
**Information technology — Multimedia
framework (MPEG-21) —**

**Part 6:
Rights Data Dictionary**

*Technologies de l'information — Cadre multimédia (MPEG-21) —
Partie 6: Dictionnaire de données des droits*
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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 21000-6 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

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

- *Part 1: Vision, technologies and strategy* [ISO/IEC 21000-6:2004](https://standards.iteh.ai/catalog/standards/sist/baf925fe-f7f4-469f-9a68-818980c08ec3/iso-iec-21000-6-2004)
- *Part 2: Digital item declaration*
- *Part 3: Digital item identification*
- *Part 5: Rights expression language*
- *Part 6: Rights data dictionary*
- *Part 7: Digital item adaptation*

The following parts are under preparation:

- *Part 8: Reference software*
- *Part 9: File format*
- *Part 10: Digital item processing*
- *Part 11: Evaluation methods for persistent association technologies*

Introduction

Today, many elements exist to build an infrastructure for the delivery and consumption of multimedia content. There is, however, no 'big picture' to describe how these elements, either in existence or under development, relate to each other. The aim for MPEG-21 is to describe how these various elements fit together. Where gaps exist, MPEG-21 will recommend which new standards are required. ISO/IEC JTC 1/SC 29/WG 11 (MPEG) will then develop new standards as appropriate while other relevant standards may be developed by other bodies. These specifications will be integrated into the multimedia framework through collaboration between MPEG and these 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 MPEG-21 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 MPEG-21 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.

This sixth part of MPEG-21 (ISO/IEC 21000-6) specifies a Rights Data Dictionary for use within the MPEG-21 Framework. This Rights Data Dictionary forms the basis of all expressions of rights and permissions as defined by the MPEG-21 Rights Expression Language (specified in ISO/IEC 21000-5).

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Information technology — Multimedia framework (MPEG-21) —

Part 6: Rights Data Dictionary

1 Scope

This part of ISO/IEC 21000 describes a Rights Data Dictionary which comprises a set of clear, consistent, structured, integrated and uniquely identified Terms (as defined in Clause 5.4) to support the MPEG-21 Rights Expression Language (REL), ISO/IEC 21000-5. Annex A specifies the methodology for and structure of the RDD Dictionary, and specifies how further Terms may be defined under the governance of a Registration Authority, requirements for which are described in Annex C.

Taken together, these specifications and the RDD Dictionary and Database together make up the RDD System. Use of the RDD System will facilitate the accurate exchange and processing of information between interested parties involved in the administration of rights in, and use of, Digital Items, and in particular it is intended to support ISO/IEC 21000-5 (REL). Clause 6 describes how this part of ISO/IEC 21000 relates to ISO/IEC 21000-5.

As well as providing definitions of Terms for use in ISO/IEC 21000-5, the RDD System is designed to support the mapping of Terms from different namespaces. Such mapping will enable the transformation of metadata from the terminology of one namespace (or Authority) into that of another namespace (or Authority). Mapping, to ensure minimum ambiguity or loss of semantic integrity, will be the responsibility of the Registration Authority, requirements for which are specified in Annex C. Provision of automated Term look-up is also a requirement.

The RDD Dictionary is a *prescriptive* Dictionary, in the sense that it defines a single meaning for a Term represented by a particular RddAuthorized TermName, but it is also *inclusive* in that it can recognize the prescription of other Headwords and definitions by other Authorities and incorporates them through mappings. The RDD Dictionary also supports the circumstance that the same name may have different meanings under different Authorities. ISO/IEC 21000-6 describes audit provisions so that additions, amendments and deletions to Terms and their attributes can be tracked.

ISO/IEC 21000-6 recognises legal definitions as and only as Terms from other Authorities that can be mapped into the RDD Dictionary. Therefore Terms that are directly authorized by the RDD Registration Authority neither define nor prescribe intellectual property rights or other legal entities.

1.1 Organization of the Document

This document contains six Clauses and four Annexes.

Clause 1 contains a Scope statement and three sub-Clauses.

Clause 2 comprises a list of Normative References.

Clause 3 comprises a list of Terms and Definitions. The Terms and Definitions in this Clause are only those required to navigate the text of the Standard. The Terms of the RDD Dictionary are contained in Clause 5.

Clause 4 describes the documentation conventions used in this document.

Clause 5 contains the Standardized Terms of the RDD Dictionary, set out in the following sub-clauses:

Clause 5.1 – Introduction to the Terms in the RDD Dictionary and the ontology which it embodies. An ontology, in this context, is a structured catalog of entities in which meaning, once defined, can be passed on from one term to

another by logical rules of association such as inheritance and opposition. The process by which the RDD Dictionary is structured and can be extended is contained in Annex A.

Clause 5.2 – A table of the fourteen RELStandardizedActTypes which provide the semantic content of the corresponding REL Multimedia Extension Rights. Each of these RELStandardizedActTypes is included in the full RDD Dictionary in Clause 5.4 but they are separated out here for ease of reference, as they are normatively referenced in the REL Standard (ISO/IEC 21000-5).

Clause 5.3 – A Figure (Figure 1) in the form of a hierarchical table including the principal ActTypes in the RDD Dictionary (“The RDD Family Tree”) showing how meaning is inherited from one to another within the RDD ontology.

Clause 5.4 – A table (Table 2) containing the RDD Dictionary of StandardizedTerms with their Attributes. The RDD Dictionary includes all the Terms that are required to support the REL Multimedia Extension Rights, and also all the Terms that are required to support the process for adding new Terms, as specified in Annex A.

Clause 6 describes how this part of ISO/IEC 21000 relates to ISO/IEC 21000-5.

Annex A (normative) specifies the methodology for and structure of the RDD Dictionary, providing information about the supporting model, how the model is used to introduce Terms to the RDD Dictionary and how those Terms are related. It also shows how further Terms may be defined under the governance of a Registration Authority, requirements for which are described in Annex C.

Annex B (normative) provides Rules and Style Guides for Textual Elements, in support of the methodology of Annex A.

Annex C (normative) describes the requirements for a Registration Authority for the RDD Dictionary.

Annex D (informative) provides examples of how this part of ISO/IEC 21000 can be applied, with illustrative examples of an Action Family, and an exemplary specialization of an ActType mapped from an external dictionary.

Annex E (informative) provides patent statements relating to ISO/IEC 21000-5.

For information about the Terms in the RDD Dictionary and their relationship to ISO/IEC 21000-5, it is necessary to read the six Clauses.

For information about the methodology of the RDD Dictionary and the ontology upon which it is based, it is necessary to read Annexes A and B.

For information about the requirements for the Registration Authority, which will govern the process of extending the dictionary, it is necessary to read Annex C.

For examples of how the RDD Dictionary can be implemented for the development of new Terms and their use in the REL, it is necessary to read Annex D.

1.2 Relationship between this part of ISO/IEC 21000 and other parts of the MPEG-21 Framework (Informative)

At present the only specific relationship with other parts of ISO/IEC 21000 is with Part 5, the Rights Expression Language. A description of this relationship is set out in Clause 6.

1.3 RDD Term Identifier Prefix

The RDD Term Identifier Prefix will be `urn:mpeg:mpeg21:2002:01-RDD-NS`. The "01" represents a serial number that may be expected to change consequent upon the maintenance activities of the Registration Authority.

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.

ISO/IEC TR 21000-1, *Information technology — Multimedia framework (MPEG-21) — Part 1: Vision, technologies and strategy*

ISO/IEC 21000-2, *Information technology — Multimedia framework (MPEG-21) — Part 2: Digital item declaration*

ISO/IEC 21000-3, *Information technology — Multimedia framework (MPEG-21) — Part 3: Digital item identification*

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 4217:2001, *Codes for the representation of currencies and funds*

ISO 8601:2000, *Data elements and interchange formats — Information interchange — Representation of dates and times*

3 Terms and Definitions

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

Terms in this International Standard, which have initial capital letters, have formal definitions either in this Clause or in the Rights Data Dictionary itself in Clause 5.4 (Table 2).

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Because this part of ISO/IEC 21000 is concerned with the definition of terms, most of the Terms used in describing the International Standard are themselves StandardizedTerms in the RDD Dictionary, and their definitions are all found in the alphabetical listing in Clause 5.4 (Table 2). Definitions of Terms which are relied upon in the Standard but are not StandardizedTerms are listed in this Clause.

Definitions for terms presented in this International Standard with initial Capitals and otherwise in lower case (for example, Act, AdoptedTerm) are given in Clause 3 or in Clause 5.4 (Table 2).

3.1

RDD

Rights Data Dictionary

3.2

RDD Database

the tool containing the RDD Dictionary and supporting its maintenance

3.3

RDD Dictionary

the Terms and their TermAttributes defined according to this International Standard

3.4

RDD System

a system comprising the RDD Dictionary, the RDD Database and the specifications contained in Annex A

3.5

RDD Registration Authority

the Registration Authority appointed to administer this International Standard

3.6

REL

the Rights Expression Language as defined in ISO/IEC 21000-5

4 Documentation Conventions

The notation and modelling conventions used in this part of ISO/IEC 21000 are specific to, and exist for the purpose of, this Standard only. This refers to the notation used in the presentation of Relationships (as explained in A.10 and used in Clause 5.4 and Annexes A and D), the diagrammatic presentations of the Term-Attribute relationships in Figure A.2, and the entity relation models in Figures A.6 and A.7.

5 Rights Data Dictionary

5.1 Preamble (Informative)

The StandardizedTerms in this Clause are specifically defined to support the REL as defined in ISO/IEC 21000-5 and provide the foundation of the RDD Dictionary. New Terms, developed specifically to support REL requirements, independently or from mappings from other schemes, can be added to the RDD Dictionary through the registration of such Terms with the Registration Authority, requirements for which are described in Annex C. Once new Terms have been added to the RDD Dictionary, they may be used explicitly in REL expressions, or they may be translated into appropriate REL expressions through the process of mapping described in the methodology in Annex A. The process is therefore flexible, capable both of supporting the REL directly and of providing a means by which it can be supported in future by the addition of Terms from external schemes, thus providing for interoperability between different Authorities.

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Great care should be taken in the use of RDD Dictionary Terms in any specific environment or application in order to avoid unintended consequences. As a closed ontology, all RDD Dictionary Terms are defined with reference to other RDD Dictionary Terms. This has two main consequences for the understanding of an RDD Dictionary term when it is used in an REL license. The first is that no assumptions should be made about the meaning of a Term based on the coincidence that it bears the same name as something in an application domain. For example, the words "Play" and "Print" are common in applications and terminals, and they have many shades of meaning. The RDD StandardizedTerms "Play" and "Print" mean only what they are defined to mean in this part of ISO/IEC 21000. The RDD Dictionary meanings of "Play" and "Print" may or may not correspond to the meanings attached to the words "play" and "print" in other domains. Words used as the names of Terms are only convenient labels: mapping is achieved by analysis of the defined meanings of Terms, irrespective of their names.

The second consequence concerns the inheritance of meaning. As the RDD Dictionary is a hierarchical ontology, most of the meaning of a Term is inherited from its parent(s) (in RDD Dictionary terminology, its "Archetypes"). Because of this, if an REL license contains a Right to a StandardizedActType (for example, "Modify"), then the holder of the license will also have all Rights for which Modify is the sole parent – that is, "Move", "Enlarge" and "Reduce" – even though these are not explicit in the license. On the other hand, if a term has more than one parent, it is not wholly included in each. So, for example, if an REL license contains a Right to "Adapt", it does not include the Right to "Play" or "Print", because Adapt is only one of the parents of these Terms.

5.2 Standardized ActTypes supporting REL

This table shows the fourteen ActTypes which provide the semantic content for the Multimedia Extension Rights in Clause 9.6 of ISO/IEC 21000-5. These ActTypes provide basic functionality for the REL. Employed within a rights expression, the Multimedia Extension Rights are capable of being used to create licences required by Rights Holders.

The fourteen ActTypes in this part of ISO/IEC 21000 have been defined in response to requirements identified in the process of developing the REL and RDD Standards, particularly focussed on common processes in the use and adaptation of Digital Resources. However, it is recognised that in future further ActTypes will have to be

introduced into the RDD Dictionary in response to new requirements from REL users, and either a corresponding syntactic element may be introduced by amendment directly into the ISO/IEC 21000-5, or one of the mechanisms described in Annex F of ISO/IEC 21000-5 or Clause 6.2 of this part of ISO/IEC 21000 to reference the new RDD ActType may be used.

Terms in bold in Table 1 are formally defined in the RDD Dictionary.

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Table 1 — Standardized ActType supporting ISO/IEC 21000-5

ActType	Parent(s)	Definition	Comments
<p>Adapt</p>	<p>Derive, ChangeTransiently</p>	<p>To ChangeTransiently an existing Resource to Derive a new Resource.</p>	<p>With Adapt, two distinct Resources will exist as a result of the process, one of which is the original Resource in unchanged form, and one of which is newly made. Changes can include the addition to and removal of elements of the original Resource, including the Embedding of other Resources. Changes can be made temporarily to the original resource in the course of the Adapt process, but such changes are not saved in the original Resource at the end of the process.</p> <p>Specializations of Adapt can be differentiated by specific attributes of the Resource which are preserved or changed. The specific attributes can be on a list or can be called out by using a list. Lists can be inclusive (for example, "Attributes a and b must be changed") or exclusive (for example, "Everything except attributes c and d must be changed"). Attributes that are not constrained in specializations can be changed.</p> <p>Most ActTypes that are generally known as "copying" may be represented in the RDD Dictionary as children of Adapt. In most domains "copy" typically means to Derive a new Resource which has the same set of specified or implied attributes as its Source, a common example being the "copying" of a Digital Object. However, the concept of "sameness" is not to be confused with that of identity, as two things cannot technically be "identical" because at the very least they will have different spatial or temporal attributes (that is, they will be located in a different place, or created at a different time), and so a "copy" with absolutely identical attributes to the original cannot logically exist. Particular interpretations of "copy" can be defined as specializations of Adapt [for further explanation see Annex D].</p>
<p>Delete</p>	<p>Destroy</p>	<p>To Destroy a DigitalResource.</p>	<p>Delete applies only to DigitalResources. Delete is not capable of reversal. After a Delete process, an "undelete" action is impossible.</p>
<p>Diminish</p>	<p>Adapt</p>	<p>To Derive a new Resource which is smaller than its Source.</p>	<p>With Diminish, two distinct Resources will exist at the end of the process, one of which is the original Resource in unchanged form, and one of which is newly made, whose content is Adapted from the original Resource, and a Measure of which is smaller than that of the original while no Measures of it are larger. Changes can include the removal of elements of the original Resource. Changes can be made temporarily to the original Resource in the course of the Diminish process, but such changes are not saved in the original Resource at the end of the process.</p>

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ActType	Parent(s)	Definition	Comments
Embed	Relate	To put a Resource into another Resource .	The Resource into which a Resource is Embedded can be pre-existing or can be created by the act of combining the EmbeddedResource with one or more others. Embed refers only to the embedding of an existing Resource in another: if a “copy” of an existing Resource is to be created and Embedded in another, then both Adapt and Embed would be used.
Enhance	Adapt	To Derive a new Resource which is larger than its Source .	With Enhance , two distinct Resources will exist at the end of the process, one of which is the original Resource in unchanged form, and one of which is newly made, whose content is Adapted from the original Resource , and a Measure of which is larger than that of the original while no Measures of it are smaller. Changes can include the addition of elements to the original Resource , including the Embedding of other Resources . Changes can be made temporarily to the original Resource in the course of the Enhance process, but such changes are not saved in the original Resource at the end of the process.
Enlarge	Modify	To Modify a Resource by adding to it.	With Enlarge , a single Resource is preserved at the end of the process. Changes can include the addition of new material, including the Embedding of other Resources , but not the changing or removal of existing elements of the original Resource .
Execute	Activate	To execute a DigitalResource .	Execute refers to the primitive computing process of executing. Execute applies only to a DigitalResource .
Install	UseTool	To follow the instructions provided by an InstallingResource .	An InstallingResource is a Resource that provides instructions which when followed result in one or more Resources that are new, or Enabled , or both new and Enabled .
Modify	Change	To Change a Resource , preserving the alterations made.	With Modify , a single Resource is preserved at the end of the process (that is, no additional Resource(s) come into existence). Changes can include the addition to and removal of elements of the original Resource , including the Embedding of other Resources within it. Specializations of Modify can be differentiated by specific attributes of the Resource being preserved or changed. The specific attributes can be on a list or can be called out by using a list. Lists can be inclusive (for example, “Attributes a and b must be changed”) or exclusive (for example, “Everything except attributes c and d must be changed”). Attributes that are not constrained in specializations can be changed.

ActType	Parent(s)	Definition	Comments
Move	Modify	To relocate a Resource from one Place to another.	With Move , at least the location of the Resource is Changed .
Play	Render, Perform	To Derive a Transient and directly Perceivable representation of a Resource .	Play covers the making of any forms of Transient representation that can be Perceived directly (that is, without any intermediary process) with at least one of the five human senses. Play includes playing a video or audio clip, displaying an image or text document, or creating Transient representations that can be touched, or Perceived to be touched. When Play is applied to a DigitalResource , content can be rendered in any order or sequence according to the technical constraints of the DigitalResource and renderer.
Print	Render, Fix	To Derive a Fixed and directly Perceivable representation of a Resource .	Print refers to the making of a Fixed physical representation, such as a hard-copy print of an image or text, that can be Perceived directly (that is, without any intermediary process) with one or more of the five human senses.
Reduce	Modify	To Modify a Resource by taking away from it.	With Reduce , a single Resource is preserved at the end of the process. Changes can include only the removal of existing elements of the original Resource .
Uninstall	UseTool	To follow the instructions provided by an UninstallingResource .	An UninstallingResource is a Resource that provides instructions which when followed result in one or more Resources that had previously been Installed being Disabled or Destroyed .

5.3 Family Tree

The ActTypes in the RDD Standard shall be arranged hierarchically from left to right as shown in Figure 1. REL StandardizedActTypes are highlighted in bold in shaded boxes. Semantic inheritance goes by specialization from left to right: meaning flows in from the ActType on the left and flows out to any ActTypes on the right. A number of ActTypes in this tree have multiple parentage. On their second appearance in the table they are shown with an asterisk *, and any Types they have are not repeated.

The definition and attributes of each ActType are given in the list of StandardizedTerms in Clause 5.4.

Each of the ActTypes in this Family Tree begets an “ActionFamily” of related Terms in the RDD Dictionary, defined according to the process shown in Annex A (A.11). An illustrative example of the development of an ActionFamily is shown in Annex D.

The RDD Family Tree is an ontology which will be extended through the registration of new Terms with the Registration Authority. The RDD StandardizedActTypes included in the FamilyTree are the REL StandardizedActTypes supporting REL, others required to support the definitions of the REL StandardizedActTypes and others required to support the methodology for defining RDD Dictionary Terms set out in Annex A.

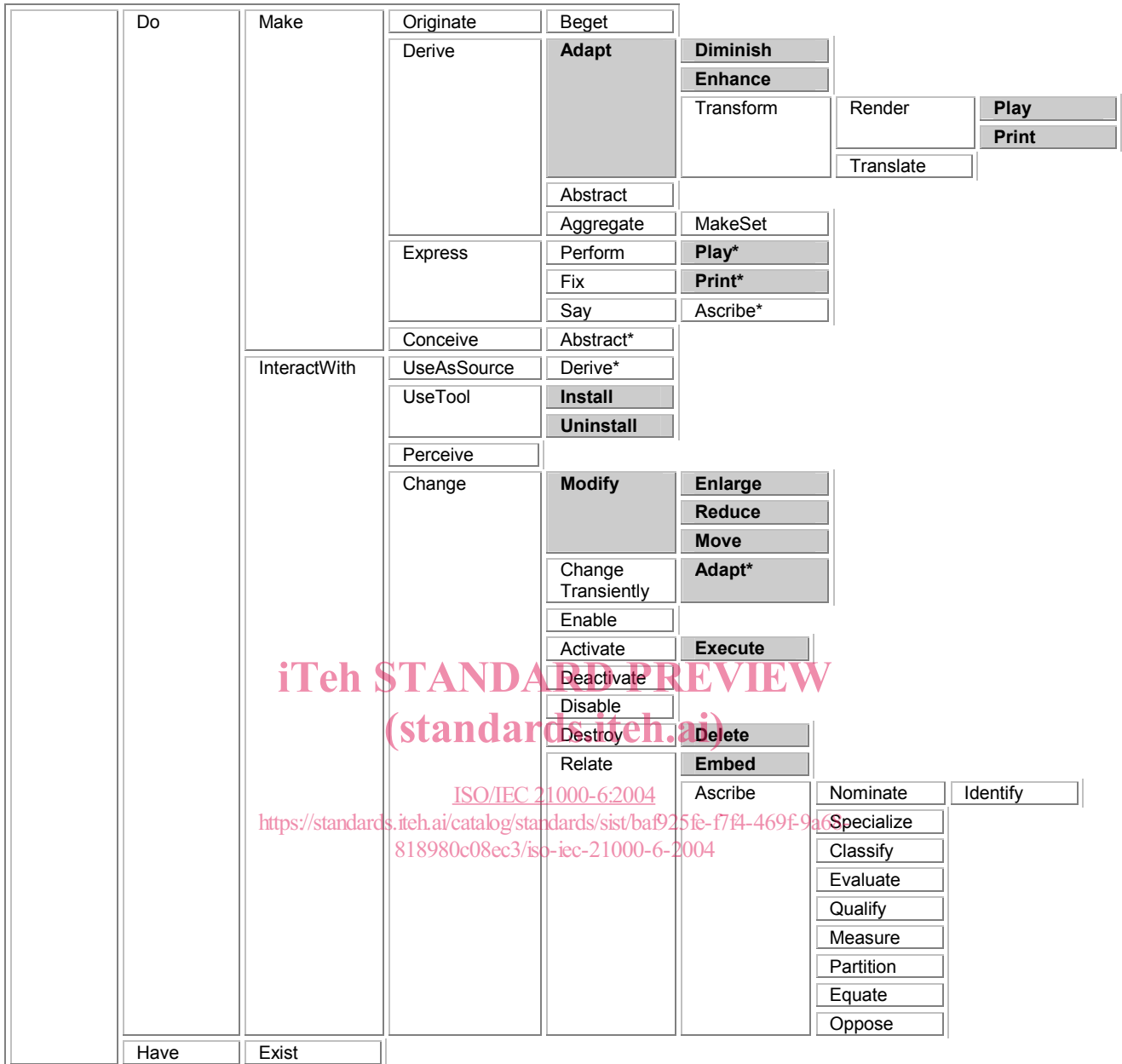


Figure 1 — FamilyTree of RDD StandardizedActTypes

5.4 StandardizedTerms

This Clause contains all the RDD StandardizedTerms listed in alphabetic order according to their Headword. Each Term is shown with its TermAttributes as defined in Annex A.2.1 (exceptions to this are shown in Table 2). To assist in navigating the hierarchy of the RDD Dictionary, each Term also shows all of its immediate Types and AllowedValues, where these exist.

Table 2 — TermAttributes omitted from Table 3

TermAttribute (reference)	Reason for omission from Table 3
RddIdentifier (A.5)	These will not be created until the RDD Dictionary is implemented in the RDD Database by the RDD Registration Authority. Each Term shall have exactly one RddIdentifier. RddIdentifiers shall be expressible as URIs in the form xxx:yyy where “xxx” represents the RDD Term Identifier Prefix as defined in Clause 1.3 and “yyy” will be in a form to be