------|---|--|
| 2.3.2 Categorization of Permissions | The RDD-REL shall enable the organisation of Permissions into categories. | | y | | |
| 2.3.3 Transport Permissions | The RDD-REL shall provide mechanisms to express transport Permissions. | | y | | |
| 2.3.4 Render Permissions | The RDD-REL shall provide mechanisms to express render Permissions. | 1,3 | M8062 | y | |
| 2.3.5 Derivative Digital Item Permissions | The RDD-REL shall provide mechanisms to express derivative Digital Item Permissions. | 3 | | y | |
| 2.3.6 File Management Permissions | The RDD-REL shall provide mechanisms to express file management Permissions. | | | y | |
| 2.3.7 Configuration Permissions | The RDD-REL shall provide mechanisms to express configuration Permissions. | | | y | |

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| 2.3.8 | Revocation of Issued Permissions | The RDD-REL shall support mechanisms by which Permissions, Conditions and/or Obligations may be revoked during the Life Cycle of a Digital Item | | | y | | |
| 2.3.9 | Conditional Update/Refresh of Issued Permissions and Obligations | The RDD-REL shall provide for situations where Permissions and Obligations require update or renegotiation when specified trigger Conditions are met. | | | y | | |
| 2.4 Conditions | | | | | | | |
| 2.4.1 | Usage Conditions | The RDD-REL shall provide mechanisms that will allow Conditions to be specified for all types of usage. | 1 | M8062 | y | | |
| 2.4.2 | Rule Expiration Due to non-Temporal Constraints | The REL shall support an expiration construct. | | | y | | |

2.5 Obligations

2.5.1 Specification of Obligations The RDD-REL shall provide mechanisms to express Obligations for all types of usage.

2.5.2 Expression of Marks for Digital Items The RDD-REL shall express mechanisms that may require that a Digital Item be marked or re-marked.

2.5.3 Obligations on Agents The RDD-REL shall express Obligations on Agents on their handling of Digital Items.

2.6 Governance

This section defines requirements for the governance of the RDD-REL.

2.6.1 Governance of the RDD-REL Management mechanisms shall be provided to enable governance of the RDD-REL

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Summary of Editor's Notes

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|---|----|
| Editor's Note: This section should be harmonized across MPEG-21 parts..... | ix |
| Editor's Note: This section needs to be developed. | 1 |
| Editor's Note: This section needs to be developed. | 1 |
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| Editor's Note: Consider harmonizing the above definitions with semantically-equivalent references to the RDD. | 3 |
| Editor's Note: Consider replacing the above definition of DigitalWork with some form of diid:identification to reference digital items and their components. Issues to be thought about include: defining the semantics of assigning rights to a digital item, defining the semantics of assigning rights to a component (vs. a resource). | 3 |