INTERNATIONAL STANDARD

ISO/IEC 21000-21

Second edition
2017-05

Information technology — Multimedia framework (MPEG-21) —

Part 21: Media contract ontology

Technologies de l'information — Cadre multimédia (MPEG-21) — Partie 21: Ontologie pour contrats de médias

Reference number
ISO/IEC 21000-21:2017(E)

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

This second edition cancels and replaces the first edition (ISO/IEC 21000-21:2013), which has been technically revised with the following changes:

— some strengthening of the core contract part, some reordering within the extension for the exploitation of intellectual property rights have been provided;

— the set of facts available for specifying conditions has been completed;

— addition of a simple payment and notification extension;

— addition of a basic extension allowing the use within MCO of acts defined in ISO/IEC 21000-5 (REL);

— a clear mechanism for defining further future extensions is in place.

It also incorporates the Technical Corrigendum ISO/IEC 21000-21:2013/Cor 1:2015.

A list of parts in the ISO/IEC 21000 series can be found on the ISO website.

Introduction

Today, many elements exist to build an infrastructure for the delivery and consumption of multimedia content. There was, however, no "big picture" to describe how these elements, either in existence or under development, relate to each other. The aim for the ISO/IEC 21000 series has been to describe how these various elements fit together. New standards as appropriate will be developed while other relevant standards may be developed by other bodies.

The result is an open framework for multimedia delivery and consumption, with both the content creator and content consumer as focal points. This open framework provides content creators and service providers with equal opportunities in the ISO/IEC 21000 series enabled open market. This will also be to the benefit of the content consumer providing them access to a large variety of content in an interoperable manner. The vision for ISO/IEC 21000 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 different communities.

ISO/IEC 21000 series aims thus at defining an open framework for multimedia applications, where users distribute, consume, operate on and transact with content represented as Digital Items.

These transactions can be automatically governed by the Media Value Chain Ontology (MVCO) from ISO/IEC 21000-19. However, beyond the operative information present in a digital licence, the digital representation of the complete business agreements between the parties may prove useful for a number of purposes. The Media Contract Ontology (MCO) is the ISO/IEC ontology for expressing such contracts in a semantic representation. MCO may be used to represent contracts, for content directly, or for services on content based on MPEG-21 technologies. However, MCO may also be used as electronic format for contracts on the trade of media rights also beyond the MPEG framework.

The provided features include the identification of the contract itself and of its parties, and an unambiguous expression of the agreed permissions, obligations, and prohibitions, in a machine-readable way, so that their verification can be implemented in software.

In particular, the MCO deontic expressions address the rights for the exploitation of intellectual property entities, including the specification of the associated conditions, together with other contractual aspects, such as payments, notifications or material delivery.

The main aspect of MCO contracts are the operative clauses, represented as machine-readable deontic expressions, e.g. the agreed permissions, obligations, and prohibitions, and the associated terms.

Besides, the MCO contract includes the identification of the contract itself, its parties, and the possible relationships with other contracts.

Among the provided features, there is the possibility to insert the textual version of the contract and/or of specific clauses, in particular for the case in which the original contract is narrative, i.e. written in natural language. Also, it is possible to add metadata related to any contract entity and to have encryption of the whole contract, or any-sub-part of it. As electronic format for a contract document, the agreement of the parties can be proved by their digital signature.

Eventually, MCO provides to the media companies the basic means for the collection of knowledge on held rights, also derived from multiple contracts, as a rights portfolio, for business management purposes.

Various potential benefits can be associated with the use of MCO. Firstly, MCO can support the business of media companies, for product placement and maximising reuse of archive content, implying also cost reductions in all rights related activities, i.e. rights clearance. Afterwards, it supports the respect of copyright laws in relation to new exploitation technologies, also by contributing to the reduction of mistakes in relation to contract compliance, implying decreasing number of controversies and other cost reductions. In general, MCO aims at increasing the quality of rights information, which gets more reliable and can be integrated with other metadata in a standard way. This can even result in improvements to the working conditions and decision processes within media companies.

Information technology — Multimedia framework (MPEG-21) —

Part 21: Media contract ontology

1 Scope

This document specifies an ontology for representing contracts in the Multimedia Framework formed for the transaction of MPEG-21 Digital Items or services related to the MPEG-21 Framework.

Media Contract Ontology (MCO) aims to digitally express agreements made in environments using ISO/IEC 21000. These agreements are contracts for transactions of content packed as Digital Items, as well as for services provided around this content by means of a sematic representation.

The range of contracts under scope are as follows:

— contracts about transactions on rights for the exploitation of content as MPEG-21 Digital Items;

— contracts about the provision of MPEG-21-based services, like delivery, identification, encryption, search and others.

However, MCO can also be used as electronic format for contracts on the trade of media rights beyond the MPEG framework.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 21000-5, *Information technology — Multimedia framework (MPEG-21) — Part 5: Rights Expression Language*

ISO/IEC 21000-19, *Information technology — Multimedia framework (MPEG-21) — Part 19: Media Value Chain Ontology*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1.1
action
something done or performed by a *party* (3.1.3) or anyone working on its behalf

Note 1 to entry: For the purposes of this document, an action represents the exercise of a right or duty.

3.1.2
data property
OWL property that links individuals to data values

3.1.3
deontic expression
generic entity encompassing the properties of an agreed machine-readable contract clause regulating the *actions* (3.1.1) of the parties

3.1.4
IP Entity
entity subject to Intellectual Property

3.1.5
MPEG-21 Contract
representation of agreements formed for the transaction of rights applied to MPEG-21 Digital Items, events or services related to the MPEG-21 Framework

3.1.6
MPEG-21 Service
system supplying utility in the Framework of MPEG-21

3.1.7
object property
OWL property that links individuals to individuals

3.1.8
obligation
deontic expression (3.1.3) binding one of the parties to execute an *action* (3.1.1)

3.1.9
party
organization or a user who accepts the respect the *deontic expressions* (3.1.3) defined in the contract and who expects the other parties in the same contract to do the same

3.1.10
permission
deontic expression (3.1.3) allowing one of the parties to execute an *action* (3.1.1)

3.1.11
prohibition
deontic expression (3.1.3) binding one of the parties not to execute an *action* (3.1.1)

3.2 Abbreviated terms

CEL	Contract Expression Language
IRI	Internationalized Resource Identifier (IETF Standard is RFC 3987)
MCO	Media Contract Ontology
MPEG	Moving Picture Experts Group
MPEG-21	ISO/IEC 21000

MVCO	Media Value Chain Ontology
OWL	Web Ontology Language
RDF	Resource Description Framework
REL	Rights Expression Language
URI	Uniform Resource Identifier (IETF Standard is RFC 3986)
URL	Uniform Resource Locator (IETF Standard is RFC 1738)
URN	Uniform Resource Name (IETF Standard is RFC 2141)
W3C	World Wide Web Consortium
XML	Extensible Markup Language (W3C Recommendation)

4 Conventions

4.1 Document conventions

4.1.1 MCO OWL Representation

Along this document, OWL will be expressed with the RDF/XML [14] syntax and its excerpts will be boxed in grey text.

When diagrams are needed for representing models (or part of) with classes and related object properties, the notation of Figure 1 is used.

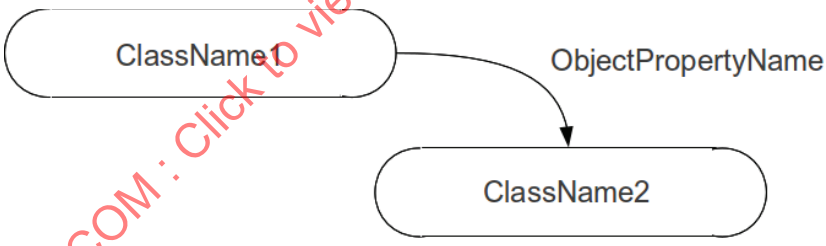


Figure 1 — Notation used for diagrams representing models with classes and related object properties

For representing examples, including class individuals (instances), the related object properties and data properties, we use the notation reported in Figure 2.

Notice that in these diagrams, negative object properties are represented in with a different shape of the arrow, depicted in red to make it more evident, while data type properties, including name and value, are represented in a grey box, linked to the balloon of the respective class individual. Some more complex examples using the notation of Figure 2 have the ellipses with various background colours for improving readability and making it easier to see which hierarchy of classes the individuals are member of. For example, cyan has been used for IPEntities, green for permissions, orange for parties, magenta for actions, and light yellow for facts.

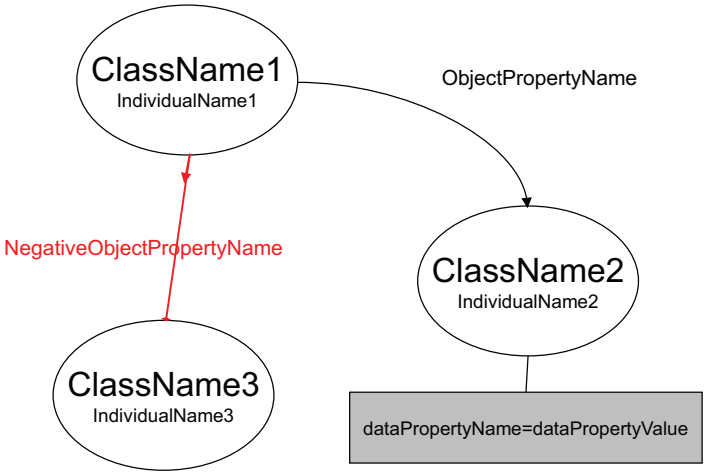


Figure 2 — Notation used for diagrams representing examples with individuals and their properties

The class hierarchy as defined in the ontology is shown as in Figure 3, where the circle with the arrow represents the parent class.

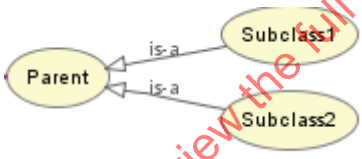


Figure 3 — OWL class hierarchy

4.2 Namespace prefix conventions

4.2.1 General

The base URI for MCO core OWL is:

`urn:mpeg:mpeg21:mco:core:2015`

The base URI for the MCO extension for exploitation of Intellectual Property Rights is:

`urn:mpeg:mpeg21:mco:ipre:2015`

The base URI for the MCO extension for payments and notification is:

`urn:mpeg:mpeg21:mco:pane:2015`

The base URI for the MCO extension for Rights Expression Language acts is:

`urn:mpeg:mpeg21:mco:rele:2015`

4.2.2 Use of prefixes

The MCO makes use of elements defined in other schemas, either given by MPEG-21 or others. The used namespace prefixes together with their reference is given in Table 1.

Table 1 — Mapping of prefixes to namespaces in examples and text

Prefix	Corresponding namespace	Ref
dc	http://purl.org/dc/elements/1.1/	ISO 15836, [5]
dii	urn:mpeg:mpeg21:2002:01-DII-NS#	ISO/IEC 21000-3, [6]
dsig	http://www.w3.org/2000/09/xmldsig#	[18]
mco-core	urn:mpeg:mpeg21:mco:core:2015#	Here
mco-ipre	urn:mpeg:mpeg21:mco:ipre:2015#	Here
mco-pane	urn:mpeg:mpeg21:mco:pane:2015#	Here
mco-rele	urn:mpeg:mpeg21:mco:rele:2015#	Here
mvco	http://purl.oclc.org/NET/mvco.owl#	ISO/IEC 21000-19
owl	http://www.w3.org/2002/07/owl#	[10] [11]
xenc	http://www.w3.org/2001/04/xmlenc#	[16]
xsd	http://www.w3.org/2001/XMLSchema#	[17]
xsi	http://www.w3.org/2001/XMLSchema-instance	[17]

5 Relationship to other parts of ISO/IEC 21000

The Digital Item is the fundamental unit of distribution and transaction in the Multimedia Framework. While the different parts of ISO/IEC 21000 deal with the components and different aspects of Digital Items, together they form a complete integrated interoperable framework. Clause 5 describes the relationship of this document with the other parts of ISO/IEC 21000 in addressing the representation of the agreements for the aforementioned transactions.

Contracts expressed with the semantic representation described in this document may entail permissions passed through the value chain whose representation shall be included as ISO/IEC 21000-19 Permission class instances.

A contract represented following this document contracts may become a part of a digital item (whose declaration is given in ISO/IEC 21000-2). If so, they will be declared with the Type element of ISO/IEC 21000-3, having the MCO URI as content. An example is given in B.3.

This document formalizes how to express contract information by means of a semantic representation, as OWL or RDF, while ISO/IEC 21000-20 provides a structured representation of contracts, in XML. Both parts share the goal of defining a contract document able to provide the information listed in 6.1 and they share the semantics for actions, facts and services.

This document also supports the expression of rights (acts) as defined in ISO/IEC 21000-5.

6 Overview

6.1 General aspects

A Media Contract Ontology (MCO) contract is a document providing the following information, optional unless otherwise stated:

— identification of the contract itself — Required;

— possible relationships with other contracts;

— the Parties — Required;

— the textual version of the contract;

— a number of textual clauses which can be referenced by the operative part element;

— the Object of the contract (Content or Service) — Required;

— the Operative part, containing the contract information which have to be machine readable (deontic expressions, links to textual clauses) — Required.

MCO supports the possibility to encrypt either the whole contract or part of it.

The MCO aims at providing the structural elements to semantically represent operative clauses, in a machine-readable form.

6.2 Semantic representation

The MCO contract document is defined by an OWL-2 Ontology model [10] and [12], made by a core, described in detail in 7.2 and by its extensions, detailed in 7.3 and 7.4.

The Contract document itself can be serialized according to any of the syntaxes given in [10], which result in serializations that are logically equivalent so that it should be possible to swap between them losslessly. The serializations used as reference by this document are:

— RDF/XML [14];

— OWL/XML [13].

Annex A contains the MCO normative specifications of the semantic representation, which are provided according to the RDF/XML serialization only. Equivalent versions using the OWL/XML serialization, or other, can be derived without difficulties.

For aim of illustrating the various serializations, the examples presented in Clause 7 and in Annex B are given in whatever of the two syntaxes, without always providing the corresponding example in the other syntax.

7 Description of Contract Semantic Representation

7.1 Media Contract Ontology extension mechanism

7.1.1 MCO core and defined extensions

The Contract Semantic Representation of MCO is based on the definition of a core and of a number of extensions, implying an extension mechanism that might be used either in further versions of this document or for the definition of other specific context application extensions.

The core defines all the contract entities which have no defined parent classes and provides the definition of general mechanisms, such as metadata or encryption.

This version of the specification defines the following extensions:

— the extension for the exploitation of intellectual property rights, described in 7.3, intended to fully convey the most common rights and conditions appearing in media contracts;

— the extension for payments and notifications, described in 7.4, which imports the previous one;

— the extension for rights expression language acts, described in 7.5.

A possible further future extension can be defined either as an extension of the MCO core, by only importing the core part described in 7.2 and defined in 8.2, or by importing any of the already defined extensions.

7.1.2 Possible extensions in MCO contract instances

OWL allows the creation of MCO contract instances in which new classes, object properties, and data properties are directly defined.

This allows, for example, the definition of custom subclasses of `mvco:Action` or `mvco:Fact` or any other of their subclasses defined in MCO.

The narrative description of such actions and facts can be given in line by means of annotation assertions, using Dublin core title and description elements. If such narrative description is provided by other available resources, it can be indicated by means of an annotation assertion, using the Dublin core identifier element.

The use of such custom defined simple actions and facts is certainly possible, although it suffers from the limitation that the semantics might not be known, a part by the parties, and that general tools operating on MCO contracts may not support them.

The definition of custom complex semantics, implying new custom object properties, is deprecated.

For example, in the e-health domain, assuming that it could be helpful to define an action for showing information about patient health history and that the condition required is for only patient relatives, the two entities might be defined as below.

```
<owl:Class rdf:about="&ex-health;show">
    <rdfs:subClassOf rdf:resource="&mco-core;GenericAction"/>
         <dc:title>e-health show action</dc:title>
         <dc:description>show patient health history</dc:description>
         <dc:identifier>http://e-health/actions/show-ph/</dc:identifier>
</owl:Class>
<owl:Class rdf:about="&ex-health;relatives">
    <rdfs:subClassOf rdf:resource="&mvco;Fact"/>
         <dc:title>relatives</dc:title>
         <dc:description>constraint to patient relatives, i.e. parents, husband/wife, children older
than 18</dc:description>
         <dc:identifier>http://e-health/actions/relatives/</dc:identifier>
</owl:Class>
<NamedIndividual rdf:about="&ex-health;a1">
  <rdf:type rdf:resource="&ex-health;show"/>
</NamedIndividual>
<NamedIndividual rdf:about="&ex-health;f1">
  <rdf:type rdf:resource="&ex-health;relatives"/>
</NamedIndividual>
<NamedIndividual rdf:about="&ex-health;p1">
  <rdf:type rdf:resource="&mvco;Permission"/>
  <mvco:permitsAction rdf:resource="&ex-health;a1/>
  <mco-core:actedOver rdf:resource="&ex-health;patientrecord/>
  <mvco:hasRequired rdf:resource="&ex-heath;f1"/>
</NamedIndividual>
```

7.2 Media Contract Ontology core

7.2.1 General

The MCO core OWL makes intensive use of the MPEG-21 Part 19 Media Value Chain Ontology (MVCO), reusing and extending some of their classes and properties. The MVCO is the language to represent the transformation of one kind of intellectual property object (called IP-Entity) to another one, as well as the required permissions to execute these transformations.

The URI of MCO core is as follows:

`urn:mpeg:mpeg21:mco:core:2015`

and the prefix used in this document is as follows:

`mco-core`

The formal normative description of the MCO core is given in 8.2, while its normative OWL, in RDF/XML syntax, is given in A.1.1

7.2.2 Contract and the contract parties

The MCO core defines the class `mco-core:Contract` to express the contract entity. Within the contract document, an individual of such class shall represent the contract itself, which can thus be identified through its Internationalized Resource Identifier (IRI). A contract may have references to pre-existing contracts whose validity might be affected.

The contract can have any number of parties. When there are no parties, the document has to be considered a template; when only one party is present, the document can be considered as a possible offer to other parties; however, a contract can be binding only if there are at least two parties, with their signature.

A party can be an `mco-core:Organization` or an `mvco:User`. In the former case, in order for the contract be binding, it is required that an `mvco:User` is also given as a signatory.

Figure 4 depicts how the model expresses this context.

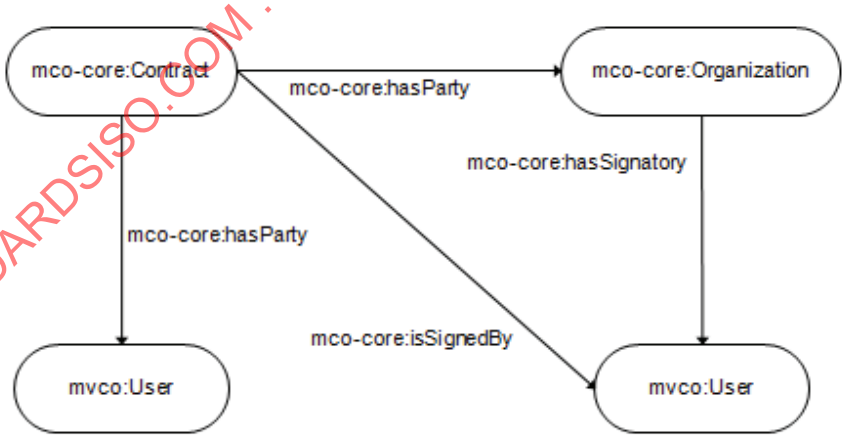


Figure 4 — Classes and object properties about the contract and its parties

Both the contract and the parties can have metadata as explained in 7.2.7.

The contract document can optionally contain the narrative contract text version by means of the data property `mco-core:TextVersion`, related to the contract individual.

The contract document may contain other individuals of the class `mco-core:Contract` for representing relationships between contracts.

For contract parties and signatories, namely `mco-core:Organization` and `mvco:User`, it is possible to include some address information either by the data property `mco-core:Address`, with simple literal value, or by referencing a VCard [15] through the object property `mco-core:hasVCard`.

By means of the data properties `mco-core:hasGoverningLaw`, `mco-core:hasCourt`, and `mco-core:isCourtJurisdictionExclusive` related to the contract individual, it is possible to specify the agreed reference legal system for the contract, the court having jurisdiction over any dispute related to the contract, and if such indicated jurisdiction is agreed to be exclusive or not.

7.2.2.1 Example

Figure 5 depicts the diagram of an example for this context, while the subsequent box contains the same entities serialized in RDF/XML.

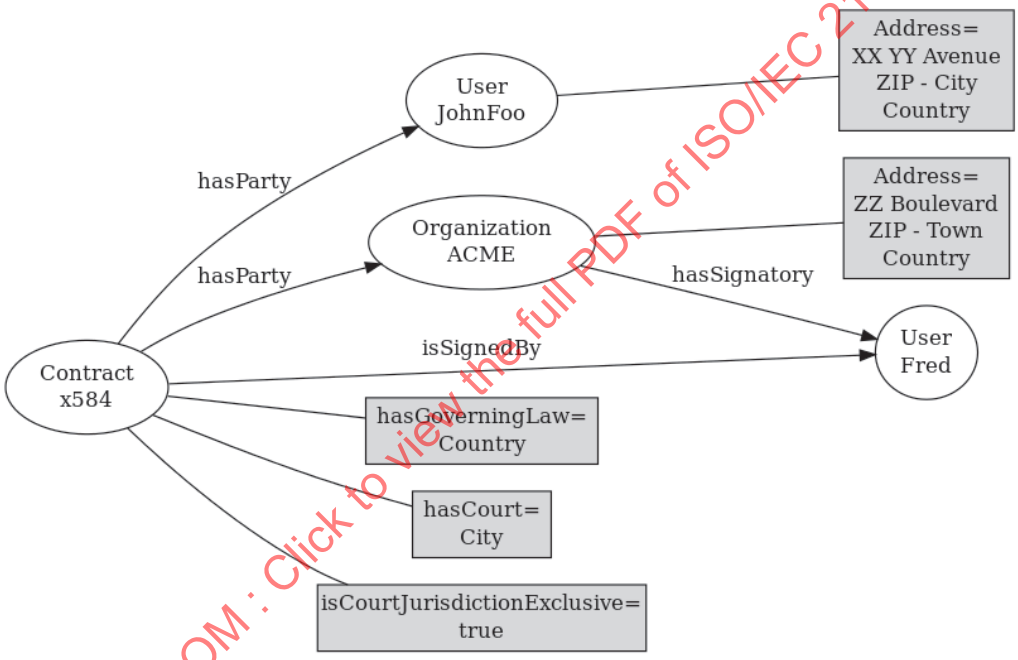


Figure 5 — Example of contract with parties

```
<!DOCTYPE rdf:RDF [
    <!ENTITY mcoex "urn:mpeg:mpeg21:mco:2015/examples#">
    <!ENTITY mco-core "urn:mpeg:mpeg21:mco:core:2015#">
    <!ENTITY DII-NS "urn:mpeg:mpeg21:2002:01-DII-NS#">
    <!ENTITY dc "http://purl.org/dc/elements/1.1/">
    <!ENTITY xsd "http://www.w3.org/2001/XMLSchema#">
    <!ENTITY mvco "http://purl.oclc.org/NET/mvco.owl#">
    <!ENTITY rdfs "http://www.w3.org/2000/01/rdf-schema#">
    <!ENTITY rdf "http://www.w3.org/1999/02/22-rdf-syntax-ns#">
]>
```

```
<rdf:RDF xmlns="http://www.w3.org/2002/07/owl#"
     xml:base="http://www.w3.org/2002/07/owl"
     xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
     xmlns:mco-core="urn:mpeg:mpeg21:mco:core:2015#"
     xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
     xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
     xmlns:mvco="http://purl.oclc.org/NET/mvco.owl#">
    <Ontology rdf:about="urn:mpeg:mpeg21:mco:2015/examples">
        <imports rdf:resource="urn:mpeg:mpeg21:mco:core:2015"/>
    </Ontology>

    <mco-core:Organization rdf:about="&mcoex;ACME">
        <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
        <mco-core:Address>ZZ Boulevard\nZIP - Town\nCountry</mco-core:Address>
        <mco-core:hasSignatory rdf:resource="&mcoex;Fred"/>
    </mco-core:Organization>

    <NamedIndividual rdf:about="&mcoex;Fred">
        <rdf:type rdf:resource="&mvco;User"/>
    </NamedIndividual>

    <NamedIndividual rdf:about="&mcoex;JohnFoo">
        <rdf:type rdf:resource="&mvco;User"/>
        <mco-core:Address>XX YY Avenue\nZIP - City\nCountry</mco-core:Address>
    </NamedIndividual>

    <mco-core:Contract rdf:about="&mcoex;x584">
        < rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
        <mco-core:hasParty rdf:resource="&mcoex;ACME"/>
        <mco-core:isSignedBy rdf:resource="&mcoex;Fred"/>
        <mco-core:hasParty rdf:resource="&mcoex;JohnFoo"/>
        <mco-core:hasGoverningLaw>Country</mco-core:hasGoverningLaw>
        <mco-core:hasCourt>City</mco-core:hasCourt>
        <mco-core:isCourtJurisdictionExclusive ref:datatype="&xsd;boolean">true</mco-core:
isCourtJurisdictionExclusive>
    </mco-core:Contract>
</rdf:RDF>
```


7.2.3 Expression of permissions, prohibitions and obligations

7.2.3.1 General

An MPEG-21 Contract typically contains an exchange of promises between the parties, which correspond to one of the deontic concepts of permission, prohibition and obligation. These concepts can be expressed by solely using the MVCO class `mvco:Permission` and combinations of the properties. However, to facilitate the task for MCO, specific classes have been defined: `mco-core:Prohibition`, `mco-core:Obligation`.

Any `mco-core:Prohibition`, or `mco-core:Obligation` or `mvco:Permission` is an `mco-core:DeonticExpression`.

The MVCO mechanism for expressing permissions centers around the `mvco:Permission` class. Figure 6 shows a diagram with OWL classes and object properties around the Permission class. An `mvco:Permission` permits an action that can be acted by a given `mco-core:Party` (either an `mco-core:Organization` or an `mvco:User`) over a specified `mvco:IPEntity` provided that the required `mvco:Fact` holds (is true). The permission is issued by another `mco-core:Party` (the right holder). Fact may not appear if no conditions are specified or there can be several facts, all required to hold.

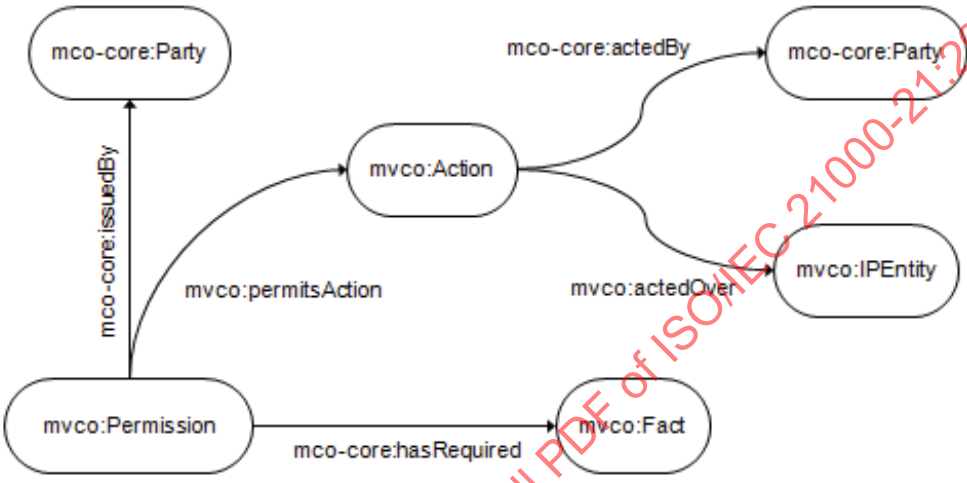


Figure 6 — Classes and object properties around permission

Making reference to the unified concept of "deontic expression", Figure 7 shows how permissions, prohibitions and obligations are expressed within the MCO Contract model.

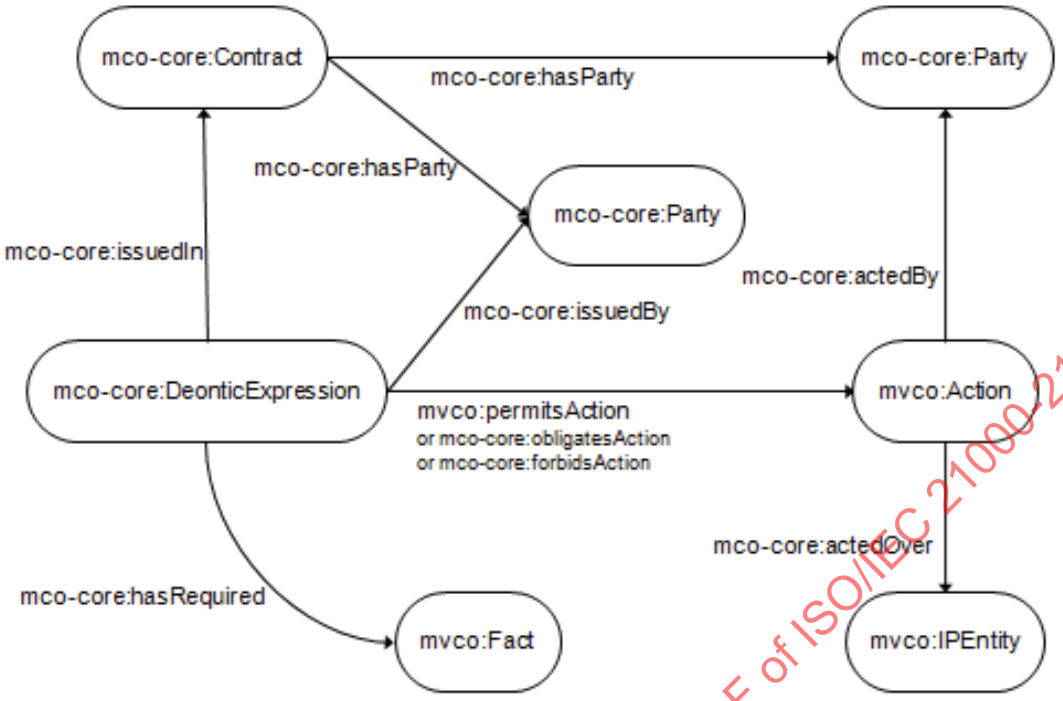


Figure 7 — Deontic expression issued in contract

7.2.3.2 Relationships between deontic expressions and textual clauses

The class `mco-core:TextualClause` is defined in order to identify a specific part of a narrative contract which is implemented by the definition of a deontic expression and express such relationship, as shown in Figure 8. The actual text of the clause is given by the data property `mco-core:Text`.

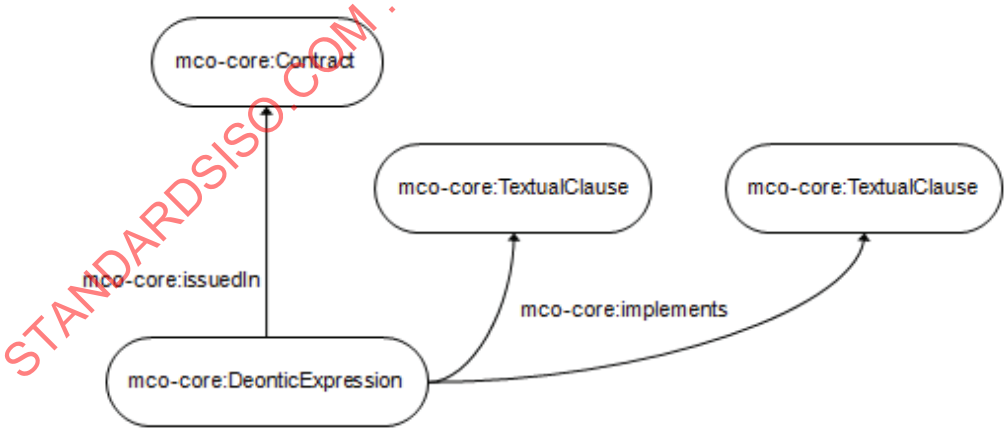


Figure 8 — Classes and object properties around textual clauses

7.2.3.3 Prohibition and obligation

Prohibitions could also be expressed with the mere MVCO constructs through the `owl:NegativeObject` property assertion; but in order to give an equal treatment to the three deontic expressions, an `mco-core:Prohibition` class has been defined together with the corresponding object property `mco-core:forbidsAction`, as shown in Figure 9.

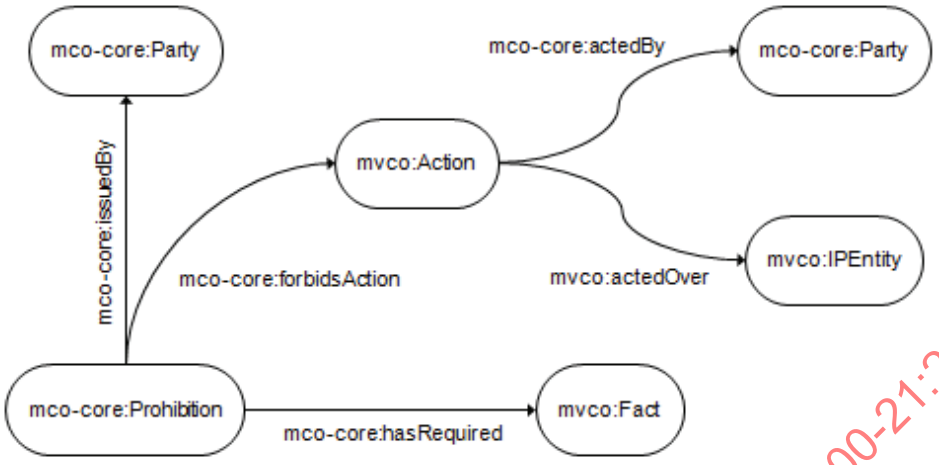


Figure 9 — Classes and object properties around prohibition

The same procedure has been followed for the obligation clauses, for which the `mco-core:Obligation` class has been defined together with the `mco-core:obligatesAction` object property, as shown in Figure 10. As for the other deontic expressions, the truthfulness of the required facts makes the obligation valid. The obligated action has to occur in the context of validity expressed by the facts, once or continuously depending on the kind of action. It is also possible to require the obligated action to occur more than once by means of specifically defined facts, such as `mco-core:Runs`.

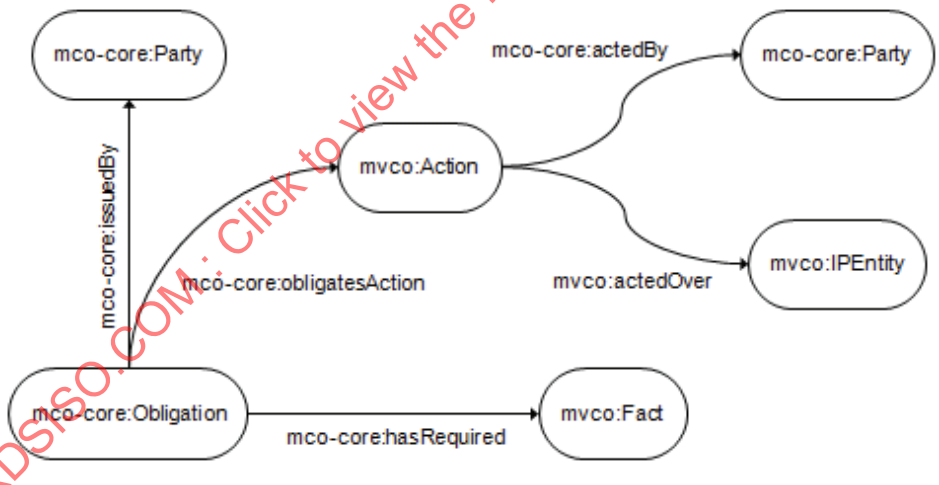


Figure 10 — Classes and object properties around Obligation

7.2.3.4 Examples

7.2.3.4.1 Permission

The expression of a permission is given with the permission instance class, being related to an action which includes some details: who performs it, over what, etc. An example of permission is given in Figure 11, where `User0002` is allowed to make an adaptation over the work named `Work001`.

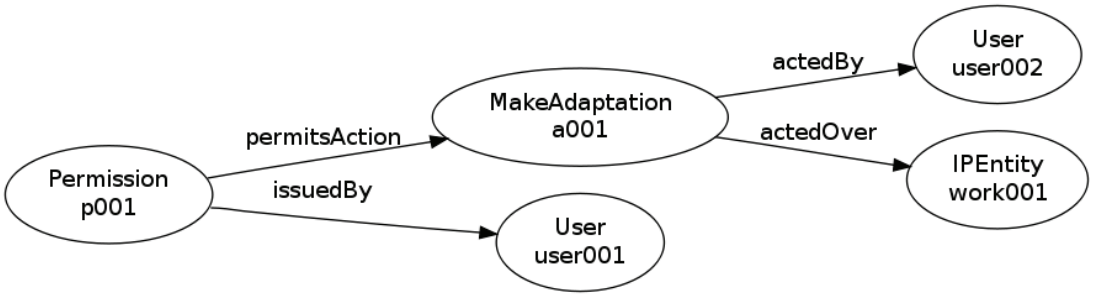


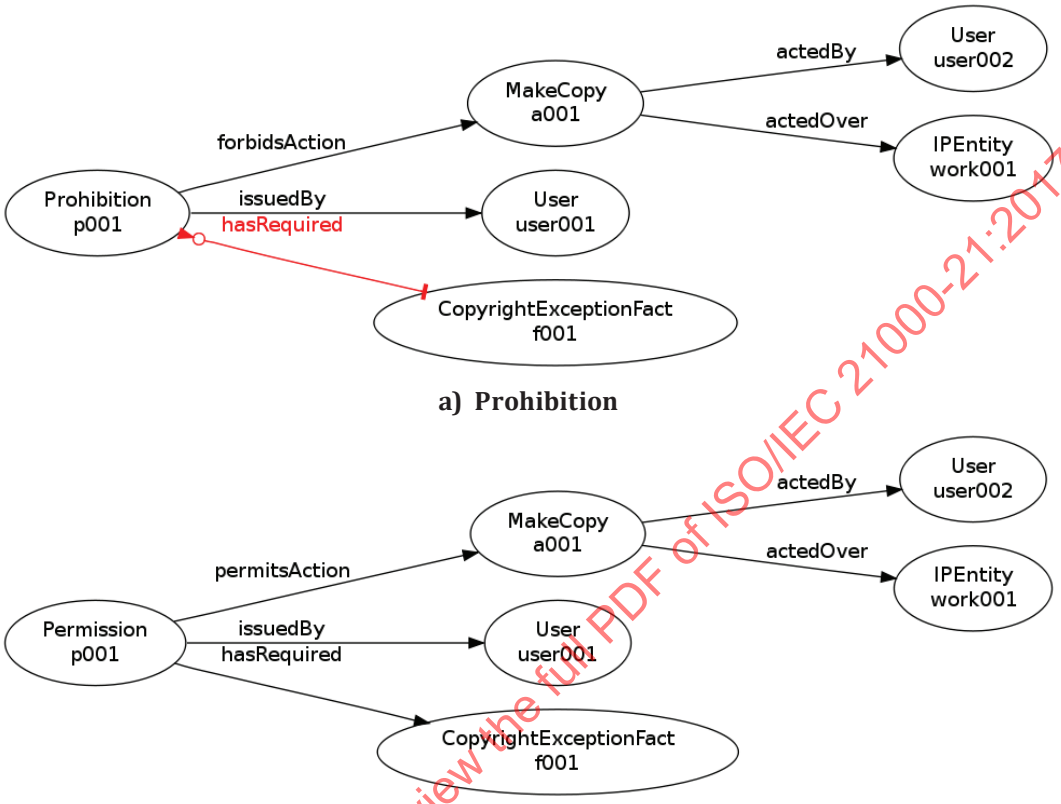
Figure 11 — Simple example of permission

The expression as RDF is given in the following fragment:

```
<!—entity individuals defined in the examples -->
 <!ENTITY mcoex "urn:mpeg:mpeg21:mco:2015/examples#">
<mvco:Permission rdf:about="&mcoex;p001">
    <mvco:permitsAction rdf:resource="&mcoex;a001"/>
    <mvco:issuedBy rdf:resource="&mcoex;user001"/>
</mvco:Permission>
<mvco:MakeAdaptation rdf:about="&mcoex;a001">
    <mvco:actedBy rdf:resource="&mcoex;user002"/>
    <mvco:actedOver rdf:resource="&mcoex;work001"/>
</mvco:MakeAdaptation>
<mvco:User rdf:about=&mcoex;user001"/>
<mvco:User rdf:about="&mcoex;user002"/>
<mvco:IPEntity rdf:about="&mcoex;work001"/>
```

7.2.3.4.2 Prohibition

Figure 12 provides a simple example of prohibition [Figure 12 a)] together with the equivalent permission [Figure 12 b)].



a) Prohibition

b) Equivalent permission

Figure 12 — Simple example of prohibition and equivalent permission

```
    <!—entity individuals defined in the examples -->
     <!ENTITY mcoex "urn:mpeg:mpeg21:mco:2015/examples#">
     <!ENTITY mvco "http://purl.oclc.org/NET/mvco.owl#">
     <!ENTITY mco-core "urn:mpeg:mpeg21:mco:core:2015#">
    <mco-core:Prohibition rdf:about="&mcoex;p001">
        <mco-core:issuedBy rdf:resource="&mcoex;user001"/>
    </mco-core:Prohibition>
    <owl:NegativePropertyAssertion>
        <owl:assertionProperty rdf:resource="&mco-core;hasRequired"/>
        <owl:sourceIndividual rdf:resource="&mcoex;p001"/>
        <owl:targetIndividual rdf:resource="&mcoex;f001"/>
    </owl:NegativePropertyAssertion>
<!--or equivalently
   <mvco:Permission rdf:about="&mcoex;p001">
      <mvco:permitsAction rdf:resource="&mcoex;a001"/>
      <mvco:hasRequired rdf:resource="&mcoex;f001"/>
      <mvco:issuedBy rdf:resource="&mcoex;user001"/>
   </mvco:Permission>
-->
   <mvco:MakeCopy rdf:about="&mcoex;a001">
       <mvco:actedBy rdf:resource="&mcoex;user002"/>
       <mvco:actedOver rdf:resource="&mcoex;work001"/>
   </mvco:MakeCopy>
   <mvco:User rdf:about="&mcoex;user001"/>
   <mvco:User rdf:about="&mcoex;user002"/>
   <mvco:IPEntity rdf:about="&mcoex;work001"/>
   <mvco:CopyrightExceptionFact rdf:about="&mcoex;f001"/>
```


7.2.3.4.3 Obligation

The diagram presented in Figure 13 shows an example of obligation of acting an audiovisual distribution in the time window given by a temporal context fact. Some OWL elements of this example (with prefix mco-ipre in the RDF text) are defined in the media contract extension for the exploitation of intellectual property rights, presented in 7.3.

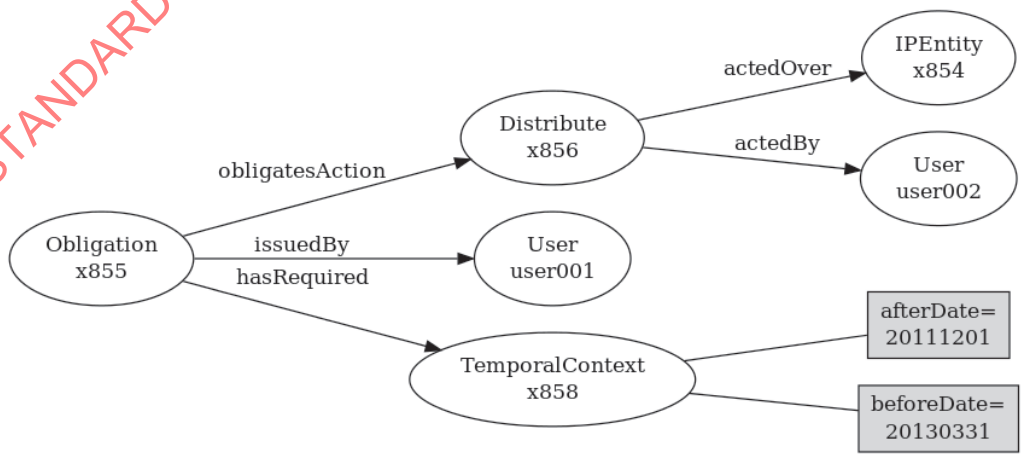


Figure 13 — Simple example of obligation

The expression as RDF is given in the following fragment.

```
<!—entity for datatype from XML Schema -->
 <!ENTITY xsd "http://www.w3.org/2001/XMLSchema#">
<!—entity individuals defined in the examples -->
 <!ENTITY mcoex "urn:mpeg:mpeg21:mco:2015/examples#">
<mco-core:Obligation rdf:about="&mcoex;x855">
    <mco-core:obligatessAction rdf:resource="&mcoex;x856"/>
    <mco-core:issuedBy rdf:resource="&mcoex;user001"/>
    <mco-core:hasRequired rdf:resource="&mcoex;x858"/>
</mco-core:Obligation>
<mvco:Distribute rdf:about="&mcoex;x856">
    <mvco:actedBy rdf:resource="&mcoex;user002"/>
    <mvco:actedOver rdf:resource="&mcoex;work001"/>
</mvco:Distribute>
<mvco:User rdf:about="&mcoex;user001"/>
<mvco:User rdf:about="&mcoex;user002"/>
<mco-ipre:TemporalContext rdf:about="&mcoex;x858">
    <mco-ipre:afterDate>20110722</mco-ipre:afterDate>
    <mco-ipre:beforeDate>20111130</mco-ipre:beforeDate>
</mco-ipre:TemporalContext>
<mvco:IPEntity rdf:about="&mcoex;work001"/>
```

7.2.4 Expression of conditions

7.2.4.1 Simple conditions

7.2.4.1.1 General

Conditions and restrictions are created using the `mvco:Fact` and the `mvco:hasRequired` object property as described in ISO/IEC 21000-19.

7.2.4.1.2 Examples of simple conditions

Real contracts include simple conditions, such as the territory or the license period. Those conditions can be created using the `mvco:hasRequired` object property as presented in the examples below.

The following example models the license period condition which restricts the exercise of the corresponding action to the year 2011, which is, after the 2011-01-01 and before the 2011-12-31.

```
    <!—entity individuals defined in the examples -->
    <!ENTITY mcoex "urn:mpeg:mpeg21:mco:2015/examples#">
<mvco:hasRequired rdf:resource="&mcoex;myLicensePeriod"/>
<mco-ipre:TemporalContext rdf:about="&mcoex;myLicensePeriod">
    <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
    <mco-ipre:afterDate >2011-01-01</mco-ipre:afterDate>
    <mco-ipre:beforeDate>2011-12-31</mco-ipre:beforeDate>
</mco-ipre:TemporalContext>
```

The following example models the territory condition limiting the exercise of the corresponding action to Spain [expressed according to ISO 3166-1].

```
    <!—entity individuals defined in the examples -->
     <!ENTITY mcoex "urn:mpeg:mpeg21:mco:2015/examples#">
 <mvco:hasRequired rdf:resource="&mcoex;myTerritory"/>
 <mco-ipre:SpatialContext rdf:about="&mcoex;myTerritory">
     <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
     <mco-ipre:inCountries>#ES</mco-ipre:inCountries>
</mco-ipre:SpatialContext>
```

7.2.4.2 Complex conditions

7.2.4.2.1 General

In real contexts, it is often needed to have more complex statements about deontic clauses, which combine atomic statements in structured logical constructs.

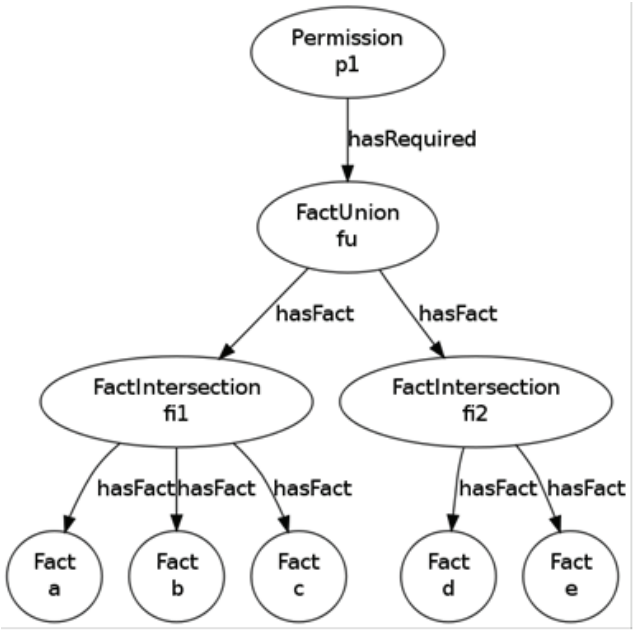
To fulfil this requirement, the abstract class named `mco-core:FactComposition` is declared, which extends `mvco:Fact` and three subclasses of this new class modelling logical intersection ("AND" operator) and logical union ("OR" operator), and logical negation ("NOT" operator), respectively named `mco-core:FactIntersection`, `mco-core:FactUnion` and `mco-core:FactNegation`. This approach on one hand leaves unvaried the construct and the semantics defined in the MVCO between `mvco:Permission` and `mvco:Fact`, and on the other hand, it extends the expressiveness of the model.

The semantics of the abstract class `mco-core:FactComposition` is that of collecting a set of facts taking part in the specification of a complex `Permission`. For this purpose, an object property `hasFact`, whose range is `mvco:Fact`, is given. This, together with the stated hierarchy between `mvco:Fact` and `FactComposition`, implies that also concrete instances of subclasses of `FactComposition` can be included as elements in a recursive way, thus allowing for (potentially) infinite-nesting of logical clauses.

7.2.4.2.2 Example

The semantics of subclasses of `FactComposition`, namely `FactIntersection` and `FactUnion`, is that of exactly specifying the logical form of these clauses. The following logical statement can be expressed as shown in Figure 14 in which the diagram in the left provides the graphical representation of the RDF/XML excerpt on the right:

```
(a AND b AND c) OR (d AND e)
```




```
<mvco:Permission rdf:about="p1">
    <mvco:hasRequired
rdf:resource="fu"/>
</mvco:Permission>
<mco-core:FactUnion rdf:about="fu">
   <mco-core:hasFact
rdf:resource="fi1"/>
   <mco-core:hasFact
rdf:resource="fi2"/>
</mco-core:FactUnion>
<mco-core:FactIntersection
rdf:about="fi1">
   <mco-core:hasFact rdf:resource="a"/>
   <mco-core:hasFact rdf:resource="b"/>
   <mco-core:hasFact rdf:resource="c"/>
</mco-core:factIntersection>
<mco-core:FactIntersection
rdf:about="fi2">
   <mco-core:hasFact rdf:resource="d"/>
   <mco-core:hasFact rdf:resource="e"/>
</mco-core:factIntersection>
<mvco:Fact rdf:about="a"/>
<mvco:Fact rdf:about="b"/>
<mvco:Fact rdf:about="c"/>
<mvco:Fact rdf:about="d"/>
<mvco:Fact rdf:about="e"/>
```

Figure 14 — Diagram and RDF/XML excerpt of a fact composition example

7.2.4.2.3 Action or event related conditions

There are contexts in which a condition is expressed in terms of dependency on the status of a related action or event. To address this requirement, the abstract class named `mco-core:ActionEventFact` is declared, which extends `mvco:Fact` and with defined subclasses `mco-core:Started` and `mco-core:Done`. The truth of these facts depends respectively on the beginning and the accomplishment of the action or the event related through the object property `mco-core:makesTrue`.

This mechanism implements the expression of a possible dependency between deontic expressions. For example, the action permitted by a "primary" permission can, when started or accomplished, make true the fact required by a "secondary" permission.

7.2.4.2.4 Example

The following example models the case in which a permission conditioned to non linear modality, such as "video on demand", is also constrained to the accomplishment of the broadcasting acted on the same content and permitted by a different permission. The time of validity of the secondary permission is also defined to begin 48 hours after the broadcasting and within seven days. In some contracts, this case is mentioned as "Catch-up-TV", although the details may differ from case to case. The diagram of the example is depicted in Figure 15, which is followed by the excerpt in RDF/XML serialization.

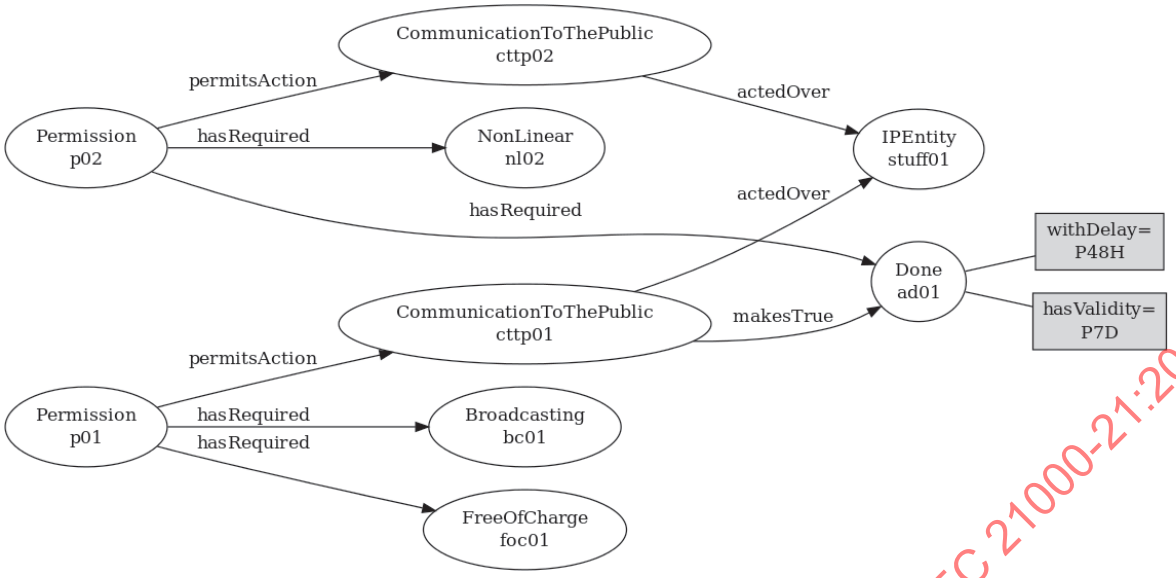


Figure 15 — Example with action related fact

```
<!—entity individuals defined in the examples -->
   <!ENTITY mcoex "urn:mpeg:mpeg21:mco:2015/examples#">
   <!ENTITY mvco "http://purl.oclc.org/NET/mvco.owl#" >
  <mco-core:Done rdf:about="&mcoex;ad01">
      <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
      <mco-ipre:withDelay rdf:datatype="&xsd;duration">P48H</mco-ipre:withDelay>
      <mco-ipre:hasValidity rdf:datatype="&xsd;duration">P7D</mco-ipre:hasValidity>
  </mco-core:Done>
  <mco-ipre:Broadcasting rdf:about="&mcoex;bc01">
      <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
  </mco-ipre:Broadcasting>
  <mco-ipre:CommunicationToThePublic rdf:about="&mcoex;cttp01">
      <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
      <mco-core:makesTrue rdf:resource="&cel;ad01"/>
      <mvco:actedOver rdf:resource="&cel;stuff01"/>
  </mco-ipre:CommunicationToThePublic>
  <mco-ipre:CommunicationToThePublic rdf:about="&mcoex;cttp02">
      <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
      <mvco:actedOver rdf:resource="&mcoex;stuff01"/>
  </mco-ipre:CommunicationToThePublic>
  <mco-ipre:FreeOfCharge rdf:about="&mcoex;foc01">
      <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
  </mco-ipre:FreeOfCharge>
  <mco-ipre:NonLinear rdf:about="&mcoex;nl02">
      <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
  </mco-ipre:NonLinear>
  <owl:NamedIndividual rdf:about="&mcoex;p01">
      <rdf:type rdf:resource="&mvco;Permission"/>
      <mvco:hasRequired rdf:resource="&mcoex;bc01"/>
      <mvco:permitsAction rdf:resource="&mcoex;cttp01"/>
      <mvco:hasRequired rdf:resource="&mcoex;foc01"/>
  </owl:NamedIndividual>
  <owl:NamedIndividual rdf:about="&mcoex;p02">
      <rdf:type rdf:resource="&mvco;Permission"/>
      <mvco:hasRequired rdf:resource="&mcoex;ad01"/>
      <mvco:permitsAction rdf:resource="&mcoex;cttp02"/>
      <mvco:hasRequired rdf:resource="&mcoex;nl02"/>
  </owl:NamedIndividual>
  <owl:NamedIndividual rdf:about="&mcoex;stuff01">
      <rdf:type rdf:resource="&mvco;IPEntity"/>
  </owl:NamedIndividual>
```


7.2.5 Reference of MPEG content and MPEG services as objects of the contract

7.2.5.1 Reference of MPEG content

In the semantic representation, MPEG content referenced in the contract shall have a representation in MCO as individuals of the class `mvco:IPEntity`, or derived classes thereof, and have attributed either

a dii:Identifier or a dii:RelatedIdentifier, and possibly other dii:RelatedIdentifier, as described in ISO/IEC 21000-3.

7.2.5.2 Reference of MPEG services

MPEG services referenced in the contract shall have a representation in MCO as instances of the class mco-core:Service or derived classes thereof. This class has several defined subclasses, matching the kinds of Services related to Content as listed in 8.2.2.

7.2.6 Actions not acted over IP-Entities

In MVCO permission model, it is expected that an action is acted over an IPEntity.

In media contracts, this is not necessarily always the case as the Parties can agree on deontics related to other kind of actions, such as payments and communications between them.

In order to allow the specification of such deontics, MCO defines a generic action, mco-core:GenericAction, and describes mvco:Action as subclass of it.

7.2.7 Metadata

7.2.7.1 General

It may be beneficial that some contract elements are enriched with general metadata. To fulfill this need, the specified mechanism is that of including Dublin Core (ISO 15836) element metadata as Annotation Properties in Annotation Assertions.

It is recommended to use this mechanism in particular for the individuals of the following classes and their subclasses:

— mco-core:Contract;

— mco-core:Organization;

— mvco:User;

— mvco:IPEntity.

7.2.7.2 Example

A simple example of using Dublin Core for metadata representation is having an ISAN identifier [4] and a title for the IP-Entity object of a contract. The corresponding excerpt of MCO document is given below, with both OWL/XML and RDF/XML serializations.

```
<Ontology xmlns="http://www.w3.org/2002/07/owl#" xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#" xmlns:rdf="http://www.w3.org/1999/02/22-rdf
-syntax-ns#" xml:base="urn:mpeg:mpeg21:mco:2015/examples#" ontologyIRI="urn:mpeg:mpeg21:mco:2015/
examples">
  <Prefix name="rdf" IRI="http://www.w3.org/1999/02/22-rdf-syntax-ns#"/>
  <Prefix name="xsd" IRI="http://www.w3.org/2001/XMLSchema#"/>
  <Prefix name="rdfs" IRI="http://www.w3.org/2000/01/rdf-schema#"/>
  <Prefix name="owl" IRI="http://www.w3.org/2002/07/owl#"/>
  <Import>urn:mpeg:mpeg21:mco:ipre:2015</Import>
  <Declaration>
   <NamedIndividual IRI="#x854"/>
  </Declaration>
```

```
  <ClassAssertion>
   <Class IRI="http://purl.oclc.org/NET/mvco.owl#IPEntity"/>
   <NamedIndividual IRI="#x854"/>
  </ClassAssertion>
  <AnnotationAssertion>
   <AnnotationProperty IRI="http://purl.org/dc/elements/1.1/identifier"/>
   <IRI>#x854</IRI>
   <Literal>isan:ABC123YZ</Literal>
  </AnnotationAssertion>
  <AnnotationAssertion>
   <AnnotationProperty IRI="http://purl.org/dc/elements/1.1/title"/>
   <IRI>#x854</IRI>
   <Literal>In the middle of nothing</Literal>
  </AnnotationAssertion>
</Ontology>



<!DOCTYPE rdf:RDF [
    <!ENTITY mco-core "urn:mpeg:mpeg21:mco:core:2015#" >
    <!ENTITY mco-ipre "urn:mpeg:mpeg21:mco:ipre:2015#" >
    <!ENTITY dc "http://purl.org/dc/elements/1.1/" >
    <!ENTITY xsd "http://www.w3.org/2001/XMLSchema#" >
    <!ENTITY mvco "http://purl.oclc.org/NET/mvco.owl#" >
    <!ENTITY rdfs "http://www.w3.org/2000/01/rdf-schema#" >
    <!ENTITY mcoex "urn:mpeg:mpeg21:mco:2015:examples#" >
    <!ENTITY rdf "http://www.w3.org/1999/02/22-rdf-syntax-ns#" >
]>

<rdf:RDF xmlns="http://www.w3.org/2002/07/owl#"
     xml:base="http://www.w3.org/2002/07/owl"
     xmlns:dc="http://purl.org/dc/elements/1.1/"
     xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
     xmlns:mcoex="urn:mpeg:mpeg21:mco:2015/examples#"
     xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
     xmlns:mco-ipre="urn:mpeg:mpeg21:mco:ipre:2015#"
     xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
     xmlns:mco-core="urn:mpeg:mpeg21:mco:core:2015#"
     xmlns:mvco="http://purl.oclc.org/NET/mvco.owl#">
    <Ontology rdf:about="urn:mpeg:mpeg21:mco:2015/examples">
        <imports rdf:resource="urn:mpeg:mpeg21:mco:ipre:2015"/>
    </Ontology>
```

```
    <!-- urn:mpeg:mpeg21:mco:2015/examples#x854 -->
    <NamedIndividual rdf:about="&mcoex;x854">
        <rdf:type rdf:resource="&mvco;IPEntity"/>
        <dc:title>In the middle of nothing</dc:title>
        <dc:identifier>isan:ABC123YZ</dc:identifier>
    </NamedIndividual>
</rdf:RDF>
```

7.2.8 Encryption

For addressing the possible encryption needs regarding a part or the entirety of an MCO contract document produced according to the sematic representation, the mechanism to be used is defined in 7.2.8.

The definition of the contract individual which represents the contract itself will not be encrypted.

A data property `mco-core:encryptedContractPart` is defined with domain `mco-core:Contract` and range XMLLiteral intended to contain XML `xenc:EncryptedDataType`.

The value of the data property will thus contain the encryption metadata and the encrypted data of the XML serialization (OWL or RDF) of the OWL contract fragment which is meant to be kept encrypted.

The complete contract shall result by merging the unencrypted and the decrypted parts, as permitted by the nature of both serialization syntaxes of the MCO semantic representation.

7.3 MCO extension for exploitation of intellectual property rights

7.3.1 General

This extension is intended to represent the main information in media contracts for content directly or for services on content based on MPEG-21 technologies.

This is implemented using some of the MPEG-21 MVCO classes and extensions thereof to represent the main information in media contracts, including specific elements to address the most relevant information found in those contracts for permitting the exploitation of intellectual property rights. Its URI is as follows:

`urn:mpeg:mpeg21:mco:ipre:2015`

and the prefix used in this document is as follows:

`mco-ipre`

The media contracts on content usually convey permissions to execute one of these generic actions (like Duplication or Broadcasting) without going into the particularities of the MPEG-21 REL rights (for example, a particular Enlarge operation would be better represented with REL, ISO/IEC 21000-5). The MCO extension for media contracts is able to represent the most common rights in contracts in the media field and the most appearing conditions in those documents, expressed as facts that can be required on permissions. This MCO extension has been created thus deriving new classes from the existing MVCO and MCO OWL-Core classes and creating new relationships.

The formal normative description of this extension is given in 8.3, while its normative OWL, in RDF/XML syntax, is given in A.1.2.

7.3.2 Description

The MCO extension for exploitation of intellectual property rights does not define any new class without other defined parent classes and fully confirm the contract model defined by the Media Contract Core.

A number of new classes is defined as a hierarchy of subclasses of `mvco:Action`, in order to reflect the exploitation actions as defined by the common protection of the intellectual property. The root of such hierarchy is the action named `ExploitIPRights`, which encompasses all the actions specified by its subclasses. The defined organization of actions into a hierarchy allows any deontic expression to apply to an action at the desired level of generality/specificity, implying that the deontic expression applies also to all the subclasses of the given action.

Another set of new classes is defined as a hierarchy of subclasses of `mvco:Fact` in order to reflect the various dimensions which form the space of conditions and restrictions. The root of such hierarchy is the abstract fact named `ExploitationCondition`.

Some of its subclasses, namely `AccessPolicy`, `DeliveryModality`, `Device`, `Means`, `ServiceAccessPolicy`, and `UserTimeAccess`, are also abstract, because they are the roots of as many sub-hierarchies. The defined organization of such hierarchies allows any deontic expression to require a fact at the desired level of generality/specificity, implying that if any member of its branch holds, then requirement is satisfied.

Other subclasses of `ExploitationCondition`, namely `Language`, `Length`, `Runs`, `SpatialContext`, `TemporalContext`, `ServiceChannelContext` and `MaterialFormat`, are not abstract, but the use of data properties here is necessary to express sufficiently specified conditions.

This extension is completed by the definition of a number of data properties. Most of them are grouped as subproperties of the abstract data property `factProperty` and are defined for allowing a full specification of the exploitation conditions. Other properties, grouped as subproperties of `deonticProperty`, are attributable to a permission.

7.3.3 Examples

The example shown in Figure 16 depicts a more complex situation, derived from a real contract, where the permission to make a broadcast is given subject to certain restrictions, spatial, temporal and of policy of access.

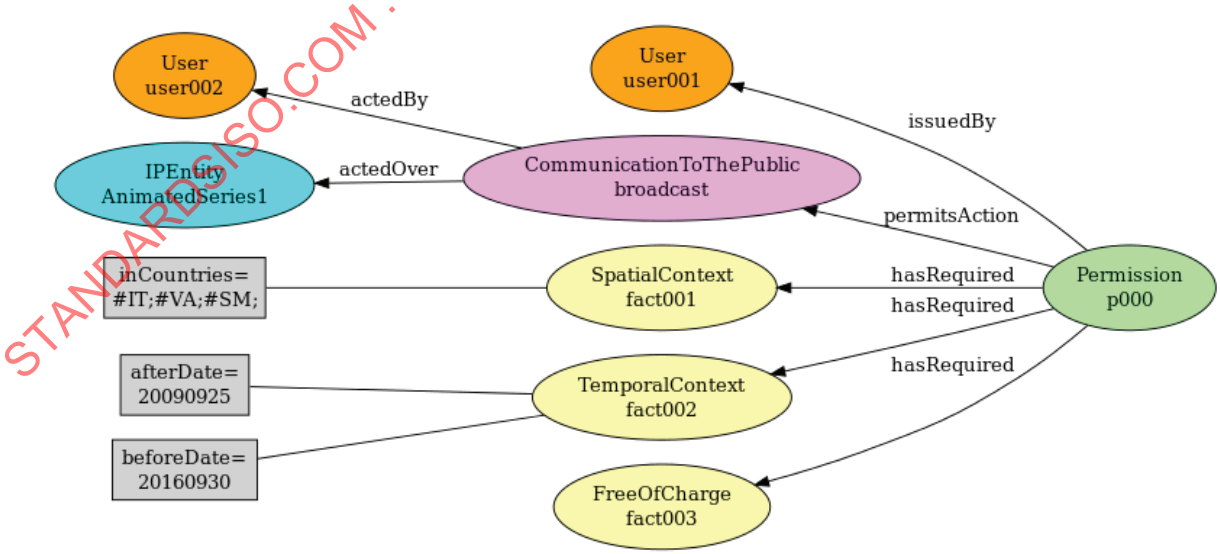


Figure 16 — Expression of a permission, extracted from a real contract

The expression as RDF is given in the following fragment.

```
<!—entity individuals defined in the examples -->
<!ENTITY mcoex "urn:mpeg:mpeg21:mco:2015/examples#">
 <mvco:Permission rdf:about="&mcoex;p000">
     <mvco:permitsAction rdf:resource="&mcoex;broadcast"/>
     <mvco:issuedBy rdf:resource="&mcoex;user001"/>
     <mvco:hasRequired rdf:resource="&mcoex;fact001"/>
     <mvco:hasRequired rdf:resource="&mcoex;fact002"/>
     <mvco:hasRequired rdf:resource="&mcoex;fact003"/>
 </mvco:Permission>
 <mco-ipre:CommunicationToThePublic rdf:about="&mcoex;broadcast">
     <mvco:actedBy rdf:resource="&mcoex;user002"/>
     <mvco:actedOver rdf:resource="&mcoex;AnimatedSeries1"/>
 </mco-ipre:CommunicationToThePublic>
 <mvco:User rdf:about="&mcoex;Licensor"/>
 <mvco:User rdf:about="&mcoex;Licensee"/>
 <mvco:IPEntity rdf:about="&mcoex;AnimatedSeries1"/>
 <mco-ipre:SpatialContext rdf:about=="&mcoex;fact001">
     <mco-ipre:inCountries>#IT;#VA;#SM;</mco-ipre:inCountries>
 </mco-ipre:SpatialContext>
 <mco-ipre:TemporalContext rdf:about=="&mcoex;fact002">
     <mco-ipre:afterDate>20090925</mco-ipre:afterDate>
     <mco-ipre:beforeDate>20160930</mco-ipre:beforeDate>
 </mco-ipre:TemporalContext>
 <mco-ipre:FreeOfCharge rdf:about=="&mcoex;fact003"/>
```

The example given in Figure 17 depicts the case of a mandate for a trade of rights in which one party gets the permission to sell rights held by the other party; a percentage for sale income is also specified.

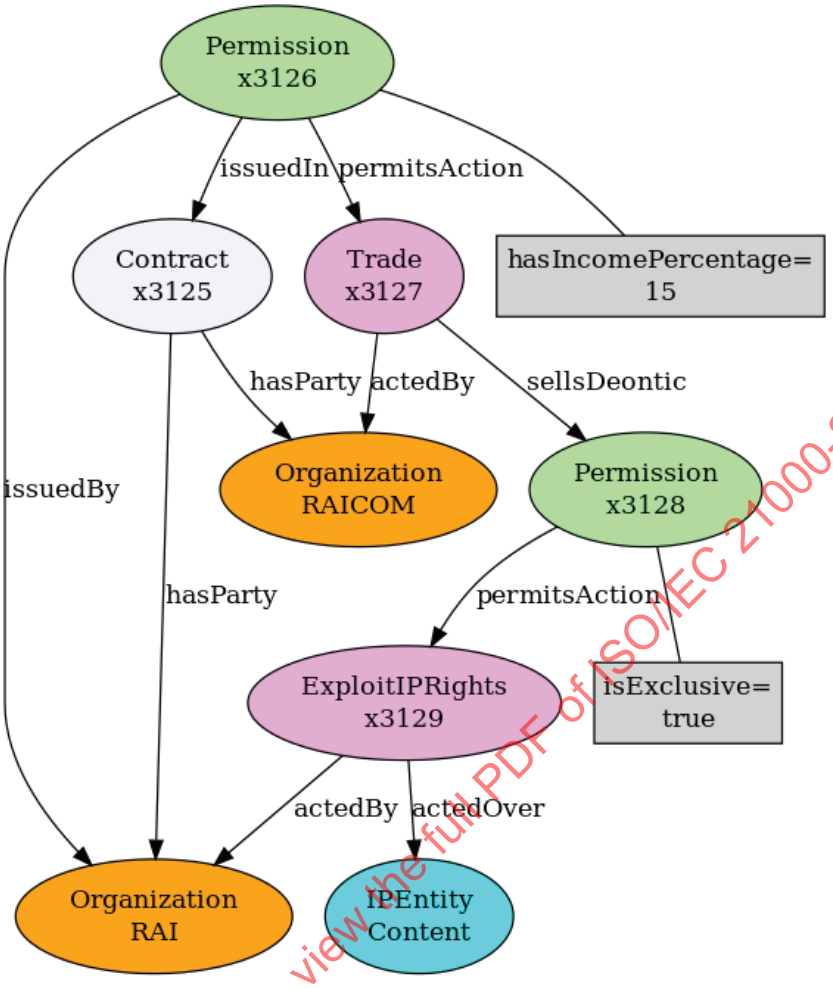


Figure 17 — Example of permission for trade of rights (mandate)

The expression as RDF is given in the following fragment.

```
<NamedIndividual rdf:about="&mcoex;Content">
  <rdf:type rdf:resource="&mvco;IPEntity"/>
</NamedIndividual>
<NamedIndividual rdf:about="&mcoex;RAI">
  <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:core:2015#Organization"/>
</NamedIndividual>
<NamedIndividual rdf:about="&mcoex;RAICOM">
  <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:core:2015#Organization"/>
</NamedIndividual><!-- &mcoex;x3125 -->
<NamedIndividual rdf:about="&mcoex;x3125">
  <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:core:2015#Contract"/>
  <mco-core:hasParty rdf:resource="&mcoex;RAI"/>
  <mco-core:hasParty rdf:resource="&mcoex;RAICOM"/>
</NamedIndividual>
<NamedIndividual rdf:about="&mcoex;x3126">
  <rdf:type rdf:resource="&mvco;Permission"/>
  <mco-ipre:hasIncomePercentage>15</mco-ipre:hasIncomePercentage>
  <mco-core:issuedBy rdf:resource="&mcoex;RAI"/>
  <mco-core:issuedIn rdf:resource="&mcoex;x3125"/>
  <mvco:permitsAction rdf:resource="&mcoex;x3127"/>
</NamedIndividual>
<NamedIndividual rdf:about="&mcoex;x3127">
  <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:ipre:2015#Trade"/>
  <mvco:actedBy rdf:resource="&mcoex;RAICOM"/>
  <mco-ipre:sellsDeontic rdf:resource="&mcoex;x3128"/>
</NamedIndividual>
<NamedIndividual rdf:about="&mcoex;x3128">
  <rdf:type rdf:resource="&mvco;Permission"/>
  <mco-ipre:isExclusive>true</mco-ipre:isExclusive>
  <mvco:permitsAction rdf:resource="&mcoex;x3129"/>
</NamedIndividual>
<NamedIndividual rdf:about="&mcoex;x3129">
  <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:ipre:2015#ExploitIPRights"/>
  <mvco:actedOver rdf:resource="&mcoex;Content"/>
  <mvco:actedBy rdf:resource="&mcoex;RAI"/>
</NamedIndividual>
```


More comprehensive examples are given in Annex B.

7.4 MCO extension for payments and notifications

7.4.1 General

This extension is intended to represent the basic information about payment terms agreed in media contracts and about agreed notification actions intended to inform the contract parties, or other indicated users, about the occurrence of relevant events.

Its URI is as follows:

`urn:mpeg:mpeg21:mco:pane:2015`

and the prefix used in this document is as follows:

`mco-pane`

The formal normative description of this extension is given in 8.4, while its normative OWL, in RDF/XML syntax, is given in A.1.3.

7.4.2 Description

7.4.2.1 General

The MCO extension for payments and notifications does not define any new class without other defined parent classes and fully confirm the contract model defined by the Media Contract Core.

Besides, this extension does not conflict with the MCO extension for the exploitation of intellectual property rights.

7.4.2.2 Payments

The general model for payments is given in Figure 18. The payment (`mco-pane:Payment`) is defined as an action, obligated by an obligation defined and agreed in the contract. The payment involves two parties of the contract, with different roles: one acting the payment and the other one being its beneficiary. The payment is fully specified by the data properties giving the amount and the currency.

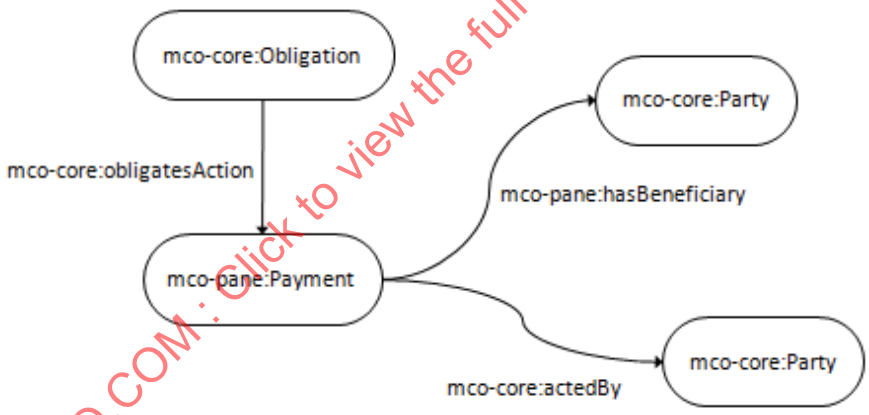


Figure 18 — Classes and object properties around payment action

Each payment is assumed to occur once, after which the obligation is satified. It is possible to define the time period of validity of the obligation by means of an `mco-ipre:TemporalContext` fact, in which data property `mco-ipre:beforeDate` specifies the deadline, while `mco-ipre:afterDate` can be used to specify the start of the acceptance period for the payment. An example of this case is given in Figure 20.

An obligation to payment can also be defined in terms of a percentage over the net income resulting from an exploitation action. In this case, the amount of the payment cannot be known in advance. Moreover, the obligation is expected to get valid on the accomplishment of the related action. An example of this case is given in Figure 21.

Notice that as each payment action can occur only once, the parties have to define one obligation for each payment occurence they need to agree, such as instalments or repeated payments. This implies that the definition of an unbounded number of payments is not supported.

No other details about the payment modalities are modelled.

7.4.2.3 Notifications

The general model for notification is given in Figure 19. The notification (`mco-pane:Notify`) is defined as an action, regulated by a deontic expression, normally but not forcely an obligation, defined and agreed in the contract. The notification involves two parties of the contract, with different roles: one acting the notification and the other one being its recipient.

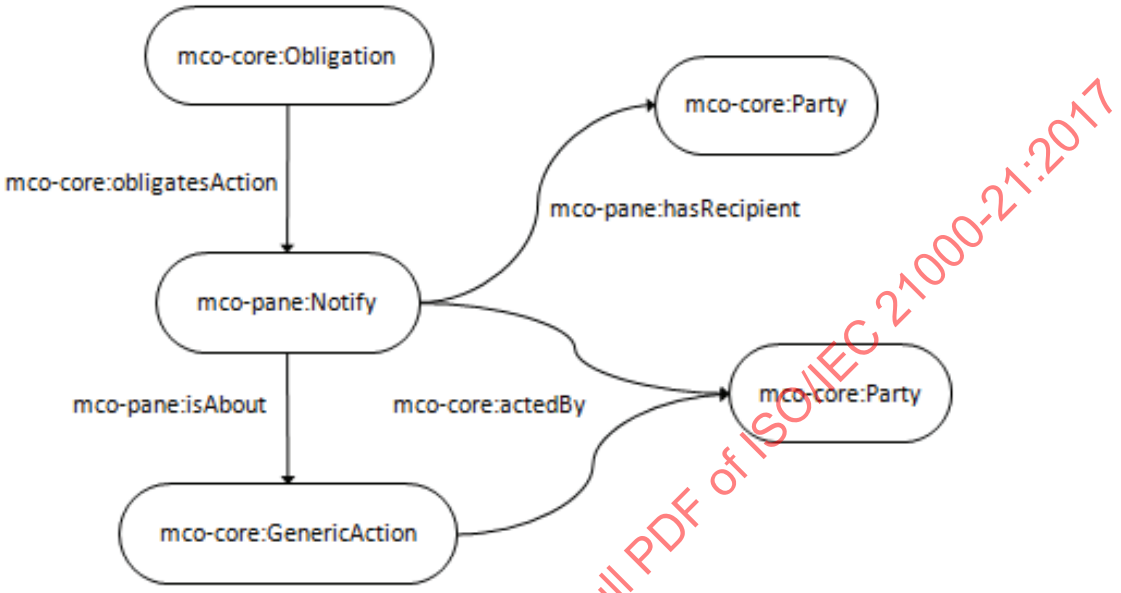


Figure 19 — Classes and object properties around notify action

A notification is intended to report about the occurrence of a related action, which can be specified either through an action related fact (`mco-core:Started` or `mco-core:Done`), required by the deontic expression regulating the action or through a specific relation (`mco-pane:isAbout`).

No other details about the notification modalities are modelled.

7.4.3 Examples

7.4.3.1 Payments

The example given in Figure 20 is an obligation of payment for a defined amount; the payment should be done before the date given by the `mco-ipre:TemporalContext` condition.

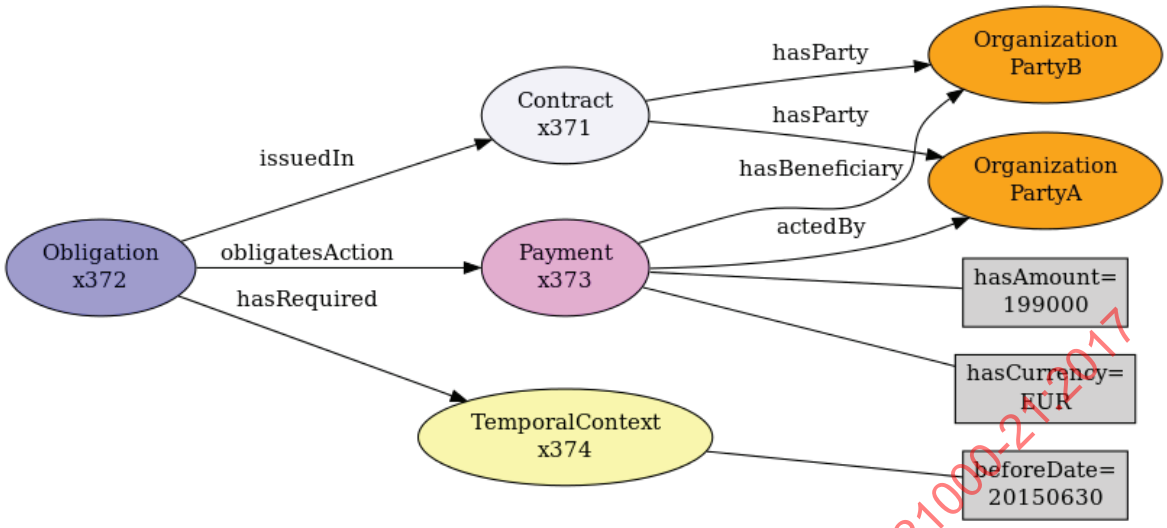


Figure 20 — Example of obligation of payment for a defined amount

The RDF/XML Serialization of the example (main entities) is given here below.

```
<NamedIndividual rdf:about="#PartyA">
     <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:core:2015#Organization"/>
</NamedIndividual>
<NamedIndividual rdf:about="#PartyB">
     <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:core:2015#Organization"/>
</NamedIndividual>
<NamedIndividual rdf:about="#x371">
    <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:core:2015#Contract"/>
    <mco-core:hasParty rdf:resource="#PartyA"/>
    <mco-core:hasParty rdf:resource="#PartyB"/>
</NamedIndividual>
<NamedIndividual rdf:about="#x372">
    <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:core:2015#Obligation"/>
    <mco-core:issuedIn rdf:resource="#x371"/>
    <mco-core:obligatesAction rdf:resource="#x373"/>
    <mco-core:hasRequired rdf:resource="#x374"/>
</NamedIndividual>
<NamedIndividual rdf:about="#x373">
    <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:pane:2015#Payment"/>
    <mco-pane:hasAmount>199000</mco-pane:hasAmount>
    <mco-pane:hasCurrency>EUR</mco-pane:hasCurrency>
    <mvco:actedBy rdf:resource="#PartyA"/>
     <mco-pane:hasBeneficiary rdf:resource="#PartyB"/>
</NamedIndividual>
<NamedIndividual rdf:about="#x374">
    <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:ipre:2015#TemporalContext"/>
    <mco-ipre:beforeDate>20150630</mco-ipre:beforeDate>
</NamedIndividual>
```

The example given in Figure 21 is an obligation of payment expressed as a percentage of the net income of an exploitation action, indicated by the property `mco-pane:hasIncomeSource`; in this case, the payment should be executed within a deadline of 30 days after the completion of the `mco-ipre:CommunicationToThePublic` action, as indicated by the property `mco-ipre:hasValidity` of the `mco-core:Done` condition.

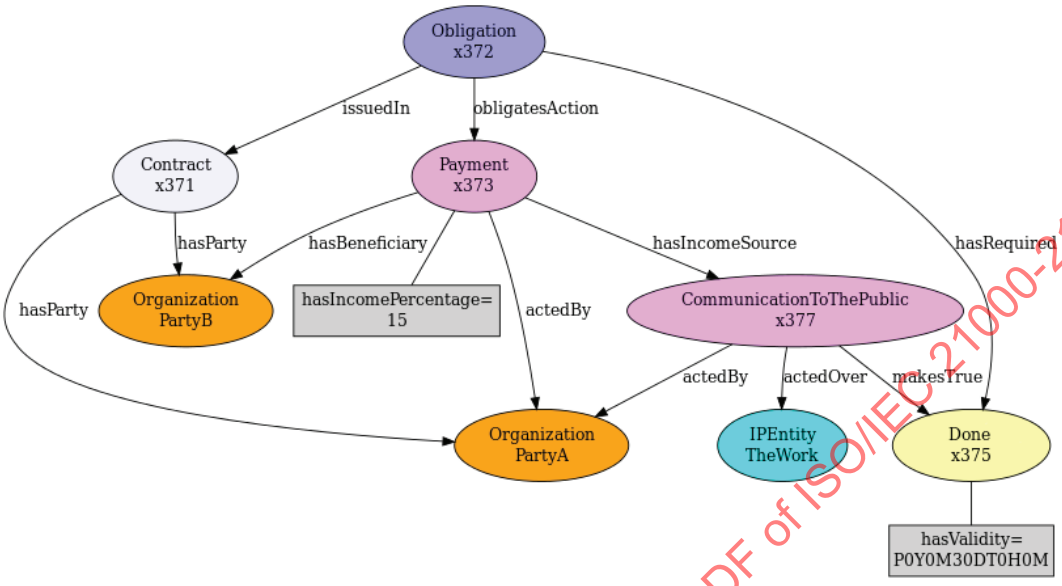


Figure 21 — Example of payment expressed as a percentage of an exploitation income

The RDF/XML Serialization of the example (main entities) is given here below.

```
<NamedIndividual rdf:about="#PartyA">
     <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:core:2015#Organization"/>
</NamedIndividual>
<NamedIndividual rdf:about="#PartyB">
     <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:core:2015#Organization"/>
</NamedIndividual>
<NamedIndividual rdf:about="#x371">
    <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:core:2015#Contract"/>
    <mco-core:hasParty rdf:resource="#PartyA"/>
    <mco-core:hasParty rdf:resource="#PartyB"/>
</NamedIndividual>
<NamedIndividual rdf:about="#x372">
    <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:core:2015#Obligation"/>
    <mco-core:issuedIn rdf:resource="#x371"/>
    <mco-core:obligatesAction rdf:resource="#x373"/>
    <mco-core:hasRequired rdf:resource="#x375"/>
</NamedIndividual>
<NamedIndividual rdf:about="#x373">
    <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:pane:2015#Payment"/>
    <mco-pane:hasIncomePercentage>15</mco-pane:hasIncomePercentage>
    <mvco:actedBy rdf:resource="#PartyA"/>
    <mco-pane:hasBeneficiary rdf:resource="#PartyB"/>
    <mco-pane:hasIncomeSource rdf:resource="#x377"/>
</NamedIndividual>
<NamedIndividual rdf:about="#x375">
    <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:core:2015#Done"/>
    <mco-ipre:hasValidity>P0Y0M30DT0H0M</mco-ipre:hasValidity>
</NamedIndividual>
<NamedIndividual rdf:about="#x377">
    <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:ipre:2015#CommunicationToThePublic"/>
    <mvco:actedBy rdf:resource="#PartyA"/>
    <mvco:actedOver rdf:resource="#TheWork"/>
    <mco-core:makesTrue rdf:resource="#x375"/>
</NamedIndividual>
```


7.4.3.2 Notifications

The example given in Figure 22 is about a notification obligated at the completion of the `mco-ipre:CommunicationToThePublic` action, indicated by the property `mco-pane:isAbout`, with a deadline of ten days, as indicated by the property `mco-ipre:hasValidity` of the `mco-core:Done` condition.

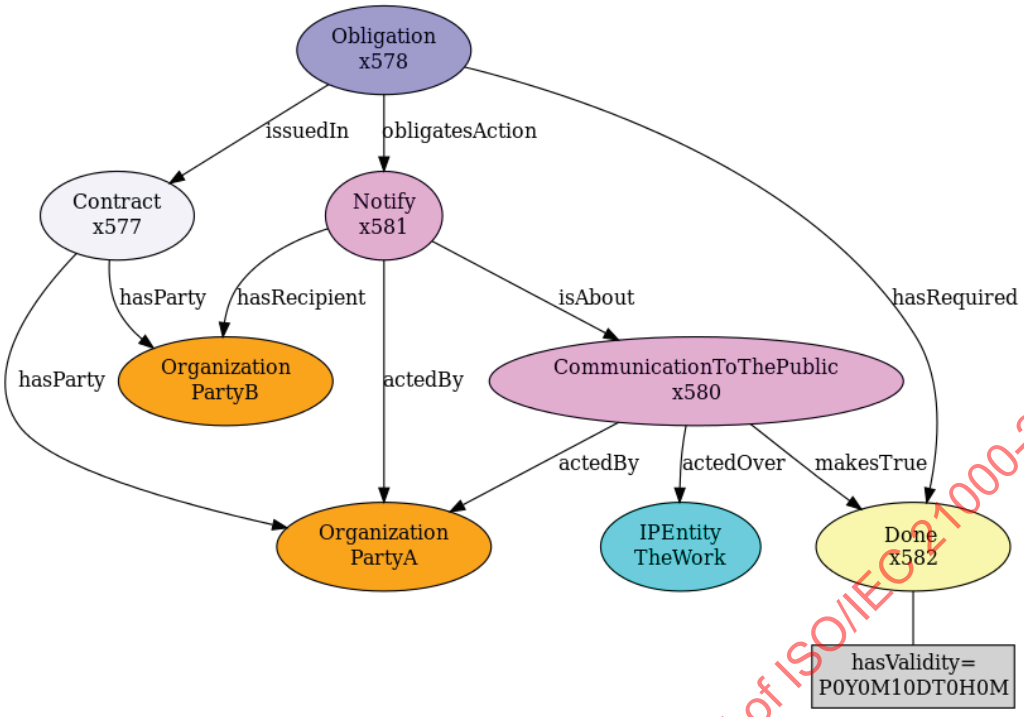


Figure 22 — Example of notification about the completion of a related action

The RDF/XML Serialization of the example (main entities) is given here below.

```
<NamedIndividual rdf:about="#PartyA">
     <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:core:2015#Organization"/>
</NamedIndividual>
<NamedIndividual rdf:about="#PartyB">
     <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:core:2015#Organization"/>
</NamedIndividual>
<NamedIndividual rdf:about="#x577">
    <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:core:2015#Contract"/>
    <mco-core:hasParty rdf:resource="#PartyA"/>
    <mco-core:hasParty rdf:resource="#PartyB"/>
</NamedIndividual>
<NamedIndividual rdf:about="#x578">
    <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:core:2015#Obligation"/>
    <mco-core:issuedIn rdf:resource="#x577"/>
    <mco-core:obligatesAction rdf:resource="#x581"/>
    <mco-core:hasRequired rdf:resource="#x582"/>
</NamedIndividual>
<NamedIndividual rdf:about="#x581">
    <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:pane:2015#Notify"/>
    <mvco:actedBy rdf:resource="#PartyA"/>
    <mco-pane:hasRecipient rdf:resource="#PartyB"/>
    <mco-pane:isAbout rdf:resource="#x580"/>
</NamedIndividual>
<NamedIndividual rdf:about="#x582">
    <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:core:2015#Done"/>
    <mco-ipre:hasValidity>P0Y0M10DT0H0M</mco-ipre:hasValidity>
</NamedIndividual>
<NamedIndividual rdf:about="#x377">
    <rdf:type rdf:resource="urn:mpeg:mpeg21:mco:ipre:2015#CommunicationToThePublic"/>
    <mvco:actedBy rdf:resource="#PartyA"/>
    <mvco:actedOver rdf:resource="#TheWork"/>
    <mco-core:makesTrue rdf:resource="#x582"/>
</NamedIndividual>
```


7.5 MCO extension for Rights Expression Language acts

7.5.1 General

This extension is intended to support the expression of REL acts within deontic expressions of MCO contracts.

Its URI is as follows:

urn:mpeg:mpeg21:mco:rele:2015

and the prefix used in this document is as follows:

mco-rele

The formal normative description of this extension is given in 8.5, while its normative OWL, in RDF/XML syntax, is given in A.1.4.

The semantics of the actions are those provided by ISO/IEC 21000-5 and are not repeated here.

7.5.2 Description

By this extension, it is possible to specify in MCO contracts permissions, prohibitions or obligation related to actions defined as REL acts in ISO/IEC 21000-5.

Other aspects of ISO/IEC 21000-5 are not covered here.

8 Formal description of Contract Semantic Representation

8.1 Overview

The formal description is given through the commented enumeration of classes, object properties, data properties, and their associated restrictions, This formal description is complementary to that of the normative computer readable OWL of Annex A.

8.2 Media Contract Ontology Core

8.2.1 General

8.2 systematically describes the MCO Core OWL, many of whose terms extend the MVCO.

The URI of MCO core is as follows:

`urn:mpeg:mpeg21:mco:core:2015`

and the prefix used in this document is as follows:

`mco-core`

Elements of MPEG-21 MVCO used as reference in this subclause are as follows.

— Classes: `mvco:Permission`, `mvco:Action`, `mvco:Fact`.

— Properties: `mvco:hasRequired`, `mvco:permitsAction` (domain `mvco:Permission`, range `mvco:Action`).

8.2.2 Classes

Classes with no other defined parent class are as follows.

— `mco-core:Party` — An individual belongs to this class if it belongs to either `mvco:User` or to `mco-core:Organization`. The class `mco-core:Party` is equivalent to the union of the classes `mvco:User` and `mco-core:Organization`.

— `mco-core:Contract` — For modelling the contract entity itself.

— `mco-core:TextualClause` — Specific part of a narrative contract which can be referenced.

— `mco-core:Organization` — For modelling a party represented in the contract by a signatory.

— `mco-core:DeonticExpression` — An individual belongs to this class if it belongs to either `mco-core:Prohibition`, `mco-core:Obligation` or `mvco:Permission`. The class `mco-core:DeonticExpression` is equivalent to the union of the classes: `mco-core:Prohibition`, `mco-core:Obligation` and `mvco:Permission`.

— mco-core:Prohibition — Clause binding one of the parties not to execute an action.

— mco-core:Obligation —Clause binding one of the parties to execute an action.

— mco-core:Service — Transaction between two parties, where one of them performs a task for the second.

  — mco-core:GenericAction — For modelling actions relevant to deontic of a media contract but which are not acted over IP-Entities; intended as an extension of mvco:Action, that is thus asserted as subclass of mco-core:GenericAction.

Subclasses of mvco:Action are as follows.

— mco-core:Consume — The action of fruition of a service or content.

— mco-core:Provide — When acted over an IP-Entity (copy or instance), it represents the action of providing at the disposal of (or making a delivery to) an mvco:User or mco-core:Organization material related to such IP-Entity. When acted over a service, it represents the offer of such service.

— mco-core:Match — models the action of executing a comparison between two (or more) IP-Entities or services and evaluating the degree of matching of the respective properties. The action may result in either a simple Boolean value or more complex structured information including ranking, confidence, or statistical data, depending on the application context. The input IP-Entities may play a different role in the action execution, e.g. one may be used as query or sample and another one as candidate under matching evaluation.

Subclasses of mvco:IPEntity are as follows.

— mco-core:Event — A real life event subject to intellectual property. Examples include sport events, concerts, and musical contexts. The particularity of this class is that its individuals occur at a given time and thus their status can vary in time with respect to be started, in progress, suspended or finished.

Subclasses of mvco:Fact are as follows.

— mco-core:FactComposition — Fact whose truth depends on one or more facts, according to the logical constructs defined by its subclasses.

— mco-core:ActionEventFact — Fact whose truth value depends on the status of actions, or individuals of classes mco-core:GenericAction or mco-core:Event, related to it by the mco-core:makesTrue property.

— mco-core:TogetherWith — In the case of deontic expression on actions acted over multiple IP-Entities, such as mco-core:Match, it expresses conditions on which IP-Entities can be involved in the action, other than the one indicated in the deontic expression itself.

Subclasses of mco-core:FactComposition are as follows.

— mco-core:FactUnion — Fact whose truth value will be evaluated as holding if at least one of the facts which are related to it through the mco-core:hasFact object property does also hold. It is restricted to being related with at least two other facts.

— mco-core:FactIntersection — Fact whose truth value will be evaluated as holding if all of the facts which are related to it through the mco-core:hasFact object property do also hold. It is restricted to being related with at least two other facts.

— mco-core:FactNegation — Fact whose truth value will be evaluated as holding if the only fact which are be related to it through the mco-core:hasFact object property does not hold. It is restricted to being related with one and only one other fact.

Subclasses of mco-core:ActionEventFact are as follows.

— mco-core:Started — Fact whose truth value depends on the beginning of actions or events related to it by the mco-core:makesTrue property.

— mco-core:Done — Fact whose truth value depends on the accomplishment of actions or events related to it by the mco-core:makesTrue property.

Subclasses of mco-core:Service are as follows.

— mco-core:Authenticate — Confirm the identity of a content item in a value chain.

— mco-core:Deliver — Transfer content between users of a value chain.

— mco-core:Describe — Associate metadata to content in a value chain.

— mco-core:Identify — Assign identifiers to content in a value chain.

— mco-core:InteractWith — Trigger an action within a value chain through content presented.

— mco-core:Package — Make content ready for delivery.

— mco-core:Present — Experience content.

— mco-core:Post — Let other users access their content.

— mco-core:Process — Perform operations on content in a value chain.

— mco-core:Store — Save content for later use.

— mco-core:Verify — Check the integrity of content.

8.2.3 Object properties

The following object properties are defined.

— mco-core:hasRequired — Relation used to extend the domain of mvco:hasRequired. The domain is mco-core:DeonticExpression and the range is mvco:Fact.

— mco-core:actedBy - Relation used to extend the range of mvco:actedBy. The domain is mco-core:GenericAction and the range is mco-core:Party.

— mco-core:actedOver — Relation used to extend the range of mvco:actedOver. The domain is mvco:Action and the range is the union of mvco:IPEntity and mco-core:Service.

— mco-core:issuedBy — Relation used to extend both the domain and range of mvco:issuedBy. The domain is mco-core:DeonticExpression and the range is mco-core:Party.

— mco-core:hasParty — Relation used to express a party in a contract. The domain is mco-core:Contract and the range is mco-core:Party.

— mco-core:isSignedBy — Relation used to identify the signatory of a contract when different from a party. The domain is mco-core:Contract and the range is mvco:User.

— mco-core:hasSignatory — For modelling the identification of the signatory on behalf of a party. The domain is mco-core:Organization and the range is mvco:User.

— mco-core:issuedIn — For modelling the identification of the contract in which the deontic expression is issued, in any context where information about multiple contracts are collected. The domain is mco-core:DeonticExpression and the range is mco-core:Contract.

— mco-core:implements — For modelling the reference from a deontic expression to narrative contract excerpts of which it makes the operative part. The domain is mco-core:DeonticExpression and the range is mco-core:TextualClause.

— mco-core:contractObjectProperty — Parent property of all the properties attributable to mco-core:Contract as both domain and range, for modelling relationships between contracts. Sub-properties of mco-core:contractProperty are as follows.

  — mco-core:cancels — The parties agree to cancel all the effects of the referenced contract.

  — mco-core:isAmendmentOf — The referenced contract is partially modified by the new agreement.

  — mco-core:prevailsOver — The referenced contract is generally still valid, but in the case of conflict the terms of the new one prevail.

  — mco-core:supersedes — The referenced contract has to be considered terminated by the new agreement which totally replaces it.

— mco-core:factObjectProperty — Parent property of all the properties having mvco:Fact as domain. Sub-properties of mco-core:factObjectProperty are as follows.

  — mco-core:hasFact — Relation between an mco-core:FactComposition and each of its component Facts.

  — mco-core:withIPEntity — Relation between mco-core:TogetherWith, which is the domain, and mvco:IPEntity, which is the range.

— mco-core:hasVCard — For modelling the address information of the contract parties and signatories. The domain is mco-core:Party and the range http://www.w3.org/2006/vcard/ns#VCard.

— mco-core:forbidsAction — Relation used to express the actions that are forbidden. The domain is mco-core:Prohibition and the range is mco-core:GenericAction.

— mco-core:obligatesAction — Relation used to express the actions that are obligated to be executed. The domain is mco-core:Obligation and the range is mco-core:GenericAction.

— mco-core:permitsAction — Relation used to express the actions that are permitted. The domain is mco-core:Permission and the range is mco-core:GenericAction. Defined in order to extend the range of mvco:permitsAction.

— mco-core:makesTrue — Relation used to express the dependency between the truth of a fact and the status of a related action. The domain is the union of mco-core:GenericAction and mco-core:Event, and the range is mco-core:ActionEventFact.

— mco-core:hasRecipient — Relation used to express the recipient of an mco-core:Provide action. The domain is mco-core:Provide and the range is mco-core:Party.

8.2.3.1 Object property chains

The following object properties chains are defined.

— mco-core:appliesOver — Relation that connects mvco:Permission to mvco:IPEntity through the properties mco-core:permitsAction and mco-core:actedOver.

— mco-core:isHeldBy — Relation that connects mvco:Permission to mco-core:Party through the properties mco-core:permitsAction and mco-core:actedBy.

8.2.4 Datatype properties

The following datatype properties are defined.

— `mco-core:Text` — The domain is `mco-core:TextualClause` for which it provides the text of the narrative contract excerpt.

— `mco-core:Address` — The domain is `mco-core:Party`, for permitting a simple mechanism of providing address information as plain text.

— `mco-core:Signature` — For expressing acceptance of the contract terms and identification of the signatory. The domain is `mvco:User` and the range is `XMLLiteral`.

— `mco-core:encryptedContractPart` — For addressing the encryption needs regarding a part or the entirety of an MCO contract document. The domain is `mco-core:Contract` and the range is `XMLLiteral`.

— `mco-core:contractProperty` — Superclass of all the data properties attributable to a Contract.

Sub-properties of `mco-core:contractProperty`, defined in the MCO core, are as follows.

— `mco-core:TextVersion` — For providing the whole narrative contract text. Domain is `mco-core:Contract`.

— `mco-core:hasGoverningLaw` — With domain `mco-core:Contract`, for indicating the applicable governing law, i.e. the agreed reference legal system of the contract; it can be indicated as a country, if that country has only one legal system.

— `mco-core:hasCourt` — With domain `mco-core:Contract`, for indicating which court has jurisdiction over any dispute related to the terms and conditions defined in the contract.

— `mco-core:isCourtJurisdictionExclusive` — With domain `mco-core:Contract` and range Boolean, for indicating if the jurisdiction of the court, given by the property `mco-core:hasCourt`, is agreed to be exclusive (true), preventing the parties from bringing proceedings in another court, or not (false). This property has to be present if and only if the property `mco-core:hasCourt` is present.

— `mco-core:factProperty` — Superclass of all the data properties attributable to a fact.

Sub-properties of `mco-core:factProperty`, defined in the MCO core, are as follows.

— `mco-core:withIPEntitiesFrom` — With domain `mco-core:TogetherWith`. For attributing the list of constrained IP-Entity sources.

— `mco-core:deonticProperty` — Superclass of all the data properties attributable to a deontic expression.

— `dii:Identifier` — It allows the identification information of a digital item. Domain is `mvco:IPEntity`.

— `mco-core:isOnLoan` — The domain is `mco-core:Provide` and range is Boolean. When the action is over IP-Entity (Copy or MakeInstance), it attributes that the material is provided on loan, thus the property of material is kept by the provider. It can be considered false when not given.

8.3 MCO extension for exploitation of intellectual property rights

8.3.1 General

8.3 systematically describes the OWL of the MCO extension for exploitation of intellectual property rights with the domain of media contracts.

The URI of MCO extension for exploitation of intellectual property rights is as follows:

urn:mpeg:mpeg21:mco:ipre:2015

and the prefix used in this document is as follows:

mco-ipre

it imports the following:

mco-core

8.3.2 Classes

8.3.2.1 Subclasses of mvco:Action

A hierarchy is created as a subclass of mvco:Action in order to address the IP-rights of an audiovisual contract. For each subclass of the hierarchy, the relationships with other, pre-existing in MVCO, subclasses of mvco:Action are given. The class mco-ipre:ExploitIPRights itself is used for modelling the entirety of IP rights, thus the permission to act it is substantially equivalent to having all rights granted. The hierarchy is shown in Figure 23 and in Figure 24.

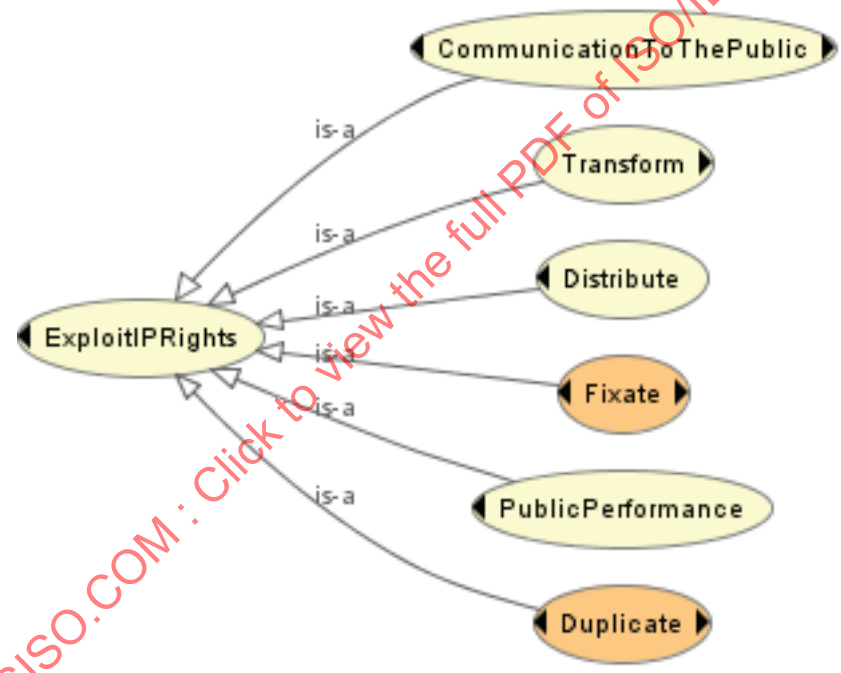


Figure 23 — Derived classes of action for audiovisual contracts

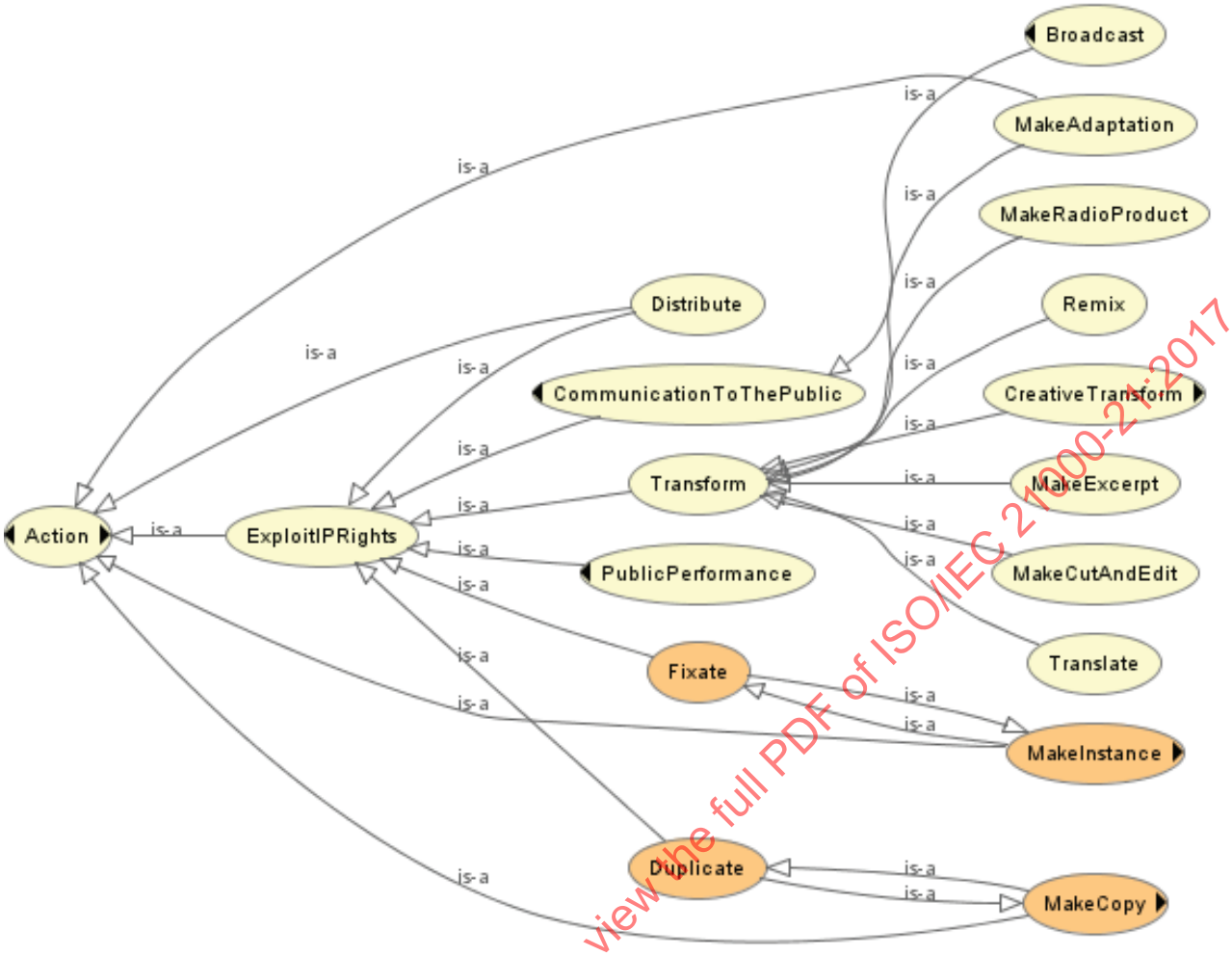


Figure 24 — Subclasses of `mco-ipre:ExploitationIPRights` inheritance from other `mvco:Action`

The following class is a subclass of `mvco:Action`:

— `mco-ipre:ExploitIPRights` — Action of exploiting the IP-rights.

The following subclasses of `mco-ipre:ExploitIPRights` are defined.

— `mco-ipre:CommunicationToThePublic` — For modelling a PublicCommunication in which the public is not present in the place where the communication is originated. Also a subclass of `mvco:PublicCommunication`.

— `mco-ipre:PublicPerformance` — For modelling a PublicCommunication in which the work is showed or played in public. Also a subclass of `mvco:PublicCommunication`.

— `mco-ipre:Fixate` — The action by which a work or a performance is materially recorded. This is equivalent to `mvco:MakeInstance`.

— `mco-ipre:Duplicate` — To make copies of the work. As a prerequisite of distribution. This is equivalent to `mvco:MakeCopy`.

— `mco-ipre:Transform` — For modelling all forms of modifications.

The class `mvco:Distribute` is modified to have `mco-ipre:ExploitIPRights` as superclass.

The following subclasses of `mco-ipre:Transform` are defined, with its hierarchy depicted in Figure 25.

— `mco-ipre:CreativeTransform` — For modelling any transformation of the IP-Entity into a new one, containing new creative editorial elements.

— `mco-ipre:MakeCutAndEdit` — For modelling cut, translation, editing, and what else alter the audiovisual content for customary exploitation purposes.

— `mco-ipre:MakeExcerpt` — For modelling the use and exploitation of excerpts separate from the source audiovisual content.

— `mco-ipre:MakeRadioProduct` — For modelling the transformation into an IP-Entity mainly made up of sound component.

— `mco-ipre:Remix` — For modelling the recombination of audio tracks or channels from a recording to produce a new or modified audio recording.

— `mco-ipre:Translate` — For modelling the modification of the IP-Entity language.

The following subclasses of `mco-ipre:CreativeTransform` are defined.

— `mco-ipre:Novelization` — For modelling the transformation of the original IP-Entity into a new literary work.

— `mco-ipre:Prequel` — For modelling the transformation into a new IP-Entity, having the same or related characters and/or the same or related context elements than the original one, for which the fiction story is consistently conceived to happen before the original story.

— `mco-ipre:Remake` — For modelling the creation of a new IP-Entity with the same theme or concept or plot than the original one.

— `mco-ipre:Sequel` — For modelling the transformation into a new IP-Entity, having the same or related characters and/or the same or related context elements than the original one, for which the fiction story is consistently conceived to be the continuation of the original story.

— `mco-ipre:Spinoff` — For modelling the transformation into a new IP-Entity, having some common elements with the original one.

The class `mvco:MakeAdaptation` is modified to have `mco-ipre:Transform` as superclass.

Figure 25 depicts the hierarchy of subclasses of `mco-ipre:Transform`.

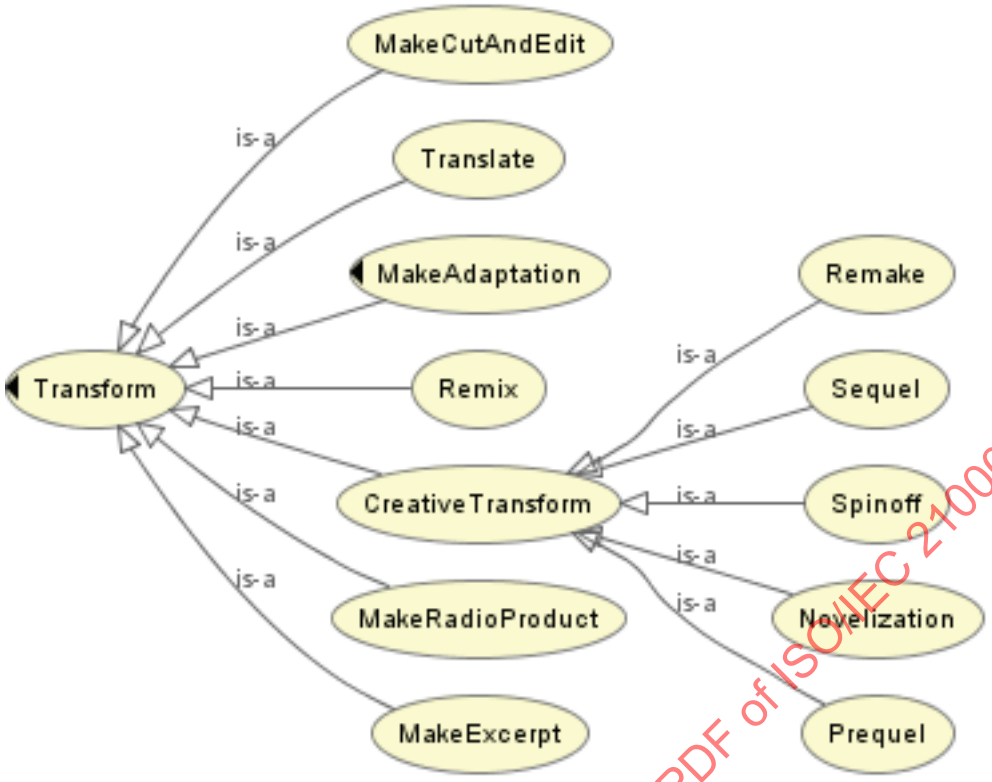


Figure 25 — Subclasses of `mco-ipre:Transform`

8.3.2.2 Subclasses of `mco-core:GenericAction`

A subclass of mco-core:GenericAction is defined as follows.

— `mco-ipre:Trade` — For modelling the action of selling rights and possibly related obligations and prohibitions.

8.3.2.3 Subclasses of `mvco:Adaptation`

A subclass of `mvco:Adaptation` is included as follows.

— `mco-ipre:Excerpt` — For modelling this particular derivative work which cannot be made without the authorization of the original author.

8.3.2.4 Exploitation conditions as subclasses of `mvco:Fact`

The constraints and restrictions given in the audiovisual contracts are represented as subclasses of `mvco:Fact`. One hierarchy, shown in Figure 26, is defined as subclasses of `mvco:Fact` for expressing restrictions on the Exploitation Rights, reflecting the structures of real contracts:

— `mco-ipre:ExploitationCondition`.

Note that one subclass is present deriving from `mvcoFact: mco-core:FactComposition` and its derived classes: `mco-core:FactUnion`, `mco-core:FactIntersection`, and `mco-core:FactNegation`. These classes facilitate the mechanisms for building the required statements about permissions with complex logic constructs.

The following classes are created as direct children of `mco-ipre:ExploitationCondition`.

— `mco-ipre:AccessPolicy` — For modelling restriction on the way the final user is charged (or not) for the content fruition.

— `mco-ipre:DeliveryModality` — For modelling restrictions based on who (and how) has the control on the time (and place) of fruition of the communication to the public.

— `mco-ipre:Device` — For modelling the restrictions on the type of equipment used by the final user for the fruition of content.

— `mco-ipre:Means` — For modelling restrictions on the way in which the content is delivered to the public.

— `mco-ipre:ServiceAccessPolicy` — For modelling restrictions on how the final users access to the service delivery content object is established for communication to the public (i.e. open or restricted).

— `mco-ipre:UserTimeAccess` — For modelling restrictions based on the possibility to establish expiration of the time of availability of the content for the fruition of the final user (i.e. rental).

— `mco-ipre:SpatialContext` — For modelling restrictions on the territory when an action can be executed.

— `mco-ipre:TemporalContext` — For modelling the "license period", which is the time when an Action can be executed.

— `mco-ipre:IPEntityContext` — For modelling the restriction on the IP-Entity, over which a deontic expression is applied, to belong to a particular editorial context, i.e. being a part of another IP-Entity. The condition is specified through the object property `mco-ipre:partOf`. The fact to hold requires that there is a relationship such as `mvco:isMadeUpOf` between the two IP entities.

— `mco-ipre:Language` — For modelling the language for communication to the public, such as that for dubbing and/or that for subtitles.

— `mco-ipre:Runs` — For modelling restrictions on maximum number of runs, which is the number of times which an Action can be executed.

— `mco-ipre:Length` — For modelling restrictions about the length, i.e. duration, of the content material resulting from an Action.

— `mco-ipre:ServiceChannelContext` — For modelling the restriction on the outlets used for the exploitation of the rights (e.g. the communication to the public); such outlets, recognizable, can be indifferently named as services (possibly with a common brand) or channels, according to the context.

— `mco-ipre:MaterialFormat` — For modelling the restrictions on the technical properties of the material (copies or instances) used for, or resulting from, the exploitation of the rights (i.e. the communication to the public).

Some of these classes indicate aspects for which condition should be expressed by specifying a subclass, as defined in the following clauses. Being such aspects independent from one another, those classes are disjoint. Other couples of classes are also defined as disjoint. See all the explicit disjointness axioms in Annex A.

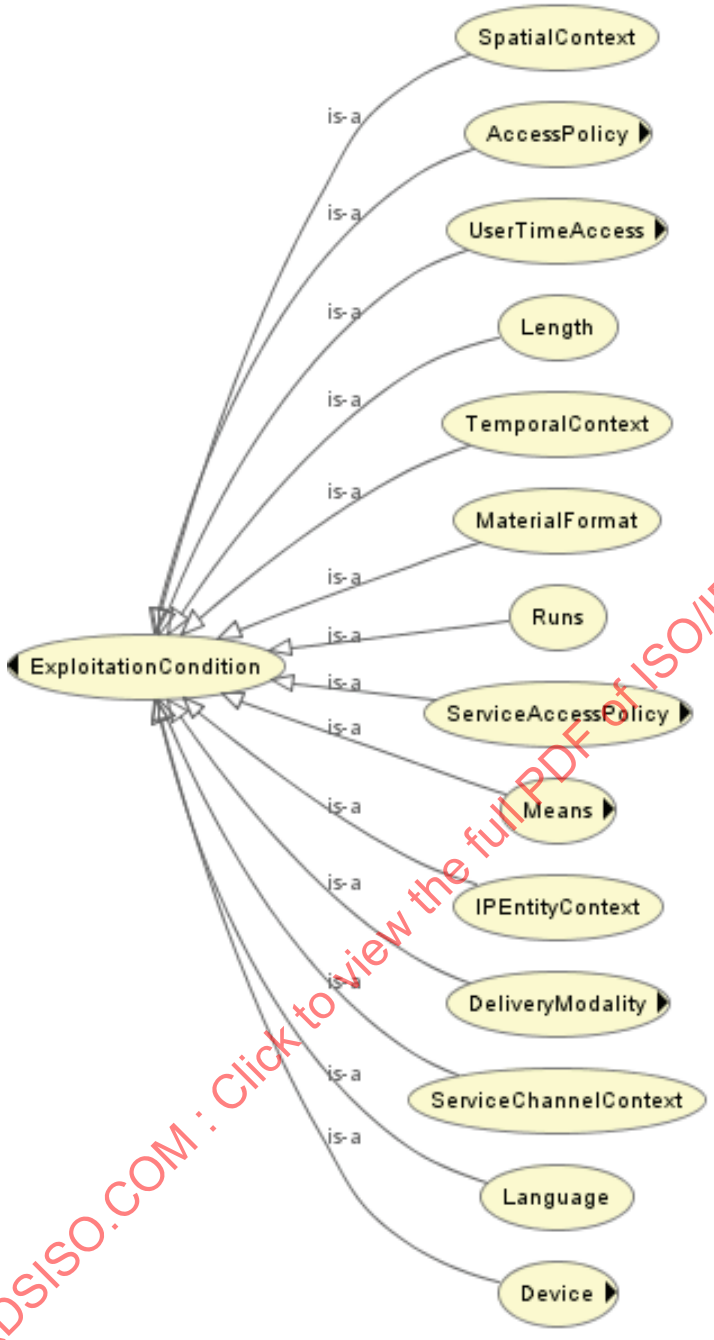


Figure 26 — Subclasses of `mco-ipre:ExploitationCondition`

8.3.2.4.1 Subclasses of `mco-ipre:AccessPolicy`

The following classes have been created as subclasses of `mco-ipre:AccessPolicy`, with hierarchy shown in Figure 27.

— `mco-ipre:FreeOfCharge` — For modelling the restriction that no charge is due, by the final user for the content fruition, other than fees levied by government agencies.

— `mco-ipre:Pay` — For modelling the restriction that the content is accessible to the viewer through payment. It is disjoint with `mco-ipre:FreeOfCharge`.

As subclasses of `mco-ipre:Pay`:

— `mco-ipre:Subscription` — For modelling the restriction that the access requires a payment of a subscription fee by the final user.

— `mco-ipre:PayPerView` — For modelling the restriction that the access requires a payment by the final user on a per-exhibition basis, at the time scheduled by the media service provider by continuous exhibition.

— `mco-ipre:PayPerPackage` —For modelling the restriction that the access requires a payment by the final user on a per-package basis, where the package is an offer for a limited catalogue of content defined by the service provider.

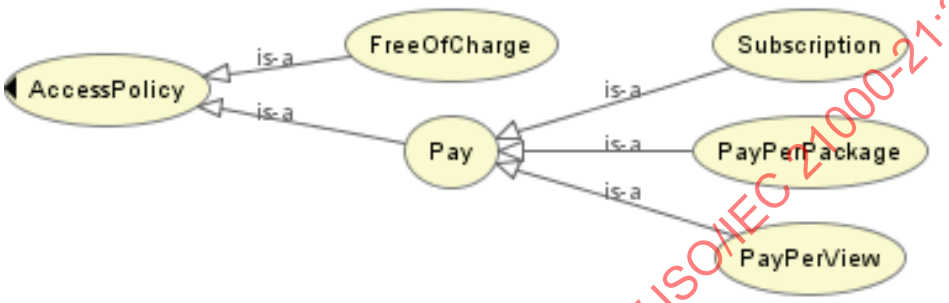


Figure 27 — Subclasses of `mco-ipre:AccessPolicy`

8.3.2.4.2 Subclasses of DeliveryModality

The following two subclasses of `mco-ipre:DeliveryModality` have been defined.

— `mco-ipre:Linear` — For modelling the restriction that the delivery modality is made by a media service provider simultaneously to many end users, on the basis of a programme schedule. It is disjoint with `mco-ipre:NonLinear`.

— `mco-ipre:NonLinear` — For modelling the restriction that the delivery modality is made by a media service provider for the view at the moment chosen by the end user and at his individual request on the basis of a catalogue of programmes selected by the media service provider. This delivery modality is also known as “makeAvailable”.

As subclasses of `mco-ipre:Linear`:

— `mco-ipre:Broadcasting` — For modelling the restriction that the linear delivery modality is made by means of any point-to-multipoint technology (such as DTH Delivery, Cable TV Delivery, Satellite Delivery, IPTV Delivery, Analogue, Mobile Broadcast Technology), for which many simultaneous viewers access the content.

— `mco-ipre:Webcasting` — For modelling the restriction that the linear delivery modality is made by streaming via the Internet.

As subclasses of `mco-ipre:NonLinear`:

— `mco-ipre:OnDemandBasis` — For modelling the restriction that the delivery of the of the non-linear modality is made in response to a user request.

As subclass of `mco-ipre:OnDemandBasis`:

— `mco-ipre:OnDemandDownload` — For modelling the restriction that the on demand basis delivery is made of the reception of data to the user’s system from a remote system for viewing for limited time or perpetuity.

— `mco-ipre:OnDemandStreaming` — For modelling the restriction that the on demand basis delivery is made in streaming modality.

The resulting hierarchy under class `mco-ipre:DeliveryModality` is presented in Figure 28.

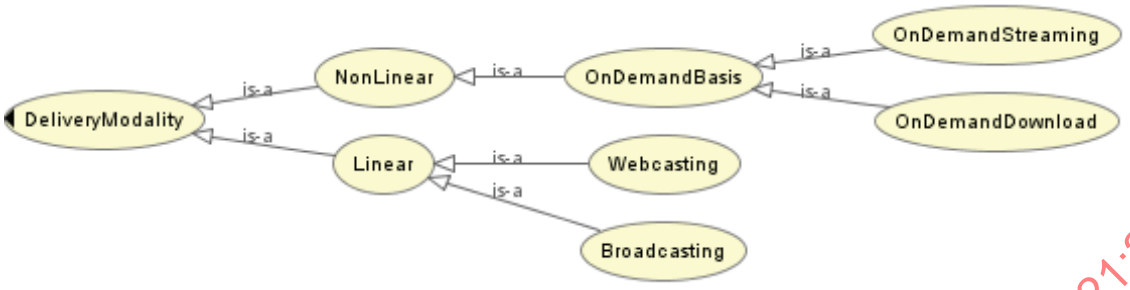


Figure 28 — Subclasses of `mco-ipre:DeliveryModality`

8.3.2.4.3 Subclasses of `mco-ipre:Device`

Subclasses of `mco-ipre:Device` are as follows.

— `mco-ipre:Computer` — For modelling the restriction that the device used by the final user for the fruition of content is a computer equipment.

— `mco-ipre:MobileDevice` — For modelling the restriction that the device used by the final user for the fruition of content is any portable equipment capable of receiving transmissions while the user is in motion.

— `mco-ipre:StorageDevice` — For modelling the restriction that the device used by the final user for the fruition of content is any device with storage capabilities, allowing the user to keep and reuse the content saved locally.

— `mco-ipre:TelevisionDevive` — For modelling the restriction that the device used by the final user for the fruition of content is any equipment with television functionalities.

— `mco-ipre:RobotDevice` — For modelling the restriction that the device used by the final user for the fruition of content is any equipment capable of performing automated tasks without human interaction.

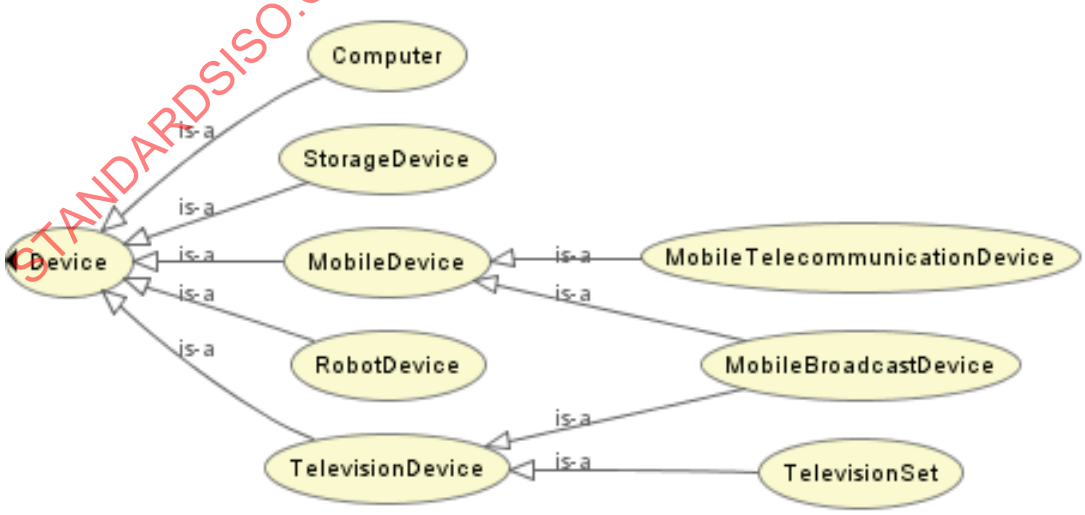


Figure 29 — Subclasses of `mco-ipre:Device`

As subclasses of `mco-ipre:MobileDevice`:

— `mco-ipre:MobileBroadcastDevice` — For modelling the restriction that the device used by the final user for the fruition of content is a mobile device capable of receiving transmission by means of wireless standard or technology for the point to multi-point broadcast of audio-visual contents to portable devices. It is a subclass of both `mco-ipre:TelevisionDevice` and `mco-ipre:MobileDevice`.

— `mco-ipre:MobileTelecommunicationDevice` — For modelling the restriction that the device used by the final user for the fruition of content is a mobile device capable of receiving transmission by means of technologies used in point-to-point mobile telecommunications (such as GSM, UMTS, W-CDMA, DCS-1800, HSDPA, HSUPA, and their derivative systems).

As subclasses of `mco-ipre:TelevisionDevice`:

— `mco-ipre:TelevisionSet` — For modelling the restriction that the television device used by the final user for the fruition of content is not a mobile broadcast device.

The resulting hierarchy under class `mco-ipre:Device` is shown in Figure 29.

8.3.2.4.4 Subclasses of `mco-ipre:Means`

Direct subclasses of `mco-ipre:Means`:

— `mco-ipre:Videogram` — for modelling the restriction that the technology used for the transmission of audiovisual content to end users is the creation of a physical container in any format (such as videocassettes, DVD, DVD-ROM, internet access ready DVD, CDi, CD, CD-ROM, UMD, VCD).

— `mco-ipre:TransmissionTechnology` — superclass grouping all the transmission technologies.

As subclasses of `mco-ipre:TransmissionTechnology`

— `mco-ipre:BroadcastTechnology` — For modelling the restriction that the technology used for the transmission of audiovisual content to end users is point-to-multipoint.

— `mco-ipre:Internet` — For modelling the restriction that the technology used for the transmission of audiovisual content to end users is based on TCP/IP software protocols or any equivalent protocol.

— `mco-ipre:MobileTechnology` — For modelling the restriction that the technology used for the transmission of audiovisual content to end users is for reception while the user is in motion for viewing on a mobile device.

As subclasses of `mco-ipre:BroadcastTechnology`:

— `mco-ipre:Cable` — For modelling the restriction that the technology used for the transmission of audiovisual content to end users for fruition on television set is co-axial and/or fiber optic cable. It excludes the use of DSL, ADSL, Internet or other IP-based networks.

— `mco-ipre:IPNetwork` — For modelling the restriction that the technology used for the transmission of audiovisual content to end users is DSL or ADSL or any IP-based network via a dedicated private (or virtual private) network, but excluding Internet.

— `mco-ipre:MobileBroadcastTechnology` — For modelling the restriction that the technology used for the transmission of audiovisual content to end users for fruition on portable device is point-to-multi-point.

— `mco-ipre:Satellite` — For modelling the restriction that the technology used for the transmission of audiovisual content to end users makes use of a geostationary satellite system.

— mco-ipre:Terrestrial — For modelling the restriction that the technology used for the transmission of audiovisual content to end users makes use of a terrestrial television transmitter.

As subclasses of mco-ipre:MobileTechnology:

— mco-ipre:MobileTelecommunicationTechnology — For modelling the restriction that the technology used for the transmission of audiovisual content to end users for fruition on portable device is point-to-point.

— mco-ipre:MobileBroadcastTechnology — The class mco-ipre:MobileBroadcastTechnology is a subclass of both mco-ipre:BroadcastTechnology and mco-ipre:MobileTechnology.

The resulting hierarchy under class mco-ipre:Means is shown in Figure 30.

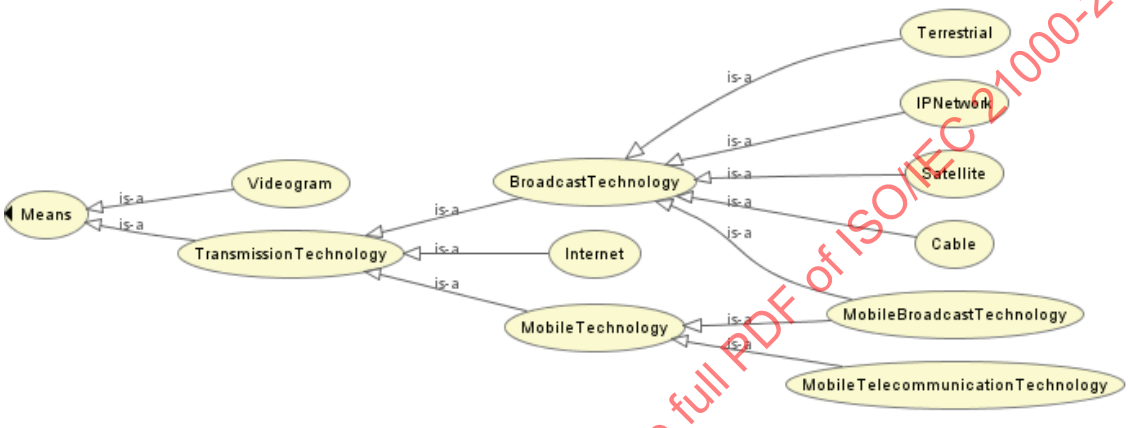


Figure 30 — Subclasses of mco-ipre:Means

8.3.2.4.5 Subclasses of mco-ipre:ServiceAccessPolicy

Direct subclasses of mco-ipre:ServiceAccessPolicy:

— mco-ipre:Open — For modelling the restriction that the service is provided to all consumers without the need for approval by the media service provider. This condition is independent from the policy of access that could be free of charge or pay. It is disjoint with mco-ipre:Restricted.

— mco-ipre:Restricted — For modelling the restriction that the service is provided only to customers who have obtained an approval by the media service provider. The provider knows and manages the consumer. The restricted policy service access is often linked to the concept of subscription (payment of service) but free forms of restricted access are also possible.

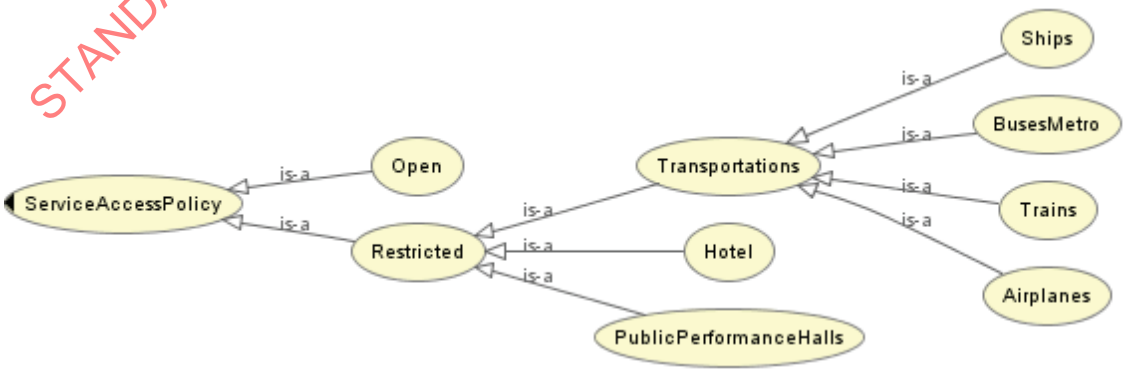


Figure 31 — Subclasses of mco-ipre:ServiceAccessPolicy

As subclasses of `mco-ipre:Restricted`:

— `mco-ipre:Hotel` — For modelling the restriction that the service is provided only to the customers of permanent or temporary living accommodations, such as hotels, motels, or apartments, within the area of such accommodations or in their immediate neighborhood.

— `mco-ipre:PublicPerformanceHalls` — For modelling the restriction that an `mco-ipre:PublicPerformance` is executed in places, such as cinemas or theatres, specifically conceived and authorized for public performances.

— `mco-ipre:Transportations` — For modelling the restriction that the service is provided only to the customers of transportation services, during their fruition on board.

As subclasses of `mco-ipre:Transportations`:

— `mco-ipre:Ships` — For modelling the restriction that the service is provided only to the customers of ship transportation services, during their fruition on board.

— `mco-ipre:Airplanes` — For modelling the restriction that the service is provided only to the customers of airplanes transportation services, during their fruition on board.

— `mco-ipre:Trains` — For modelling the restriction that the service is provided only to the customers of train transportation services, during their fruition on board.

— `mco-ipre:BusesMetro` — For modelling the restriction that the service is provided only to the customers of urban public transportation services, including buses, trams, and metro (or rapid transit), during their fruition on board.

The resulting hierarchy under class `mco-ipre:ServiceAccessPolicy` is shown in Figure 31.

8.3.2.4.6 Subclasses of `mco-ipre:UserTimeAccess`

Direct subclasses of `mco-ipre:UserTimeAccess`, with the resulting hierarchy show in Figure 32, are as follows.

— `mco-ipre:Limited` — for expressing a limited availability over time of the content for the access by the end user (e.g. rental).

— `mco-ipre:Unlimited` — for expressing unlimited availability over time of the content for the access by the end user.

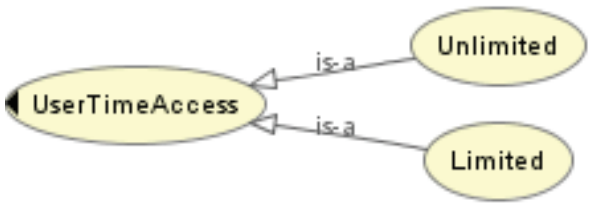


Figure 32 — Subclasses of `mco-ipre:UserTimeAccess`

8.3.3 Object Properties

The following object properties are defined.

— `mco-ipre:partOf` — Relation used to express which IP-Entity is required to be the parent context by an `mco-ipre:IPEntityContext` restriction. The domain is `mco-ipre:IPEntityContext` while the range is `mvco:IPentity`.

— `mco-ipre:sellsDeontic` — Relation used to link an `mco-ipre:Trade` action, which is the domain, to an `mco-core:DeonticExpression`, which is the range.

8.3.4 Datatype Properties

The following data properties are defined.

— `mco-ipre:factProperty` — Grouping of data properties which have an `mvco:Fact` as a domain.

— `mco-ipre:deonticProperty` — Grouping of data properties which have an `mco-core:DeonticExpression` as a domain.

8.3.4.1 Subproperties of factProperty

With `mco-ipre:TemporalContext` as a domain and date as a range:

— `mco-ipre:afterDate` — The date after which the TemporalContext is defined to be valid.

— `mco-ipre:beforeDate` — The date before which the TemporalContext is defined to be valid.

With `mco-ipre:Language` as a domain and string as a range (a string representing the language codes using a standard ISO format can be used here):

— `mco-ipre:hasLanguages` For attributing which languages are permitted, when language is constrained, according to ISO 639-1 [1].

With `mco-ipre:Runs` as a domain and `xsd:nonNegativeInteger` as a range:

— `mco-ipre:hasNumberOfRuns` — For attributing the number of permitted runs, when they are constrained.

— `mco-ipre:hasNumberOfRepetitions` — For attributing the number of repetitions that, within a validity window, have to be considered as a single run.

With `mco-ipre:Runs`, `mco-ipre:Limited` or `mco-core:ActionEventFact` as a domain and duration as a range:

— `mco-ipre:hasValidity` — For attributing the period of validity of the context expressed by the fact. When domain is `mco-ipre:Limited`, it attributes how long the end user can access the content after having got access. When domain is `mco-ipre:Runs`, it attributes the period during which an unlimited or specified number of repetitions have to be considered as a single run. When domain is `mco-core:ActionEventFact`, it attributes how long the context of the fact has to be considered valid, i.e. true.

With `mco-core:ActionEventFact` and its subclasses as domain and duration as a range:

— `mco-ipre:withDelay` — For attributing the elapsed time, following to the beginning, for `mco-core:Started`, or achievement, for `mco-core:Done`, of a related action, after which the context of the fact has to be considered valid, i.e. true.

With `mco-ipre:SpatialContext` as a domain and string as a range (a string representing the Country Codes using a standard ISO format can be used here):

— `mco-ipre:inCountries` — The countries, or country subdivisions, in which the SpatialContext is valid, according to the country codes in ISO 3166-1, [2].

With `mco-ipre:Length` as a domain and duration as a range:

— `mco-ipre:hasMaxLength` — It attributes the maximum length, as duration of canonical play, of material resulting from an action.

With `mco-ipre:ServiceChannelContext` as domain and string or `anyURI` as range:

— `mco-ipre:hasServicesAndChannels` — It attributes which services and/or channels are permitted (or obligated or forbidden) when the service or channel is constrained.

With mco-ipre:MaterialFormat as domain:

— mco-ipre:matchesFormatComplianceProfile — With xsd:anyURI as range, it attributes which ist he format compliance profile that defines the itemized technical properties, with their expected values and (when relevant) their assessment thresholds, against which the constrained material format should match.

— mco-ipre:hasFormat — It attributes which format is permitted (or obligated or forbidden) when the material format is constrained.

— mco-ipre:hasVideoFormat — It attributes which video format is permitted (or obligated or forbidden) when the material format is constrained.

— mco-ipre:hasAudioFormat — It attributes which audio format is permitted (or obligated or forbidden) when the material format is constrained.

— mco-ipre:hasMaxBitrate — With xsd: positiveInteger as range, it attributes the maximum bitrate, in kilobits per second, for the constrained material.

— mco-ipre:hasMinBitrate — With xsd:positiveInteger as range, it attributes the minimum bitrate, in kilobits per second, for the constrained material.

— mco-ipre:hasAspectRatio — It attributes which aspect ratios are permitted (or obligated or forbidden) for the constrained material.

— mco-ipre:hasMaxLines — With xsd:positiveInteger as range, it attributes the maximum number of picture lines of the constrained material.

— mco-ipre:hasMinLines — With xsd:positiveInteger as range, it attributes the minimum number of picture lines of the constrained material.

8.3.4.2 Subproperties of deonticProperty

The following data properties have mvco:Permission as a domain.

— mco-ipre:hasIncomePercentage — With xsd:decimal as range, for modelling the cases when the income of exploitation of the Permission has to be shared.

— mco-ipre:hasPercentage — With xsd:decimal as range,for modelling the cases when the permission is shared with other actors (not 100 %) and thus the permission cannot be actually exploited. If the permission does not expire, i.e. it does not require an mco-ipre:TemporalContext with mco-ipre:beforeDate data property, it can be considered a “percentage of ownership”; otherwise, it shall be considered only as a “percentage of use”.

— mco-ipre:hasSublicenseRight — With boolean as range, for explicitly modelling the permission to sublicense a granted right (a permission on the permission). If not explicitly given, the permission to sublicense can be considered as granted.

— mco-ipre:isExclusive — With boolean as range, it tells if this exploitation might be granted by the issuer to multiple licensees in the same context or not. If not explicitly given, the exclusivity shall not be considered granted. Attention should be paid that, in the case of exclusivity, if mco-ipre:hasSublicenseRight=false, then the granted exploitation could not be object of further trade.

8.4 MCO extension for payments and notifications

8.4.1 General

8.4 systematically describes the OWL of the MCO extension for payments and notifications in the domain of media contracts.

The URI of MCO extension for exploitation of intellectual property rights is as follows:

urn:mpeg:mpeg21:mco:pane:2015

and the prefix used in this document is as follows:

mco-pane

it imports the following:

mco-ipre

8.4.2 Classes

As subclasses of mco-core:GenericAction:

— mco-pane:Payment — It models a payment action between contract parties.

— mco-pane:Notify — It models a notification action between contract parties, informing the recipient party about the occurrence of a related action, acted by, or on behalf of the notifier party. The details of notification content are not specified here.

8.4.3 Object properties

The following object properties are defined.

— mco-pane:hasBeneficiary — With domain mco-pane:Payment and range mco-core:Party, relation used to express the recipient party for a payment action.

— mco-pane:hasIncomeSource — With domain mco-pane:Payment and range mco-core:GenericAction, relation used, when the payment amount is defined as a percentage on the net income resulting from a rights exploitation action, to indicate that action directly.

— mco-pane:hasRecipient — With domain mco-pane:Notify and range mco-core:Party, relation used to express the recipient party for a notification action.

— mco-pane:isAbout — With domain mco-pane:Notfiy and range mco-core:GenericAction, relation used to express directly which action is the object of the notification.

8.4.4 Data Properties

The following data properties are defined, with domain mco-pane:Payment.

— mco-pane:hasAmount — With range xsd:decimal, it attributes the precise value of the payment amount, when it is defined in the contract.

— mco-pane:hasCurrency — It attributes the currency of the payment, with expected values as three character string according to ISO-4217 [3] , not strictly enforced.

— mco-pane:hasIncomePercentage — With range xsd:decimal, it attributes the payment amount when it is defined as a percentage on the net income resulting from a rights exploitation action; in this case, the amount of the payment cannot be known in advance.

8.5 MCO extension for Rights Expression Language acts

8.5.1 General

8.5 systematically describes the OWL of the MCO extension for Rights Expression Language acts, which support the expression of REL acts within deontic expressions of MCO contracts.

Its URI is as follows:

urn:mpeg:mpeg21:mco:rele:2015

and the prefix used in this document is as follows:

mco-rele

8.5.2 Classes

The semantics of the classes listed in 8.5.2 are provided by ISO/IEC 21000-5 and are not repeated here.

The following class is a subclass of mvco:Action:

— mco-rele:RelAct — Grouping of all REL defined acts.

The following subclasses of mco-ipre:RelAct are defined:

— mco-rele:Issue;

— mco-rele:Obtain;

— mco-rele:PossessProperty;

— mco-rele:Revoke;

— mco-rele:Rel-mx-Act — grouping of all acts defined in the REL multimedia extension;

— mco-rele:Rel-sx-Act — grouping of all acts defined in the REL standard extension.

The following subclasses of mco-ipre:Rel-mx-Act are defined:

— mco-rele:Adapt;

— mco-rele:Delete;

— mco-rele:Diminish,

— mco-rele:Embed,

— mco-rele:Enhance,

— mco-rele:Enlarge,

— mco-rele:Execute,

— mco-rele:Install,

— mco-rele:Modify,

— mco-rele:Move,

— mco-rele:Play,

— mco-rele:Print,

— mco-rele:Reduce,

— mco-rele:Uninstall.

The following subclasses of mco-ipre:Rel-sx-Act are defined:

— mco-rele:RightsUri.

8.5.3 Object properties

No object properties are defined.

8.5.4 Data properties

No data properties are defined.

Annex A
(normative)

Ontologies

A.1 MCO ontologies

These are the normative MCO OWLs, in RDF/XML syntax.

A.1.1 MCO core OWL

This is the normative MCO core OWL, to be found in the `mco-core.owl` file attached to this document and also available at the following URL:

http://standards.iso.org/iso-iec/21000/21/ed-2

A.1.2 MCO OWL extension for exploitation of intellectual property rights

This is the normative MCO OWL extension for media contracts, to be found in the `mco-ipre.owl` file attached to this document and also available at the following URL:

http://standards.iso.org/iso-iec/21000/21/ed-2

A.1.3 MCO OWL extension for payments and notifications

This is the normative MCO OWL extension for payments and notifications agreed in media Contracts, to be found in the `mco-pane.owl` file attached to this document and also available at the following URL:

http://standards.iso.org/iso-iec/21000/21/ed-2

A.1.4 MCO OWL extension for Rights Expression Language acts

This is the normative MCO OWL extension for acts defined in REL, when used in media contracts, to be found in the `mco-rele.owl` file attached to this document and also available at the following URL:

http://standards.iso.org/iso-iec/21000/21/ed-2

Annex B
(informative)

Examples of MCO contracts

B.1 Example 1

B.1 contains a first example of contract representation using MCO. The example is organized in the following way:

— B.1.1 contains the text of the original narrative contract;

— B.1.2 contains the same contract with MCO semantic representation, using the ontology RDF/XML serialization [14], as well as a set of derived graphical representations.

The structured CEL representation for this contract is provided in ISO/IEC 21000-20:2013, B.1.2.

B.1.1 Text of original contract

The text given below, provided by RAI-Radiotelevisione Italiana, is taken from a real contract from which all sensitive information has been removed. This type of contract is quite common, as it grants to a broadcaster licensee all the rights for his activity without constraints related with the means used for the transmission of the content to the end users.

```
Proposal of Agreement Rai (Licensee) -  XXXX (Licensor)

                        Spett.le
                        XXXX

 PROPOSAL OF LICENSE AGREEMENT  Acquisition of utilization and
 exploitation rights of n. 1 First Run Animated Series entitled
                           [...]
                               Between

XXXX is a company duly organized under the  laws  of
[...],  le with its registered office located at [...], legally
represented by [...] (hereinafter referred as XXXX and/or  you
and/or Licensor)
                          on the one hand
                                And
RAI  - Radiotelevisione  Italiana  S.p.A a company duly organized
under the  laws  of Italy,  with its registered office located at
Viale  G.  Mazzini n. 14  -  Rome,  Italy,  legally
represented by its CEO [...] (hereinafter,  Rai
and/or Licensee)

hereinafter, collectively, the Parties.

  [...]

    That being stated, it is hereby formulated the following
                            Proposal:

1)   [..]

2)   OBJECT  OF  THE LICENSE AGREEMENT  RIGHTS GRANTED  TO  RAI

2.1  (Acquisition of 100% exploitation rights both  by  free  of
charge  and upon any kind of payment communication to the public
and/or by making the Program available to the public, both  free
of  charge and upon any kind of payments, at the time and  place
```

chosen by the viewer, in Italy, Vatican City, Republic of San Marino and Principality of Monaco)
Under this Agreement, Rai acquires from XXXX,
on an exclusive basis and with the fullest and unconditional authority to assign/grant/sublicense to any third parties, 100% (one hundred per cent) of the following utilisation and economic exploitation rights - and 100% (one hundred per cent) of the relative net receipts related to the following First Run Animated Tv Series (hereinafter also the Animated Series and/or the Program and/or Series) in the Italian language dubbed version, and to the pertaining filmed materials, in the Italian language dubbed version thereto, for the entire term specified below (the Licensed Period) in the territories of Italy, Vatican City, Republic of San Marino and Principality of Monaco, being however agreed that overspill does not constitute a breach of the Agreement (hereinafter, jointly, the Territory):

Original title: [...]
Nationality: [...]
Production Year: 2007
Lasting: n.52 eps. lasting about 5 each
Filmed material: coloured
Delivery materials: Italian dubbed language
i) by communication to the public through remote diffusion/broadcast, whether or not a charge is being paid by the viewer [i.e. any and all free of charge and upon any kind of payment forms of circular diffusion/broadcast (point to multipoint), including the so-called Free TV, Pay Tv, Pay per View, Near Video on Demand, Pay per channel, Pay per Day, etc.] and/or
ii) by making the Program available to the public both free of charge and upon payment, at the time and place chosen by the final viewer [i.e. any and all forms of point to point communication, including Video on Demand, Subscription Video on Demand, Pay on Demand, Demand Video etc.]
in the Italian dubbed language (hereinafter also Authorized Language), in any forms and manners, by any kind of encoding devices conditioning the access to the Program, on any platforms and by any technical means and/or technologies and/or communication protocols now existing and/or hereafter devised (such as, without limitation: by communication to the public and/or by making the Work available to the public via air - including digital terrestrial - MMDS, any kind of satellites, wires, cables and fibers of any kind and nature, etc.; both in the analogue and in the digital formats), on any type of channels (s.c. general content channels, thematic channels, etc.), accessible/receivable/viewable by any type of terminals/devices, including any and all the cable and/or satellite and/or terrestrial re-transmissions and all On Demand services free of charge and/or upon payment, provided through any networks, including the telematic and informatics ones, using any communication protocols and accessible by the final viewer by any terminals/devices, in the Territory, except however possible overspills due to the technical characteristics of the transmission means used and anyhow subject to the following third sub-paragraph.
The herein licensed rights shall also include the exclusive right to place the Programs at the publics disposal with or without any payments being due (i.e. excluding any utilizations which might require the payment of a specific fee by the final user, in order to view each Program), by cable, air and/or satellite, by means of digital technology and all transmission networks, including the telematic ones, in such a way as any final users can gain access to, from the place and at the time individually selected.

The grant is made for n. 5 (five) years starting on [...]
, until [...], (the so-called License Period);
Within the Territory and during the License Period, Rai shall

have the right:
- [...];
- [...]

The following number of runs are hereby granted during the License
Period:
- with reference to the communication to the public by unencrypted and free of charge television diffusion/broadcast (point to multipoint communication) - the so-called Free TV by any means and methods on general content channels, with the sole exception of original transmissions by digital terrestrial technology as better specified in the following sub paragraph : 10 (ten) runs;
- [...]
- with reference to the communication to the public by encrypted and upon payment television diffusion/broadcast (point to multipoint communication) - the so-called PAY TV, PAY PER VIEW, NEAR VIDEO ON DEMAND ecc. by any means and methods on whatsoever type of channel (general content channels, thematic channels): unlimited runs;
- [...]

- with reference to the right to make the Program available to the public at the time and place chosen by the final viewer (point to point communication) and, therefore, to the afore said both free of charge and upon any kind of payments on demand exploitation, any limitation of runs cannot apply, due to the technical characteristics of the service and, consequently, the hereby licensed rights shall be granted for an unlimited number of make-available acts.

3.2 [...]

3.3 (Right to use separate excerpts)
By the present Agreement, Rai is also granted the right to use and exploit in the Territory and during the License Period and during the License Period, even by the Internet or similar networks (e.g. UMTS, etc.) with the fullest faculty to use nonlinear formats, digital compression and temporary and/or permanent playback systems in the transmission/broadcast/diffusion/distribution on any distribution channels, including online and offline and even multimedia ones separate excerpts of each episodes composing the Program, in the Authorized Language, up to a maximum of one (1) minute in length, and/or individual stills of the same Program, by any means and in any forms and manners, within both the promotional and institutional activities, also of anthological nature and anyhow for non-profit purposes, carried out on its own and/or by its associated, affiliated, subsidiary, sublicensee companies, with the exception of uses for the purpose of advertising any products.

B.1.2 MCO semantic representation of the contract

The text below is the RDF/XML serialization of the example of contract. As the contract is a proposal, it lacks signatories and signatures.

```
<!DOCTYPE rdf:RDF [
    <!ENTITY mco-core "urn:mpeg:mpeg21:mco:core:2015#" >
    <!ENTITY mcoex "urn:mpeg:mpeg21:mco:2015/examples#" >
    <!ENTITY DII-NS "urn:mpeg:mpeg21:2002:01-DII-NS#" >
    <!ENTITY mco-ipre "urn:mpeg:mpeg21:mco:ipre:2015#" >
    <!ENTITY dc "http://purl.org/dc/elements/1.1/" >
    <!ENTITY xsd "http://www.w3.org/2001/XMLSchema#" >
    <!ENTITY mvco "http://purl.oclc.org/NET/mvco.owl#" >
    <!ENTITY rdfs "http://www.w3.org/2000/01/rdf-schema#" >
    <!ENTITY rdf "http://www.w3.org/1999/02/22-rdf-syntax-ns#" >
]>
<rdf:RDF
        xml:base="urn:mpeg:mpeg21:mco:2015/examples"
        xmlns:owl="http://www.w3.org/2002/07/owl#"
        xmlns:dc="http://purl.org/dc/elements/1.1/"
        xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
        xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
        xmlns:mco-ipre="urn:mpeg:mpeg21:mco:ipre:2015#"
        xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
        xmlns:mco-core="urn:mpeg:mpeg21:mco:core:2015#"
        xmlns:mcoex="urn:mpeg:mpeg21:mco:2015/examples#"
        xmlns:mvco="http://purl.oclc.org/NET/mvco.owl#"
        xmlns:DII-NS="urn:mpeg:mpeg21:2002:01-DII-NS#">
        <Ontology rdf:about="urn:mpeg:mpeg21:mco:2015/examples">
            <imports rdf:resource="urn:mpeg:mpeg21:mco:ipre:2015"/>
        </Ontology>
    <!-- urn:mpeg:mpeg21:mco:2015/examples#AnimatedSeries -->
    <NamedIndividual rdf:about="&mcoex;AnimatedSeries">
        <rdf:type rdf:resource="&mvco;IPEntity"/>
        <dc:date rdf:datatype="&xsd;dateTime">2007</dc:date>
        <dc:format>coloured</dc:format>
        <dc:language>dubbed italian</dc:language>
        <DII-NS:Identifier>isan:ab123yz</DII-NS:Identifier>
        <dc:description>total 52 episodes</dc:description>
    </NamedIndividual>
    <!-- urn:mpeg:mpeg21:mco:2015/examples#RaiExcerpt -->
    <NamedIndividual rdf:about="&mcoex;RaiExcerpt">
        <rdf:type rdf:resource="&mvco;IPEntity"/>
    </NamedIndividual>
    <!-- urn:mpeg:mpeg21:mco:2015/examples#XXXX -->
    <mco-core:Organization rdf:about="&mcoex;XXXX">
        <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
        <dc:description>Licensor</dc:description>
    </mco-core:Organization>
```

```
    <!-- urn:mpeg:mpeg21:mco:2015/examples#it.RAI -->
    <mco-core:Organization rdf:about="&mcoex;it.RAI">
        <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
        <dc:description>Licensee</dc:description>
        <dc:identifier>urn:VATIN:IT06382641006</dc:identifier>
    </mco-core:Organization>
    <!-- urn:mpeg:mpeg21:mco:2015/examples#x860 -->
    <mco-core:Contract rdf:about="&mcoex;x860">
        <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
        <mco-core:TextVersion rdf:datatype="&xsd;string">
    <!-- TEXT OF NARRATIVE CONTRACT HERE -->
</mco-core:TextVersion>
        <mco-core:hasParty rdf:resource="&mcoex;XXXX"/>
        <mco-core:hasParty rdf:resource="&mcoex;it.RAI"/>
    </mco-core:Contract>
    <!-- urn:mpeg:mpeg21:mco:2015/examples#x891 -->
    <NamedIndividual rdf:about="&mcoex;x891">
        <rdf:type rdf:resource="&mvco;Permission"/>
        <mco-ipre:isExclusive rdf:datatype="&xsd;boolean">true</mco-ipre:isExclusive>
        <mco-core:issuedBy rdf:resource="&mcoex;XXXX"/>
        <mco-core:issuedIn rdf:resource="&mcoex;x860"/>
        <mvco:permitsAction rdf:resource="&mcoex;x895"/>
        <mvco:hasRequired rdf:resource="&mcoex;x909"/>
        <mco-core:implements rdf:resource="&mcoex;x915"/>
    </NamedIndividual>
    <!-- urn:mpeg:mpeg21:mco:2015/examples#x892 -->
    <NamedIndividual rdf:about="&mcoex;x892">
        <rdf:type rdf:resource="&mvco;Permission"/>
        <mco-ipre:isExclusive rdf:datatype="&xsd;boolean">true</mco-ipre:isExclusive>
        <mco-core:issuedBy rdf:resource="&mcoex;XXXX"/>
        <mco-core:issuedIn rdf:resource="&mcoex;x860"/>
        <mvco:permitsAction rdf:resource="&mcoex;x896"/>
        <mvco:hasRequired rdf:resource="&mcoex;x899"/>
        <mvco:hasRequired rdf:resource="&mcoex;x900"/>
        <mvco:hasRequired rdf:resource="&mcoex;x901"/>
        <mvco:hasRequired rdf:resource="&mcoex;x908"/>
        <mco-core:implements rdf:resource="&mcoex;x916"/>
    </NamedIndividual>
```

```
<!-- urn:mpeg:mpeg21:mco:2015/examples#x893 -->
<NamedIndividual rdf:about="&mcoex;x893">
    <rdf:type rdf:resource="&mvco;Permission"/>
    <mco-ipre:isExclusive rdf:datatype="&xsd;boolean">true</mco-ipre:isExclusive>
    <mco-core:issuedBy rdf:resource="&mcoex;XXXX"/>
    <mco-core:issuedIn rdf:resource="&mcoex;x860"/>
    <mvco:permitsAction rdf:resource="&mcoex;x898"/>
    <mvco:hasRequired rdf:resource="&mcoex;x903"/>
    <mvco:hasRequired rdf:resource="&mcoex;x908"/>
    <mco-core:implements rdf:resource="&mcoex;x920"/>
</NamedIndividual>
<!-- urn:mpeg:mpeg21:mco:2015/examples#x894 -->
<NamedIndividual rdf:about="&mcoex;x894">
    <rdf:type rdf:resource="&mvco;Permission"/>
    <mco-ipre:isExclusive rdf:datatype="&xsd;boolean">true</mco-ipre:isExclusive>
    <mco-core:issuedBy rdf:resource="&mcoex;XXXX"/>
    <mco-core:issuedIn rdf:resource="&mcoex;x860"/>
    <mvco:permitsAction rdf:resource="&mcoex;x897"/>
    <mvco:hasRequired rdf:resource="&mcoex;x904"/>
    <mvco:hasRequired rdf:resource="&mcoex;x905"/>
    <mvco:hasRequired rdf:resource="&mcoex;x908"/>
    <mco-core:implements rdf:resource="&mcoex;x917"/>
</NamedIndividual>
<!-- urn:mpeg:mpeg21:mco:2015/examples#x895 -->
<mco-ipre:MakeExcerpt rdf:about="&mcoex;x895">
    <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
    <mvco:actedOver rdf:resource="&mcoex;AnimatedSeries"/>
    <mvco:resultsIn rdf:resource="&mcoex;RaiExcerpt"/>
    <mco-core:actedBy rdf:resource="&mcoex;it.RAI"/>
</mco-ipre:MakeExcerpt>
<!-- urn:mpeg:mpeg21:mco:2015/examples#x896 -->
<mco-ipre:CommunicationToThePublic rdf:about="&mcoex;x896">
    <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
    <mvco:actedOver rdf:resource="&mcoex;AnimatedSeries"/>
    <mco-core:actedBy rdf:resource="&mcoex;it.RAI"/>
</mco-ipre:CommunicationToThePublic>
<!-- urn:mpeg:mpeg21:mco:2015/examples#x897 -->
<mco-ipre:CommunicationToThePublic rdf:about="&mcoex;x897">
    <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
    <mvco:actedOver rdf:resource="&mcoex;AnimatedSeries"/>
    <mco-core:actedBy rdf:resource="&mcoex;it.RAI"/>
</mco-ipre:CommunicationToThePublic>
<!-- urn:mpeg:mpeg21:mco:2015/examples#x898 -->
<mco-ipre:CommunicationToThePublic rdf:about="&mcoex;x898">
    <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
    <mvco:actedOver rdf:resource="&mcoex;AnimatedSeries"/>
    <mco-core:actedBy rdf:resource="&mcoex;it.RAI"/>
</mco-ipre:CommunicationToThePublic>
```

```
    <!-- urn:mpeg:mpeg21:mco:2015/examples#x899 -->
    <mco-ipre:FreeOfCharge rdf:about="&mcoex;x899">
        <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
    </mco-ipre:FreeOfCharge>
    <!-- urn:mpeg:mpeg21:mco:2015/examples#x900 -->
    <mco-ipre:Linear rdf:about="&mcoex;x900">
        <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
    </mco-ipre:Linear>
    <!-- urn:mpeg:mpeg21:mco:2015/examples#x901 -->
    <mco-ipre:Runs rdf:about="&mcoex;x901">
        <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
        <mco-ipre:hasNumberOfRuns rdf:datatype="&xsd;nonNegativeInteger">10</mco-ipre:
hasNumberOfRuns>
    </mco-ipre:Runs>
    <!-- urn:mpeg:mpeg21:mco:2015/examples#x903 -->
    <mco-ipre:NonLinear rdf:about="&mcoex;x903">
        <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
    </mco-ipre:NonLinear>
    <!-- urn:mpeg:mpeg21:mco:2015/examples#x904 -->
    <mco-ipre:Pay rdf:about="&mcoex;x904">
        <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
    </mco-ipre:Pay>
    <!-- urn:mpeg:mpeg21:mco:2015/examples#x905 -->
    <mco-ipre:Linear rdf:about="&mcoex;x905">
        <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
    </mco-ipre:Linear>
    <!-- urn:mpeg:mpeg21:mco:2015/examples#x908 -->
    <mco-core:FactIntersection rdf:about="&mcoex;x908">
        <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
        <mco-core:hasFact rdf:resource="&mcoex;x909"/>
        <mco-core:hasFact rdf:resource="&mcoex;x910"/>
        <mco-core:hasFact rdf:resource="&mcoex;x911"/>
    </mco-core:FactIntersection>
    <!-- urn:mpeg:mpeg21:mco:2015/examples#x909 -->
    <mco-ipre:TemporalContext rdf:about="&mcoex;x909">
        <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
        <mco-ipre:afterDate rdf:datatype="&xsd;dateTime">20110415</mco-ipre:afterDate>
        <mco-ipre:beforeDate rdf:datatype="&xsd;dateTime">20160415</mco-ipre:beforeDate>
    </mco-ipre:TemporalContext>
    <!-- urn:mpeg:mpeg21:mco:2015/examples#x910 -->
    <mco-ipre:Language rdf:about="&mcoex;x910">
        <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
        <mco-ipre:hasLanguages>#it;</mco-ipre:hasLanguages>
    </mco-ipre:Language>
    <!-- urn:mpeg:mpeg21:mco:2015/examples#x911 -->
    <mco-ipre:SpatialContext rdf:about="&mcoex;x911">
        <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
        <mco-ipre:inCountries>#VA;#IT;#SM;#MC;</mco-ipre:inCountries>
    </mco-ipre:SpatialContext>
```

```
    <!-- urn:mpeg:mpeg21:mco:2015/examples#x912 -->
    <NamedIndividual rdf:about="&mcoex;x912">
        <rdf:type rdf:resource="&mvco;Permission"/>
        <mco-ipre:isExclusive rdf:datatype="&xsd;boolean">true</mco-ipre:isExclusive>
        <mco-core:issuedBy rdf:resource="&mcoex;XXXX"/>
        <mco-core:issuedIn rdf:resource="&mcoex;x860"/>
        <mvco:hasRequired rdf:resource="&mcoex;x899"/>
        <mvco:hasRequired rdf:resource="&mcoex;x908"/>
        <mvco:permitsAction rdf:resource="&mcoex;x913"/>
        <mco-core:implements rdf:resource="&mcoex;x919"/>
    </NamedIndividual>
    <!-- urn:mpeg:mpeg21:mco:2015/examples#x913 -->
    <mco-ipre:CommunicationToThePublic rdf:about="&mcoex;x913">
        <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
        <mvco:actedOver rdf:resource="&mcoex;RaiExcerpt"/>
    <mco-core:actedBy rdf:resource="&mcoex;it.RAI"/>
    </mco-ipre:CommunicationToThePublic>
    <!-- urn:mpeg:mpeg21:mco:2015/examples#x915 -->
    <mco-core:TextualClause rdf:about="&mcoex;x915">
        <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
        <mco-core:Text rdf:datatype="&xsd;string">
The  grant is made for n. 5 (five) years starting on [...]
,    until  [...],   (the  so-called  License
Period);
3.3 (Right to use separate excerpts)
By  the present Agreement, Rai is also granted the  right
to  use  and  exploit  in the Territory and during  the  License
Period  and  during the License Period, even by the Internet  or
similar networks (e.g. UMTS, etc.)  with the fullest faculty to
use  nonlinear formats, digital compression and temporary and/or
permanent        playback        systems        in        the
transmission/broadcast/diffusion/distribution      on      any
distribution  channels, including online and  offline  and  even
multimedia  ones  separate excerpts of each episodes  composing
the  Program, in the Authorized Language, up to a maximum of one
(1)  minute  in  length, and/or individual stills  of  the  same
Program, by any means and in any forms and manners, within  both
the  promotional   and   institutional  activities,   also   of
anthological nature and anyhow for non-profit purposes,  carried
out on its own and/or by its associated, affiliated, subsidiary,
sublicensee  companies,  with the  exception  of  uses  for  the
purpose of advertising any products.
</mco-core:Text>
    </mco-core:TextualClause>
    <!-- urn:mpeg:mpeg21:mco:2015/examples#x917 -->
    <mco-core:TextualClause rdf:about="&mcoex;x917">
        <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
```

```
        <mco-core:Text rdf:datatype="&xsd;string">
Under  this Agreement, Rai acquires from XXXX,
on  an  exclusive  basis and with the fullest and  unconditional
authority to assign/grant/sublicense to any third parties,  100%
(one hundred per cent) of the following utilisation and economic
exploitation  rights - and 100% (one hundred per  cent)  of  the
relative  net  receipts  related to the  following  First  Run
Animated  Tv  Series  (hereinafter also  the  Animated  Series
and/or  the  Program and/or Series) in the Italian  language
dubbed  version, and to the pertaining filmed materials, in  the
Italian  language dubbed version thereto, for  the  entire  term
specified  below (the Licensed Period) in the  territories  of
Italy, Vatican City, Republic of San Marino and Principality  of
Monaco,  being however agreed that overspill does not constitute
a  breach  of  the  Agreement  (hereinafter,  jointly,  the
Territory):
The  grant is made for n. 5 (five) years starting on [...]
,  until  [...],  (the  so-called  License
Period);
Within  the Territory and during the License Period, Rai shall
have the right:
- with reference to the communication to the public by encrypted
and  upon  payment television diffusion/broadcast  (point  to
multipoint communication) -  the so-called PAY TV, PAY PER VIEW,
NEAR  VIDEO  ON  DEMAND  ecc.  by  any  means  and  methods  on
whatsoever  type of channel (general content channels,  thematic
channels): unlimited runs;
</mco-core:Text>
    </mco-core:TextualClause>
    <!-- urn:mpeg:mpeg21:mco:2015/examples#x919 -->
    <mco-core:TextualClause rdf:about="&mcoex;x919">
        <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
        <mco-core:Text rdf:datatype="&xsd;string">
Under  this Agreement, Rai acquires from XXXX,
on  an  exclusive  basis and with the fullest and  unconditional
authority to assign/grant/sublicense to any third parties,  100%
(one hundred per cent) of the following utilisation and economic
exploitation  rights - and 100% (one hundred per  cent)  of  the
relative  net  receipts  related to the  following  First  Run
Animated  Tv  Series  (hereinafter also  the  Animated  Series
and/or  the  Program and/or Series) in the Italian  language
dubbed  version, and to the pertaining filmed materials, in  the
Italian  language dubbed version thereto, for  the  entire  term
specified  below (the Licensed Period) in the  territories  of
Italy, Vatican City, Republic of San Marino and Principality  of
Monaco,  being however agreed that overspill does not constitute
a  breach  of  the  Agreement  (hereinafter,  jointly,  the
Territory):
```

```
The  grant is made for n. 5 (five) years starting on [...]
,    until  [...],   (the  so-called  License
Period);
Within  the Territory and during the License Period, Rai shall
have the right:
3.3 (Right to use separate excerpts)
By  the present Agreement, Rai is also granted the  right
to  use  and  exploit  in the Territory and during  the  License
Period  and  during the License Period, even by the Internet  or
similar networks (e.g. UMTS, etc.)  with the fullest faculty to
use  nonlinear formats, digital compression and temporary and/or
permanent         playback        systems         in         the
transmission/broadcast/diffusion/distribution       on       any
distribution  channels, including online and  offline  and  even
multimedia  ones  separate excerpts of each episodes  composing
the  Program, in the Authorized Language, up to a maximum of one
(1)  minute  in  length, and/or individual stills  of  the  same
Program, by any means and in any forms and manners, within  both
the   promotional   and   institutional   activities,   also   of
anthological nature and anyhow for non-profit purposes,  carried
out on its own and/or by its associated, affiliated, subsidiary,
sublicensee  companies,  with the  exception  of  uses  for  the
purpose of advertising any products.
</mco-core:Text>
    </mco-core:TextualClause>
    <!-- urn:mpeg:mpeg21:mco:2015/examples#x920 -->
    <mco-core:TextualClause rdf:about="&mcoex;x920">
        <rdf:type rdf:resource="http://www.w3.org/2002/07/owl#NamedIndividual"/>
        <mco-core:Text rdf:datatype="&xsd;string">
Under  this Agreement, Rai acquires from XXXX,
on  an  exclusive  basis and with the fullest and  unconditional
authority to assign/grant/sublicense to any third parties,  100%
(one hundred per cent) of the following utilisation and economic
exploitation  rights - and 100% (one hundred per  cent)  of  the
relative  net  receipts  related to the  following  First  Run
Animated  TV  Series  (hereinafter also  the  Animated  Series
```