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Partie 20: Langage d'expression des contrats

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Foreword

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

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

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

ISO/IEC 21000-20 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information Technology*, Subcommittee SC 21, *Coding of audio, picture, multimedia and hypermedia information*.

This second edition cancels and replaces the first edition which has been technically revised.

ISO/IEC 21000 consists of the following parts, under the general title *Information Technology — Multimedia Framework (MPEG-21)*:

- *Part 1: Vision, Technologies and Strategy [Technical Report]*
- *Part 2: Digital Item Declaration*
- *Part 3: Digital Item Identification*
- *Part 4: Intellectual Property Management and Protection Components*
- *Part 5: Rights Expression Language*
- *Part 6: Rights Data Dictionary*
- *Part 7: Digital Item Adaptation*
- *Part 8: Reference Software*
- *Part 9: File Format*
- *Part 10: Digital Item Processing*
- *Part 11: Evaluation Tools for Persistent Association Technologies [Technical Report]*
- *Part 12: Test Bed for MPEG-21 Resource Delivery [Technical Report]*
- *Part 14: Conformance Testing*
- *Part 15: Event Reporting*

- *Part 16: Binary Format*
- *Part 17: Fragment Identification of MPEG Resources*
- *Part 18: Digital Item Streaming*
- *Part 19: Media Value Chain Ontology*
- *Part 20: Contract Expression Language*
- *Part 21: Media Contract Ontology*

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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 set of standards ISO/IEC 21000 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 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 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 licenses using the Rights Expression Language from ISO/IEC 21000. However, beyond the operative information present in a digital license, the digital representation of the complete business agreements between the parties may prove useful for a number of purposes. The Contract Expression Language (CEL) is the ISO/IEC language to express such contracts in a structured representation.

CEL may be used to represent contracts, for content directly, or for services on content based on MPEG-21 technologies. However CEL 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 CEL 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.

Information Technology — Multimedia Framework (MPEG-21) — Part 20: Contract Expression Language

1 Scope

This part of ISO/IEC 21000 specifies a language for representing contracts in the Multimedia Framework formed for the transaction of MPEG-21 Digital Items or services related to the MPEG-21 Framework.

The Contract Expression Language (CEL) aims at digitally representing the agreements made in an environment of ISO/IEC 21000 use. These contracts include those about both transactions of content packed as Digital Items as well as services provided around this content.

The range of contracts under scope is:

- Contracts about transactions on rights for the exploitation of content as MPEG-21 Digital Items;
- Contracts about the provision of MPEG-21-based services, i.e. delivery, identification, encryption, search and others.

The aspects represented by CEL contracts include:

- The textual clauses, in natural language as they are in the narrative contract, duly structured;

The operative clauses, as computer language expressions.

However CEL may also be used as electronic format for contracts on the trade of media rights also beyond the MPEG framework.

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

Besides, the CEL 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 CEL provides to the media companies the basic means for the collection of knowledge on held rights, also derived from multiple contracts, as rights port-folio, for business management purposes.

Various potential benefits can be associated to the use of CEL. Firstly CEL can support the business of media companies, for product placement and maximizing reuse of archive content, implying also cost reductions in all rights related activities, e.g. rights clearance. Afterwards, it supports the respect of copyright laws with respect to new exploitation technologies, also by contributing to the reduction of mistakes with respect to contract compliance, implying decreasing number of controversies and other cost reductions. In general CEL aims at increasing the quality of rights information, which gets more reliable and can be integrated with other

metadata in standard way. This can bring even to improve working conditions and all the decision processes within media companies.

With respect to the first edition (2013), this second edition of CEL provides: some strengthening of the core contract part; some reordering within the extension for the exploitation of intellectual property rights, also by completing the set of facts available for specifying conditions and the addition of a simple payment and notification extension. The relationship with acts defined in ISO/IEC 21000 part 5 (REL) has been refined. Finally, a clear mechanism for defining further future extensions is in place.

2 Normative references

The following referenced documents are indispensable for the application 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.

IETF RFC 1738, *Uniform Resource Locators (URL)*, December 1994, <http://www.ietf.org/rfc/rfc1738.txt>

IETF RFC 2141, *Uniform Resource Name (URN) Syntax*, May 1997, <http://www.ietf.org/rfc/rfc2141.txt>

IETF RFC 2396, *Uniform Resource Identifiers (URI): Generic Syntax*, Internet Standards Track Specification, August 1998, <http://www.ietf.org/rfc/rfc2396.txt>

IETF RFC 2426, *vCard MIME Directory Profile*, F. Dawson and T. Howes, September 1998. <http://www.ietf.org/rfc/rfc2426.txt>

ISO 639 (all parts), *Codes for the representation of names of languages*.

ISO 3166 (all parts), *Codes for the representation of names of countries and their subdivisions*.

ISO 4217, *Codes for the representation of currencies and funds*.

ISO 15836, *Information and documentation — The Dublin Core metadata element set*.

ISO/IEC 15938-5, *Information technology — Multimedia content description interface — Part 5: Multimedia description schemes*

ISO/IEC 21000-3, *Information technology — Multimedia Framework (MPEG-21) — Part 3: Digital Item Identification*

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

ISO/IEC 21000-21, *Information technology — Multimedia Framework (MPEG-21) — Part 21 Media Contract Ontology*

ISO, *MPEG-7 Classification Schema*, http://standards.iso.org/ittf/PubliclyAvailableStandards/MPEG-7_schema_files/mpeg7-v3.xsd

OWL Web Ontology Language Reference, 10 February 2004, <http://www.w3.org/TR/2004/REC-owl-ref-20040210>

OWL 2, OWL 2 Web Ontology Language Document overview, W3C Recommendation, 27 October 2009, <http://www.w3.org/TR/owl2-overview/>

RDF/XML, *RDF/XML Syntax Specification (Revised)*, W3C Recommendation, 10 February 2004, <http://www.w3.org/TR/2004/REC-rdf-syntax-grammar-20040210/>

W3C, *XML Encryption Syntax and Processing Version 1.1*, W3C Working Draft 16 March 2010, <http://www.w3.org/TR/xmlenc-core1/>

W3C, *XML Schema, XML Schema Part 1: Structures and Part 2: Datatypes*, W3C Recommendation, 2 May 2001, <http://www.w3.org/TR/2001/REC-xmlschema-1-20010502>, <http://www.w3.org/TR/2001/REC-xmlschema-2-20010502>.

W3C, *XML Signature Syntax and Processing* - W3C Recommendation 12 February 2002. <http://www.w3.org/TR/xmlsig-core/>.

3 Terms, definitions and abbreviated terms

3.1 Terminology

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

3.1.1 Action

Something done or performed by a Party (or anyone acting on her behalf). It represent the exercise of a right or duty.

3.1.2 Deontic expression

The generic entity encompassing the properties of an agreed machine readable contract clause regulating the Actions of the parties.

3.1.3 MPEG-21 Contract

Representation of agreements formed for the transaction of MPEG-21 Digital Items or services related to the MPEG-21 Framework.

3.1.4 MPEG-21 Service

System supplying utility in the MPEG-21 Framework.

3.1.5 Obligation

A deontic expression binding one of the parties to execute an Action.

3.1.6 Party

An organization or a user who accepts to respect the deontic expressions defined in the contract and who expects the other parties in the same contract to do the same.

3.1.7 Permission

A deontic expression allowing one of the parties to execute an Action.

3.1.8 Prohibition

A deontic expression binding one of the parties not to execute an Action.

3.2 Abbreviated terms

For the purposes of this document, the following abbreviations apply.

CEL: Contract Expression Language

IPRE:	Intellectual Property Rights Exploitation
IRI:	Internationalized Resource Identifier
MCO:	Media Contract Ontology
MPEG:	Moving Picture Experts Group
MPEG-7:	ISO/IEC 15938
MPEG-21:	ISO/IEC 21000
OWL:	Web Ontology Language
RDF:	Resource Description Framework
REL:	Rights Expression Language
URI:	Uniform Resource Identifier (IETF Standard is RFC 3986)
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 XML Representation

The syntax of each XML element in the Contract Expression Language is specified using the constructs provided by XML Schema. XML Schema documents or its fragments are presented in orange boxes. Omissions are marked with suspension points ([...]).

```
<?xml version="1.0" encoding="UTF-8"?>
<schema xmlns="http://www.w3.org/2001/XMLSchema" [...]
```

XML documents or its fragments are presented in gray boxes. Omissions are marked with suspension points ([...]).

```
<cel-core:Contract id="715" xsi:schemaLocation="urn:mpeg:mpeg21:cel:core:2015
cel-core.xsd" xmlns:dc="http://purl.org/dc/elements/1.1/" [...]
```

This part of ISO/IEC 21000 also makes use of diagrams to express portions of XML Schema, as shown in Figure 1.

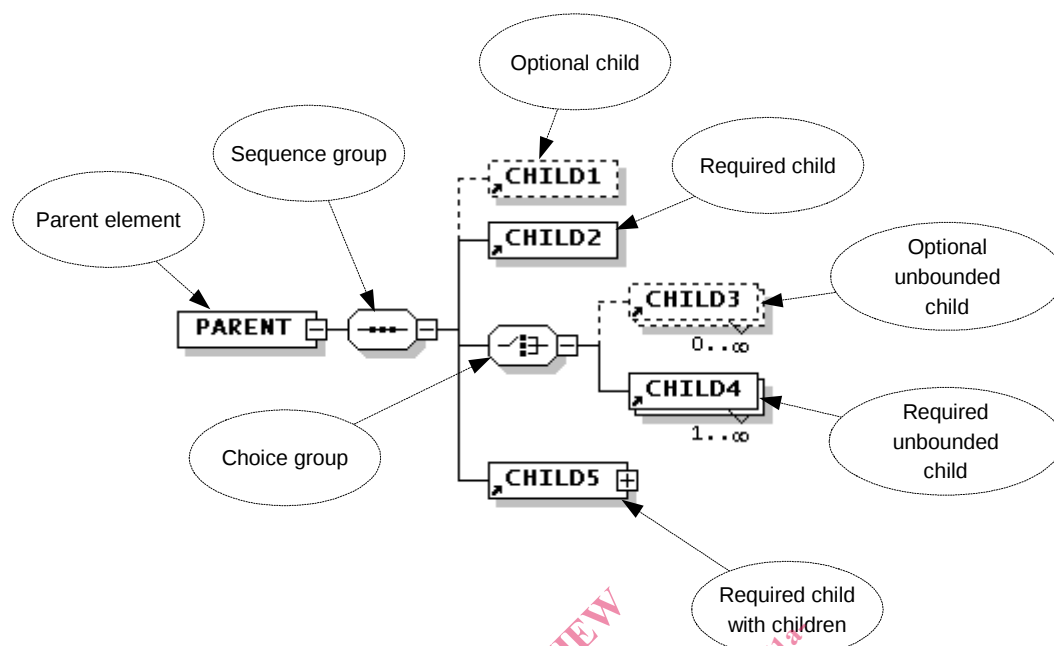


Figure 1 — Sample XML Schema diagram

This schema diagram states which elements are required (boxes with solid outline), those that are optional (boxes with dashed outline), the number of occurrences of each element (0...), and the lineage between elements (symbols between elements indicating either a choice, or a sequence).



Figure 2 — Compositors used in XML Schema diagrams

Compositors, as shown in Figure 2, describe (from left to right) respectively a *sequence* of elements, a *choice* of elements and the *all* model.

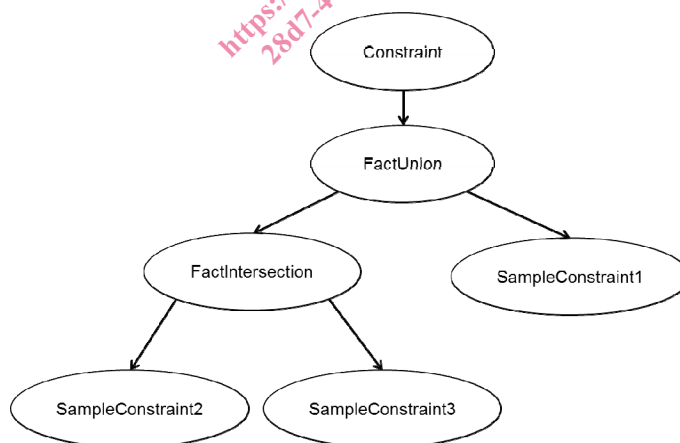


Figure 3 — Graphical representation of contract examples

Graphical description of contract examples, as shown in Figure 3, presents how the elements in a contract relate between themselves to facilitate understanding of complex representations. FactUnion and FactIntersection allow the combination of constraints to represent complex relationships between the constraints defined in this document to represent a contract.

4.2 Namespace prefix conventions

The namespace for CEL core XML Schema is:

```
urn:mpeg:mpeg21:cel:core:2015
```

The namespace for CEL extension on exploitation of intellectual property rights XML Schema is:

```
urn:mpeg:mpeg21:cel:ipre:2015
```

The namespace for CEL extension on payments and notification XML Schema is:

```
urn:mpeg:mpeg21:cel:pane:2015
```

The namespace for CEL extension on MPEG-21 REL standard and multimedia extensions is:

```
urn:mpeg:mpeg21:cel:rele:2015
```

4.2.1 Use of prefixes

The CEL 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
cel-core	urn:mpeg:mpeg21:cel:core:2015	Here
cel-ipre	urn:mpeg:mpeg21:cel:ipre:2015	Here
cel-pane	urn:mpeg:mpeg21:cel:pane:2015	Here
cel-rele	urn:mpeg:mpeg21:cel:rele:2015	Here
dc	http://purl.org/dc/elements/1.1/	ISO 15836
dii	urn:mpeg:mpeg21:2002:01-DII-NS	ISO/IEC 21000-3
dsig	http://www.w3.org/2000/09/xmldsig#	W3C XML Signature Syntax and Processing
rel-mx	urn:mpeg:mpeg21:2003:01-REL-MX-NS	ISO/IEC 21000-5
rel-r	urn:mpeg:mpeg21:2003:01-REL-R-NS	ISO/IEC 21000-5
rel-sx	urn:mpeg:mpeg21:2003:01-REL-SX-NS	ISO/IEC 21000-5
xenc	http://www.w3.org/2001/04/xmldenc#	W3C XML Encryption Syntax and Processing
xsd	http://www.w3.org/2001/XMLSchema	W3C XML Schema
xsi	http://www.w3.org/2001/XMLSchema-instance	W3C XML Schema Instance

5 Relationship to other ISO/IEC 21000 Parts

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. This clause describes the relationship of this part of ISO/IEC 21000 with the other parts of ISO/IEC 21000 in addressing the representation of the agreements for the aforementioned transactions.

A contract represented following this part of ISO/IEC 21000 may become a part of a Digital Item (whose declaration is given with the ISO/IEC 21000-2 Part). If so, it will be declared with the `Type` element of ISO/IEC 21000-3 pointing to the CEL URI, as described in Annex B.3.

This part of ISO/IEC 21000 has the aim, as ISO/IEC 21000-21, of digitally representing contracts information. CEL enables the structured representation of contracts' information making use of XML, while MCO provides their semantic representation by means of OWL or RDF. Both parts share the goal of defining a contract document able to provide the information listed in Clause 6.1 and they share the semantics for Actions, Facts and Services.

This part of ISO/IEC 21000 also supports the expression of Rights and Conditions as defined in ISO/IEC 21000-5.