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Title:	**MPEG-21 Requirements for a Rights Data Dictionary and a Rights Expression Language**
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1 Introduction

The purpose of this document is to express the requirements within the context of the MPEG-21 Multimedia Framework for the specification of a Rights Data Dictionary and a Rights Expression Language. These requirements will be used in two ways: Firstly, as a basis for comparison against submissions in response to a Call for Proposals to evaluate the ability of each proponent's solutions to fulfil the stated requirements; And secondly, as a guide to measure the functionality and scope of an MPEG specification for a Rights Data Dictionary and a Rights Expression Language.

The contents of this document has been created by consolidating the submissions received in the responses to the Call for Requirements for a Rights Data Dictionary and a Rights Expression Language, issued by MPEG in January 2001 [1]. It should be regarded as a 'work in progress' to which comments are invited. At the request of a number of the respondents to the Call for Requirements, MPEG decided to re-issue the Call for Requirements in March 2001 to allow time for additional responses to be received. The closing date for responses was 1 June 2001. An 'ad-hoc' group meeting was held in London on 7-8 June 2001 to further elaborate the requirements taking into account these responses, in preparation for the anticipated Call for proposals to be issued at the MPEG meeting to be held in Sydney from 16 – 20th July. The AhG completed its work on Sunday 15th July and this current document is the input document from the completed AhG.

MPEG sees a **Rights Data Dictionary** as *a dictionary of key terms which are required to describe rights of all Users, including intellectual property rights, that can be unambiguously expressed using a standard syntactic convention, and which can be applied across all domains in which rights need to be expressed.* A **Rights Expression Language** is seen as *a machine-readable language* that can declare rights and permissions *using the terms as defined in the Rights Data Dictionary.*

The Rights Data Dictionary and Rights Expression Language are intended to provide flexible, interoperable mechanisms to support transparent and augmented use of digital resources in publishing, distributing, and consuming of electronic books, broadcasting, digital movies, digital music, interactive games, computer software and other creations in digital form, in a way that protects digital content and honours the rights, conditions, and fees specified for digital contents. It is also intended to support specification of access and use controls for digital content in cases where financial exchange is not part of the terms of use, and to support exchange of sensitive or private digital content.

The Rights Data Dictionary and Rights Expression Language are also intended to provide flexible interoperable mechanisms to ensure personal data is processed in accordance with individual rights and to meet the requirement for Users to be able to express their rights and interests in a way that addresses issues of privacy and use of personal data. (Note: Users, in this context, is as defined in the MPEG-21 Technical Report. However, it is recognized that, for the purpose of the requirements for a Rights Data Dictionary and a Rights Expression Language, such a high-level definition must be supported by more

precise definitions for the different categories of User to reflect their respective roles. Proponents will be requested to propose a set of appropriate roles and definitions – see requirement 2.1.1).

A standard Rights Data Dictionary should define an extensive and unambiguous set of semantics covering the vocabulary of terms for rights expressions used in the Rights Expression Language.

A standard Rights Expression Language should be able to support guaranteed end-to-end interoperability, consistency and reliability between different systems and services. To do so, it must offer richness and extensibility in declaring rights, conditions and obligations, ease and persistence in identifying and associating these with digital contents, and flexibility in supporting multiple usage/business models.

1.1   Terminology

For consistency, this document adopts the terminology that is being used within the MPEG-21 Technical Report to describe the seven architectural 'Elements' within the Multimedia Framework. Contributors to this work are therefore encouraged to read the Study on the Technical Report [3] and in particular Annex A of that document (and repeated in Annex A of this document). Contributors are also encouraged to read the Working Draft specifications for Digital Item Declaration [4] and Digital Item Identification and Description [5] that provides a context for the requirements for the Rights Data Dictionary and Rights Expression Language.

In addition to the terminology used in the MPEG-21 Technical Report, a small number of defined terms have been introduced which are listed in Annex C. These have been introduced to explain some specific terms relating to the requirements for a Rights Data Dictionary and a Rights Expression Language. It should be noted that these terms and their associated definitions should only be used in conjunction with this document and it should not be assumed that they are normative terms for use within the context of a Rights Data Dictionary and Rights Expression Language specification.

1.2   Accessibility

It is assumed that the RDD-REL will provide optimised accessibility to Digital Items for Users with a broad variation in human capabilities that should be supported by all the requirements below.

Access to Digital Items for such Users may require methods for providing and controlling alternative selectable media presentation forms, structures for storage and transport of

logically linked media of different kinds and methods for transformation between media forms.

1.3 Personal Data

As a result of the rapid development in computer technology large quantities of information relating to individuals are routinely collected and used by public administrations and in every sector of business, irrespective of national boundaries. There are differing expectations about the fundamental rights of individuals and, in particular, their right to privacy from abuses resulting from the processing (such as the collection, use, transmission, storage, disclosure etc.) of personal data. The Requirements in this document, when fulfilled, will allow the expression of such policies related to personal data.

Personal data in the form of Digital Items should be:
- Processed fairly and lawfully;
- Adequate, relevant and not excessive;
- Accurate;
- Not kept longer than necessary;
- Processed in accordance with individuals' legal rights; and
- Kept secure.

2 Requirements for a Rights Data Dictionary and a Rights Expression Language

This section contains the requirements for a Rights Data Dictionary and a Rights Expression Language. There has purposely not been any attempt to categorise the requirements between those for the Data Dictionary or those for the Expression Language. Also, no order of precedence has been placed on the requirements.

For brevity, the Rights Data Dictionary and a Rights Expression Language shall be referred to with the acronym "RDD-REL" in the requirements below.

2.1 General Requirements

2.1.1 Support of Multiple Usage/Business Models

Requirement:

The RDD-REL shall be used to express multiple Usage/Business Models utilising Permissions, Conditions and Obligations.

Note:

Some usage/business models are envisaged to involve 'super distribution', in which Digital Item and rights to interact with it are passed along from one user to another.

Example:

Usage/business models may include "sell", "loan", "transfer", "preview", "super distribution", "subscription", "pay per use", "pay by component", or , "gifting", among others.

2.1.2 Articulation of Roles

Requirement:

The RDD-REL shall support the articulation of Roles undertaken by Users

Note:

Roles may be sector specific. A mapping between them may also be useful. The articulation of Roles should enable a User to perform multiple Roles as required

Example:

- Using the same tool a User can edit a document he has authored but may only be able to view documents authored by other Users

2.1.3 Definition of Terms

Requirement:

The RDD-REL shall support the identification and definition of the semantics without syntactical encodings.

Note:

Semantic interpretation must be independent of the syntax used. The RDD-REL terms shall be defined utilising standard data element specification methods. In the event that an hierarchical set of definitions is used, the RDD-REL must provide well-defined semantics to determine which rights apply to data at all points within the hierarchy.

Example:

- XML namespaces can be used to identify elements
- Despite the valuable fact that a single RDD term may represent analogous rights for items in many different media, the analogy should *not* be left implicit.
- A dictionary entry should include generous usage notes for a large variety of media and applications.

2.1.4 Standard Identification Systems

Requirement:

The RDD-REL shall support open standard identification systems

Note:

Example:

- ISO TC46 SC9 identification systems including ISAN, ISBN, ISRC, ISSN, etc
- Open standards based on the URI standard (RFC2396) [6]

2.1.5 Interoperability

Requirement:

The RDD-REL shall support complete Interoperability for the management and protection of Expressions associated with Digital Items across IPMP Systems

Note:

Interoperability should also ensure that rights are governable and exercisable in the event of some IPMP solution and system providers ceasing to actively conduct business or provide usage services

Example:

- The RDD-REL shall enable Expressions from different Users to be interpreted and processed by other Users.

- Rights assigned by a Rights holder of a MPEG Digital Item should be understood and exercisable by all MPEG tools that implement the language.

2.1.6 Extensibility

Requirement:

The RDD-REL shall provide extensibility.

Note:

The RDD-REL should be extensible to allow new features to meet the needs of the digital content industry today and in the future. This would allow for an initial implementation able to express only a limited set of Expressions.

Example:

2.1.7 Customisability

Requirement:

The RDD-REL shall be flexible to enable subsets of Expressions to meet different purposes and needs.

Note:

The ability to customize the language for vertical applications may allow for efficient implementations.

Example:

- A single function eBook application requires only a subset of terminology versus a multi-function media application.

2.1.8 Expressiveness

Requirement:

The RDD-REL shall provide mechanisms for all Users of Digital Items to express their rights and interests in, and contractual agreements related to the Digital Items according to a variety of usage and business models.

Note:

The RDD-REL should meet the needs of all parties to the Digital Item life cycle, including those involved in creation, distribution, consumption and disposal of Digital Items. This includes, not only content providers and distributors issuing rights to end users, but also content providers issuing rights to distributors, distributors issuing rights to distributors, and end users transferring rights to end users.

Example:

- A producer may assign exclusive rights to a particular distributor

- A distributor may allow a retailer to distribute Digital Items for consumption by end users
- Temporal rights associated with a Digital Item may need to be renewed as a result of a transaction

2.1.9 Machine Readable Language

Requirement:

The RDD-REL shall be machine-readable.

Note:

Machine readability will enable automatic handling (i.e. machine-to-machine) of Expressions.

Example:

2.1.10 Adding New and Modifying Existing Expressions

Requirement:

The RDD-REL shall provide mechanisms to introduce new and modify existing Expressions.

Note:

These mechanisms shall allow adding new Expressions without resulting in new versions of the language.

Example:

2.1.11 Identification and Description of Rights Expressions

Requirement:

The RDD-REL shall provide mechanisms to unambiguously identify Expressions written in the language, as well as supply descriptive information about these Expressions.

Note:

Proper identification is essential in searching, indexing, registering, archiving, and referencing Expressions.
An Expression could be considered to be a Digital Item

Example:

2.1.12 Authentication of Expressions

Requirement:

The RDD-REL shall enable authentication of Expressions and descriptions written in the language.

Note:

This enables detection of any tampering of Expressions. This is essential for service providers specializing in issuing and managing rights documents for their customers and in detecting inconsistency of the rights descriptions.

Example:

- Authentication could be ensured by providing digital signatures to Expressions.
- Where no mechanism exists for pushing updates, revocations, renewals, etc, to Agents, a pull-mechanism may be preferable to determine that the rule-sets being applied are current. For example, the publisher might supply a URL as part of the Rights and Obligations Expression to instruct an enforcement engine to test for changes before applying the Expression.

2.1.13 Verification of Expressions

Requirement:

The RDD-REL shall provide mechanisms for verification of Expressions.

Note:

The language must be sufficiently flexible and extensible to verify Expressions at any point in the Digital Item's life cycle.

Example:

- One application may require geography to be proven by the consumer according to attributes contained within digital certificates issued with reference to a specified Public Key Infrastructure.

2.1.14 Multiple Expressions Conflict

Requirement:

The RDD-REL shall provide a mechanism to resolve conflicts between multiple Expressions

Note:

There are many ways in which conflicting Expressions may be applied to the same Digital Item.

Example:

- For financial Obligations, two or more prices might be specified for the same Agent/Item Interaction
- One access rule might ban an interaction on the grounds of group membership while another independent rule might grant access to an individual who happens to belong

to that group. One rule might allow for viewing of a broad catalogue while a persons age might restrict access to certain works in that catalogue.

2.1.15 Permission by Contract and/or Legislation

Requirement:

The RDD-REL shall support expression of Permission by contract and/or legislation.

Note:

Example:

- In order to take a picture of an ancient artistic work regardless of the fact that the original copyright may have expired, authorization for access may be required from the owner of the work.
- Legislation in a specific jurisdiction may take precedent over contractual rights applicable in other jurisdictions.

2.1.16 Expression Language Support of Dictionary Terms

Requirement:

The REL shall support all of the terms defined in the RDD.

Note:

The RDD is expected to evolve over time with new terms to be added and it is expected that the REL shall be sufficiently flexible to accommodate this.

Example:

2.1.17 Written in Open, Standard Meta-Language

Requirement:

The RDD-REL shall be defined in open, standard meta-language.

Note:

This will enable interoperability, machine readability, easy adoption, and fast development and deployment. It will also ease integration with IPMP-aware systems and services, including non-MPEG systems.

Example:

ASN.1 and BNF (Backus Naur Form)

2.1.18 Well-Defined Semantics

Requirement:

The RDD-REL shall have unambiguous, and understandable semantics.

Note:

This will enable predictable processing.

Example:

2.1.19 A Core Set of Primitives

Requirement:

The RDD-REL shall provide a minimal core set of primitive constructs from which all Expressions can be constructed or derived.

Note:

An appropriate set of primitives will allow the Expression of multiple business models without reference to the models themselves. Furthermore, new functionality can be delivered by the RDD-REL without changes to the standard itself.

Example:

- Instead of defining pay-per-view, rent-to-own, and other such models, the core set of primitives should provide the fundamental building blocks.

2.1.20 Sequencing

Requirement:

The RDD-REL shall allow for the specification of Expressions that must be fulfilled in a total or partial temporal ordering.

Note:

A total ordering is one in which there is an absolute ranking (i.e., for a collection of items, there is a well defined ordering of any two items within the collection). A partial ordering is one where, for a collection of items, there may be items between which there is no explicit order.

Example:

- A simple temporal example is the requirement to view the "FBI Warning" before a movie which may be browsed freely.

- An example of a total ordering of Obligations on a distributor is:
  1. A request for conformation must be issued back to the content provider before passing data to a particular client for the stated use
  2. On receipt of confirmation, payment must be taken from the client
  3. Data is supplied to the client

- An example of a partial ordering of Obligations on the same distributor obtained by adding the following Obligations:
  4. A minimum service level is specified for data transmissions

5. Audit records must be returned to the content provider immediately on completion of the transaction.

Here, steps 3 and 4 have no explicit ordering (in fact, they are coincident), so the partial ordering is 1→2→(3,4)→5.

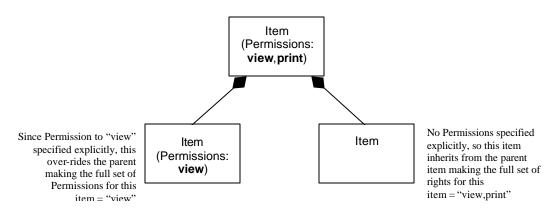## 2.1.21 Inheritance Semantics

Requirement:

The RDD-REL shall enable an hierarchy of Permissions via an inheritance mechanism.

Note:

A well-defined system of inheritance is a way of avoiding potential conflicts, while allowing efficient attribution of Expressions to multiple Digital Items.

Example:

- The semantics might specify that lower-level rights expressions always override higher-level expressions, regardless of the strength or weakness of the constraints involved. In some cases it may be meaningful for the Permissions hierarchy to specify default Permissions at the higher-levels to be applied only if lower-level Permissions are not specified. For example, the default Permissions for a news item might be "view" and "print". However, if lower-level elements of the item are to disallow printing, then it should be possible to specify just "view". This would over-ride completely the higher-level Permissions already granted:

Item
(Permissions:
view,**print**)

Since Permission to "view" specified explicitly, this over-rides the parent making the full set of Permissions for this item = "view"

Item
(Permissions:
view)

Item

No Permissions specified explicitly, so this item inherits from the parent item making the full set of rights for this item = "view,print"

- In other scenarios (for example in Permissions hierarchies created by successive distributions/aggregation of content) the Permissions attributed by the last distributor might be allowed to remove, but not add to earlier Permissions.

2.1.22 Minimising Overheads

Requirement:

The RDD-REL must be expressed in an efficient manner to ensure the minimal impact upon content payload

Note:

The imposition of significant overheads by the addition of access control and other rights management syntax is an issue. Consideration must be given to the efficiency of Expression in this context.

Example:

- Real-time streaming data is often high-bandwidth and subject to advanced compression techniques.
- Real-time pricing updates may be in the order of a hundred or so bytes. Even a 10% overhead in additional information would place an unreasonable burden on the systems processing and transmitting the data.

2.2 Digital Item Requirements

This section specifies requirements for Digital Items with respect to their use in an RDD-REL.

In the context of MPEG-21, a Digital Item is a structured digital object with a standard representation. REL Expressions are to be treated as Digital Items.

Other examples of Digital Items include, Data dictionaries and terms, databases accessible on a network via a query language, distributed objects accessed via API calls (e.g., CORBA or DCOM objects), Web servers accessed via HTTP and video streams from a surveillance camera.

2.2.1 Digital Item Description

Requirement:

The RDD-REL shall provide mechanisms to reference Digital Item Descriptions as part of the language, make reference to external content descriptions, and include existing content descriptions.

Note:

Expressions may need to depend upon descriptors of Digital Items for their evaluation, as well as on other types of descriptive information.
Digital Item Identification and Description is currently under development by MPEG and an outline is contained in [5]

Example:

- Descriptions of Digital Items can include information from very low-level (colours, fonts, shapes, sound characteristics, segmentations in space and time, etc.) to very high level (creators, publication dates, title, description, table of content, etc.).
- Render rights for a movie may depend on whether the producer has declared it suitable for children.

2.2.2 Creation Types

Requirement:

The RDD-REL shall support the creation of Expressions associated with all creation types.

Note:

Various analyses of the intellectual property domain identify different types of creation. For example the INDECS analysis identifies four creation types:
- *Abstraction*
- *Expression*

- *Manifestation*
- *Artefact*

Example:

2.2.3 Composite Digital Items

Requirement:

The RDD-REL shall provide mechanisms to associate Expressions with composite Digital Items.

Note:

The Expression associated with a composite Digital Item may differ from the Expressions associated with any of its components.

Example:

- An eBook may contain text, graphics, images and multimedia clips.

2.2.4 Fragments of Digital Items

Requirement:

The RDD-REL shall provide mechanisms to reference fragments of Digital Items that are not pre-declared as Digital Items themselves.

Note:

It may not be practical to declare all possible fragments to which it may be desirable to attribute Expressions.

Example:

- A publisher may wish to allow printing of up to three pages from an eBook without specifying in advance which pages may be printed.

2.2.5 Digital Item Aggregations

Requirement:

The RDD-REL shall provide mechanisms to reference Containers or other aggregations of Digital Items.

Note:

It may be desirable to associate Expressions with a collection of Digital Items, rather than apply individual Expressions to individual items within a collection (see [4])

Example:

Examples of collections of Digital Items include:
- A set of associated eBooks
- A series of episodes from a TV show

- The news bulletins from a single day

2.2.6 Digital Item Protection

Requirement:

The RDD-REL shall support mechanisms to protect Expressions from being altered or removed.

Note:

It is necessary to flag that a particular Expression should be subject to protection. The protection itself (if any) is provided by an IPMP system controlling the Expression as a Digital Item.

Example:

2.2.7 Digital Item Authentication

Requirement:

The RDD-REL shall provide mechanisms to reference authentication schemes.

Note:

It may be necessary to ensure the integrity of Digital Items and to detect if the Digital Item has been altered in an unauthorised manner. Authentication mechanisms could be specifications of necessary information that is needed for other security modules to perform authenticity verification. Digital Item authentication allows users to determine that Digital Items they have obtained are authentic and distinguish them from Digital Items of unknown origin.

Example:

- The signing of Digital Items by trusted parties is a way to ensure Digital Item authenticity.

2.2.8 Digital Item Confidentiality

Requirement:

The RDD-REL shall support mechanisms to indicate types and levels of protection against unauthorised Users accessing Expressions.

Note:

Some business models may require that Users are not aware of the precise Expressions associated with Digital Items and that these remain confidential.

Example:

- A User may be granted Copy Permissions on an eBook once a voucher is received but the content owner may not want this to be known in advance.

2.2.9   Digital Item Availability

Requirement:

The RDD-REL shall support mechanisms to indicate where Digital Items are available for retrieval or access.

Note:

Business models offering content on fulfilment of certain conditions should be enabled.

Example:

- Digital Item retrieval or access is possible when Digital Items are corrupted, not authenticated, or otherwise not available.
- Content availability can be specified by URIs (including URLs) of contents or distribution points of the contents.

2.2.10 Life Cycle of Digital Items

Requirement:

The RDD-REL shall support all operations throughout the entire Life Cycle of Digital Items

Note:

Digital Items will require specific Expressions depending on the stage of its Life Cycle at which an Expression is applied. The provision in the RDD-REL of comprehensive semantics and syntax will enable this.
Management of Expressions will be more exact by addressing each stage of the Life Cycle of Digital Items and the respective roles of the Users.

Example:

- Content providers in their relationships with distributors will need to express terms in a particular manner. These may include terms concerning onward distribution and payment.
- Distributors will need to be able to express the Permissions granted to end users.
- Expressions may need to be able to deal with issues that are affected by different jurisdictions.
- Creators of Digital Items may want to grant Permissions for particular versions.

2.2.11 Format and Delivery Independence

Requirement:

The RDD-REL shall provide mechanisms to ensure that the interpretation of Expressions is independent of the format or delivery channel of Digital Items.

Note:

Example:

- Permissions for a Digital Item may support its delivery by two different protocols.

2.3 Usage Permissions Element Semantics

2.3.1 Specification of Usage Permissions

Requirement:

Usage Permissions expressed in the RDD-REL shall cover all types and modes of operations and activities that happen to Digital Items during their Life Cycle.

Note:

To date MPEG has identified at least the following usage Permissions: access, view, play, print, copy, edit and delete.

Example:

2.3.2 Categorization of Permissions

Requirement:

The RDD-REL shall enable the organisation of Permissions into categories.

Note:

Such a categorization may be based on the Digital Item Life Cycle.

Example:

These Permissions may be categorized into:
- Render (for Digital Item use),
- Transport (for Digital Item delivery and transfer),
- Derivative work (for Digital Item manipulation),
- File management (for Digital Item search and storage),
- Configuration (for Digital Item installation),
- Etc..

2.3.3 Transport Permissions

Requirement:

The RDD-REL shall provide mechanisms to express transport Permissions.

Note:

Transport Permissions govern the movement of Digital Items.

Example:

- A transfer Permission allows a User to transfer a Digital Item from one repository to another.

2.3.4 Render Permissions

Requirement:

The RDD-REL shall provide mechanisms to express render Permissions.

Note:

Render Permissions govern the creation of representations of a Digital Item.

Example:

- Play Permissions refer to ways of making a transient or ephemeral copy of a work available for use.
- Print Permissions refer to making copies of a Digital Item.

2.3.5 Derivative Digital Item Permissions

Requirement:

The RDD-REL shall provide mechanisms to express derivative Digital Item Permissions.

Note:

MPEG has to date identified a number of ways in which content may be altered which include (but are not limited to):

- Précis
- Reformat
- Change Font
- Transform
- Annotate

Example

- Extract Permission allows removing a fragment of a Digital Item, thus creating a new Digital Item. The rights owner can decide whether a Digital Item can be reused as a whole or in parts, and also can associate different Permissions and Conditions with different fragments of a Digital Item.
- Edit Permission allows the modification of the Digital Item.
- Embed Permission allows inclusion of a Digital Item as part of a composite Digital Item.

2.3.6 File Management Permissions

Requirement:

The RDD-REL shall provide mechanisms to express file management Permissions.

Note:

File management Permissions govern access to directory and file information. MPEG to date has identified the following file management Permissions.

- Delete
- Verify
- Backup
- Restore

Example:

- Delete Permission allows the operation of deleting a copy of a Digital Item.
- Verify Permission allows authorization to check the authenticity of a Digital Item.
- Backup Permission allows making copies of a Digital Item for the purpose of guarding against the loss of the original due to accident or catastrophic media or equipment failure.
- Restore Permission allows the conversion of a backup copy into a usable copy in a controlled manner.

2.3.7 Configuration Permissions

Requirement:

The RDD-REL shall provide mechanisms to express configuration Permissions.

Note:

Configuration Permissions govern the adding and removing of Digital Items from repositories. MPEG to date has identified the following configuration Permissions:
- Install
- Uninstall

Example:

- Install Permission allows for the operation of loading, verification and certification of a Digital Item into a repository.
- Uninstall Permission allows for the removal from or disabling of a Digital Item in a repository.

2.3.8 Revocation of Issued Permissions

Requirement:

The RDD-REL shall support mechanisms by which Permissions, Conditions and/or Obligations may be revoked during the Life Cycle of a Digital Item

Note:

Example:

- Permissions for access to a Digital Item are granted to an individual following an e-commerce transaction. The transaction later turns out to be fraudulent and the Permissions of access are revoked.

2.3.9 Conditional Update/Refresh of Issued Permissions and Obligations

Requirement:

The RDD-REL shall provide for situations where Permissions and Obligations require update or renegotiation when specified trigger Conditions are met.

Note:

This requirement allows for certain Conditions that can be specified as triggers to enable an update of the rules currently in place.

Example:

- If content is being aggregated into a larger work then existing Rights and Obligations associated with stand-alone content may no longer apply and may need to be redefined.

- Periodic refresh of Rights and Obligations may be required and may be time-based or usage based.

2.4 Conditions

2.4.1 Usage Conditions

Requirement:

The RDD-REL shall provide mechanisms that will allow Conditions to be specified for all types of usage.

Note:

To date MPEG has identified the following usage Conditions:
- Time based
- Count based
- Fee based
- User based
- Territory based
- Device based
- Digital Item Component based
- Network Based

Example:

Time based:
- Express time limits (e.g. continuous, accumulative and recurring) that govern when rights become available and when they cease to be available.

Count based:
- Express limits that govern how many times rights can be exercised within the Digital Item life cycle

Fee based:
- Express the kinds of charges to exercise a Permission for all kinds of digital works

User based:
- Express access control policies based on digital identities, certificates or defined roles of Users

Territory based:
- Express Permissions limited to certain physical regions, areas locations and digital domains

2.4.2 Rule Expiration Due to non-Temporal Constraints

Requirement:

The REL shall support an expiration construct.

Note:

Expiration is permanent, regardless of the ongoing status of the condition that caused expiration to occur. Non-temporal constraints include all constraints other than time based.

Example:

2.5 Obligations

Obligations are conditions that must be satisfied in order to exercise granted Permissions.

2.5.1 Specification of Obligations

Requirement:

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

Note:

To date MPEG has identified the following usage Obligations:
- Usage Tracking and Reporting
- Multiple and Grouping Obligations
- Fee payment
- Digital Item Rendering Obligations
- Financial Reporting
- Branding
- General Acknowledgements
- Legal Notices
- Marks

Example:

- Usage Tracking and Reporting
  - Record usage history and generate reports for survey and business purposes
- Multiple and Grouping Obligations
  - Specify mechanisms to express individual or groups of Obligations, which are common to a set of Permissions.
- Digital Item Rendering Obligations
  - Express obligations requiring specific methods for content rendering, such as rendering a video of Britney Spears associated with a Pepsi advertisement and not with a Coke advertisement

2.5.2 Expression of Marks for Digital Items

Requirement:

The RDD-REL shall express mechanisms that may require that a Digital Item be marked or re-marked.

Note:

It must be possible for marks to be added at various stages in the distribution of Digital Items

Example:

- Examples of marks include watermarks and fingerprints.

2.5.3 Obligations on Agents

Requirement:

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

Note:

Example:

- A content provider requires distribution to take place over tamper-resistant channels (e.g., using an SSL Web connection).

2.6 Governance

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

2.6.1 Governance of the RDD-REL

Requirement:

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

Note:

As defined by JTC 1, relating to governance [7], technical groups developing technical standards shall make every attempt to avoid the necessity for registration and JTC 1 Registration Authorities in particular. Where this is not possible, technical groups shall attempt to satisfy their requirements through the use of existing registration processes (e.g., use of ISO 3166 by ISO/IEC 10021 and ISO/IEC 8348 Add 2).

All requirements for registration must be reviewed and concurred by the RG-RA (see 17.4.2). Procedure standards for JTC 1 Registration Authorities must also be reviewed and concurred by the RG-RA (see 17.4.2). Where registration is performed by a means other than a JTC 1 Registration Authority, the RG-RA must still assure the international integrity of the registration. This involves a review by the RG-RA of the documentation of the process by which other organizations, standards or automated facilities provide the registration and action by the RG-RA on an exception basis as required. This documentation may take the form of procedures to be included in the technical standard, reference to existing standards, or the creation of separate procedure standards.

Example:

ANNEX A - MPEG-21 Terms (Informative)

Term	Definition or synonymous term(s)
Anchor	An Anchor associates Descriptors with a fragment of a media resource and provides an externally identifiable target for links from a location within a media resource.
Container	A potentially hierarchical structure that allows Digital Items to be grouped.
Digital Item	A Digital Item is a structured digital object with a standard representation, identification and meta-data within the MPEG-21 framework. This entity is also the fundamental unit of distribution and transaction within this framework
End User	A User taking the role of consumer, i.e. being at the end of a value or delivery chain (a human consumer, an agent operating on behalf of a human consumer, etc.). Note: "User" refers to all participants in the value or delivery chain.
IPMP	Intellectual Property Management & Protection
Privacy	Privacy is the ability of a User to control access to that particular User's private information
Resource	A *resource* is an individually identifiable asset such as a video or audio clip, an image, or a textual asset. A *resource* may also potentially be a physical object.
Trust	Is synonymous with predictability, e.g. a trusted device is one which exhibits predictable behaviour
User	User of a system. This includes all members of the value chain (e.g., creator, rights holders, distributors and consumers of Digital Items) [Producers] Comment : the current definition still causes real confusion, where everyone is considered to be a user

ANNEX B - Acronyms (Informative)

ACRONYM	EXPLANATION
API	Application Program Interface
CfP	Call for Proposals
CfR	Call for Requirements
CORBA	Common Object Request Broker Architecture
DCOM	Distributed Common Object Model
HTTP	Hyper Text Transfer Protocol
INDECS	Interoperability of Data in E-Commerce Systems. See http://www.indecs.org
IPMP	Intellectual Property Management and Protection
ISAN	International Standard Audiovisual Number
ISBN	International Standard Book Number
ISRC	International Standard Recording Code
ISO	International Organisation for Standardisation
ISSN	International Standard Serial Number
MPEG	Moving Picture Experts Group
RG-RA	Rapporteur Group on Registration Authorities
URI	Uniform Resource Identifier (See [6])
URL	Uniform Resource Locator
XML	Extensible Markup Language

ANNEX C - Glossary of Terms (Informative)

Note: The terms in this Glossary have been defined solely for the purpose of interpreting their meaning within the context of this document.

TERM	DEFINITION
Agent	An entity that operates under the control of another entity
Condition	A stipulation, proviso, or limitation that must exist or be fulfilled before a Permission can be exercised or granted
Container	A Container is a structure that allows Items and/or Containers to be grouped (see [4])
Expression	The description, using consistent semantics defined in a Rights Data Dictionary, of terms used to express permissions, conditions or obligations controlling the use of a Digital Item
Extensibility	The ability to support future additions and enhancements without requiring fundamental change to the original structure
Fragment	A Fragment unambiguously designates a specific point or range within a Resource (see [4])
Interoperability	The condition achieved when two or more technical systems can exchange and interpret information directly in a predictable way that is satisfactory for the users of the systems
IPMP System	IPMP systems include all Intellectual management and protection systems, regardless of provenance
Life Cycle	All events implicated in the existence of a digital item, including creation, exploitation, transfer and disposal
Marks	Any information embedded in or distinguishing information extracted from a Digital Item (e.g. watermarks, fingerprints)
Obligation	A course of action that a person or entity is bound to perform when exercising a granted permission
Permission	Permission granted by a rights owner, the owner's agent, or a competent authority
Privacy	The maintenance of personal data in a confidential state
Rights Data Dictionary	A dictionary of key terms which are required to describe rights of those who control digital items, including intellectual property rights, and the permissions they grant, that can be unambiguously expressed using a standard syntactic convention, and which can be applied across all domains in which rights and permissions need to be expressed
Rights Expression Language	A machine-readable language that can declare rights and permissions using the terms as defined in the Rights Data Dictionary
Role	A set of functions performed by a User or Users in combination

ANNEX D – References (Informative)

[1] ISO/IEC JTC-1/ SC29/WG11 N3950 Call for Requirements for a Rights Data Dictionary and a Rights Expression Language, January 2001, Pisa MPEG Meeting

[2] ISO/IEC JTC-1/ SC29/WG11 N4044 Reissue of the Call for Requirements for a Rights Data Dictionary and a Rights Expression Language, March 2001, Singapore MPEG Meeting

[3] ISO/IEC JTC-1/ SC29/WG11 N4040 Study on MPEG-21 (Multimedia Framework) Part 1 v2.0, March 2001, Singapore MPEG Meeting

[4] ISO/IEC JTC-1/ SC29/WG11 N**** MPEG-21 Digital Item Declaration CD

[5] ISO/IEC JTC-1/ SC29/WG11 N**** MPEG-21 Digital Item Identification and Description WD (2.0)

[6] IETF RFC 2396. *Uniform resource identifiers (URI): Generic syntax*. http://www.ietf.org/rfc/rfc2396.txt.

[7] See JTC1 Registration Authority, www.jtc1.org