Open Digital Rights Language (ODRL)

Version: 0.8
Date: 2000-11-21
This Version: <http://odrl.net/ODRL-08.pdf>
Previous Versions: <http://odrl.net/ODRL-07.pdf>
Editor: Renato Iannella <renato@iprsystems.com>

0 Status

This document is an early draft and a **work-in-progress** and may be updated and/or replaced by other documents at any time.

The intention is to promote this draft document amongst multiple communities interested in the expression of Digital Rights Management statements and semantic interoperability across these communities.

ODRL will be standardised via an appropriate, open, and non-competitive organisation with an open process for the future maintenance of the standard. ***ODRL*** has no license requirements and is available in the spirit of "open source" software.

Comments are welcome to the editors from all interested parties.

Change Bars indicate modifications from Version 0.7

1 Overview

Digital Rights Management (DRM) involves the description, layering, analysis, valuation, trading and monitoring of the rights over an enterprise's assets; both in physical and digital form; and of tangible and intangible value. DRM covers the digital management of rights - be they rights in a physical manifestation of a work (eg a book), or be they rights in a digital manifestation of a work (eg an ebook). Current methods of managing, trading and protecting such assets are inefficient, proprietary, or else often require the information to be wrapped or embedded in a physical format [HIGGS].

A key feature of managing online rights will be the substantial increase in re-use of digital material on the Web as well as the increased efficiency for physical material. The pervasive Internet is changing the nature of distribution of digital media from a passive one way flow (from Publisher to the End User) to a much more interactive cycle where creations are re-used, combined and extended ad infinitum. At all stages, the Rights need to be managed and honoured with trusted services.

Current Rights management technologies include languages for describing the terms and conditions, tracking asset usages by enforcing controlled environments or encoded asset manifestations, and closed architectures for the overall management of rights.

The Open Digital Rights Language (***ODRL***) provides the semantics for DRM in open and trusted environments whilst being agnostic to mechanisms to achieve the secure architectures.

1.1 The Bigger Picture

It is envisaged that ***ODRL*** will "plug into" an open framework that enables peer-to-peer interoperability for DRM services. (See [ERICKSON] for an overview of this area). However, ***ODRL*** can also be used as an mechanism to express rights statements on its own and to plug into existing DRM architectures, for example, the Electronic Book Exchange [EBX] framework.

The editors consider that traditional DRM (even though it is still a new discipline) has taken a closed approach to solving problems. That is, the DRM has focused on the *content protection* issues more than the *rights management* issues. Hence, we see a movement towards "Open Digital Rights Management" (ODRM) with clear principles focused on interoperability across multiple sectors and support for fair-use doctrines.

The ODRM Framework consists of Technical, Business, Social, and Legal streams as shown in Figure 1.

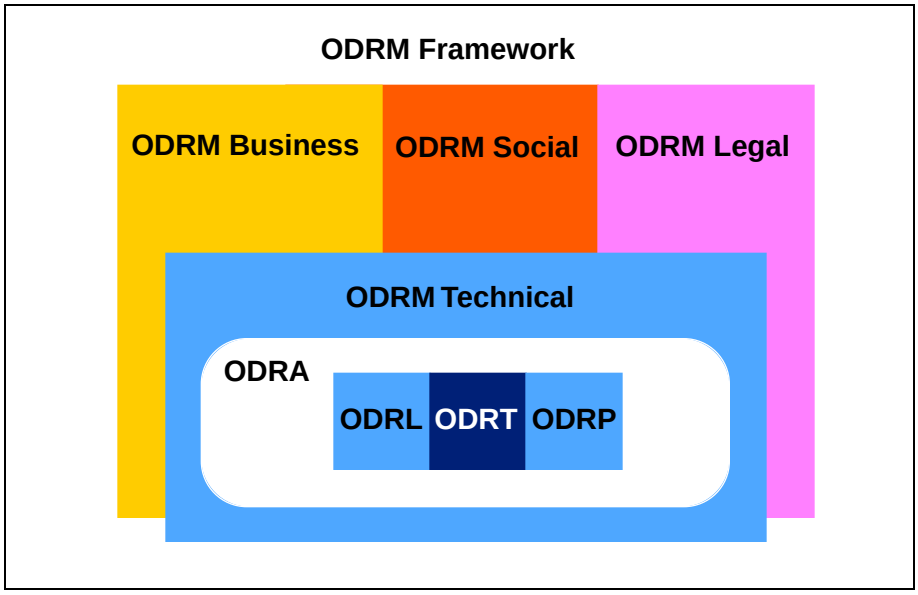

Figure 1. ODRM Framework

The ODRM Technical stream consists of an Architecture (ODRA), Trading Protocol (ODRT) and Protection (ODRP) mechanisms with ***ODRL*** clearly focused on solving a common and extendable way of expressing Rights assertions within this Architecture.

The ODRM Architecture exists in other forms that are specific to other communities needs, such as Privacy metadata. Hence, ODRA can be

achieved by abstracting and reusing such architectures to enable trusted metadata expressions about digital assets.

1.2 About this Specification

This document, along with its normative references, includes all the specification necessary for the implementation of interoperable ***ODRL*** applications.

The key words *must, must not, required, shall, shall not, should, should not, recommended, may*, and *optional* in this specification are to be interpreted as described in [RFC2119] which defines the significance of each particular requirement.

Examples used in this document are for demonstration purposes only.

2 ODRL

ODRL complements existing analogue rights management standards by providing digital equivalents, and supports an expandible range of new services that can be afforded by the digital nature of the assets in the Web environment. In the physical environment, ***ODRL*** can be used to enable machine-based processing for Rights management.

ODRL is a standard vocabulary for the expression of terms and conditions over assets. ***ODRL*** covers a core set of semantics for these purposes including the rights holders and the expression of permissible usages for asset manifestations. Rights can be specified for a specific asset manifestation (format) or could be applied to a range of manifestations of the asset.

2.1 Scope

ODRL is focused on the semantics of expressing rights languages. ***ODRL*** can be used within trusted or untrusted systems for both digital and physical assets. However, ***ODRL*** does not determine the capabilities nor requirements of any trusted services (eg for content protection, digital/physical delivery, and payment negotiation) that utilises its language. Clearly, however, ***ODRL*** will benefit rights transactions over digital assets as these can be captured and managed as a single transaction. In the physical world, ***ODRL*** expressions would need an accompanying system with the distribution of the physical asset.

ODRL defines a core set of semantics. Additional semantics can be layered on top of ***ODRL*** for third-party value added services.

ODRL does not enforce or mandate any policies for DRM, but provides the mechanisms to express such policies. Communities or organisations, that establish such policies based on ***ODRL***, do so based on their specific business or public access requirements.

ODRL depends on the use of unique identification of assets. This is a very difficult problem to address and to have agreement across many sectors and is why identification mechanisms and policies of the assets

is outside the scope of ***ODRL***. Sector-specific versions of ***ODRL*** may address the need to infer information about the asset manifestation from its unique identifier.

ODRL model is based on an analysis and survey of sector specific requirements (models and semantics), and as such, aims to be compatible with a broad community base. ***ODRL*** aims to meet the common requirements for many sectors and has been influenced by the ongoing work and specifications / models of the following groups:

- <indecs> [INDECS]
- Electronic Book Exchange [EBX]
- IFLA
- DOI Foundation [DOI]
- ONIX International [ONIX]
- MPEG
- IMS
- Dublin Core Metadata Initiative [DCMI]
- Propagate Project [PROPAGATE]

ODRL proposes to be compatible with the above groups by defining an independent and extensible set of semantics. ***ODRL*** does not depend on any media types as it is aimed for cross-sector interoperability.

2.2 Foundation Model

ODRL is based on a simple, yet extensible, model for rights management which involves the clear separation of Parties, Assets, and Rights descriptions. This is shown in Figure 2.

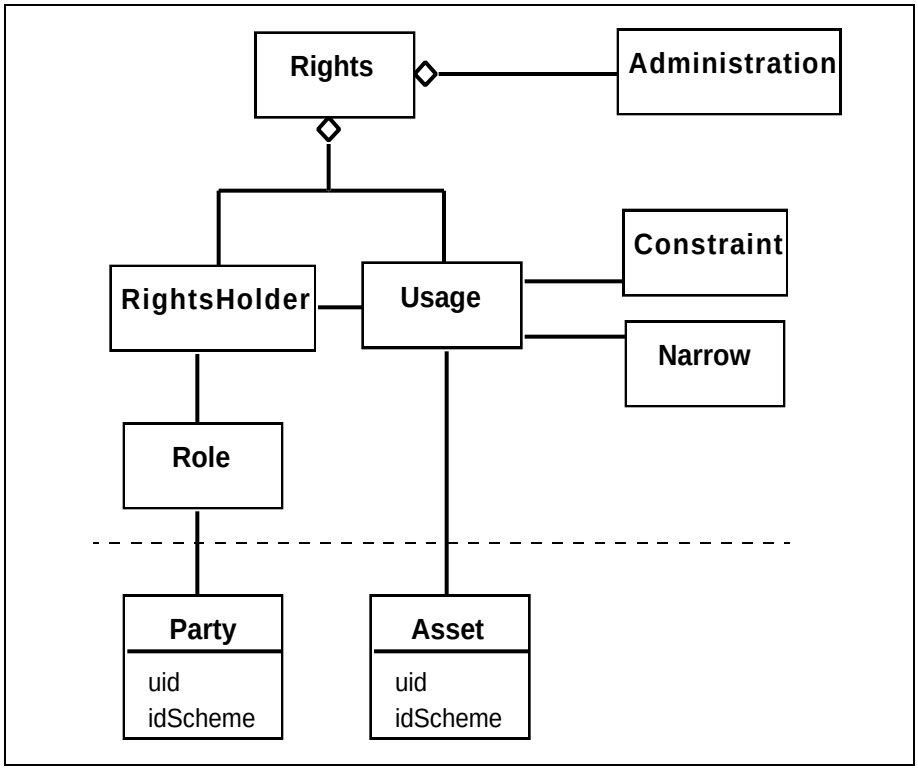

Figure 2. ODRL Foundation Model

The Rights entity consists of Usage, Constraint, Narrow, and RightsHolder which together enable the expression of digital rights over the identified Asset and their Rights Holders (parties). The Parties' Role with respect to their entitlements can also be expressed.

The description of the Party and Asset entities is outside the scope of ***ODRL***. What is in scope is that these entities must be referenced by using unique identification mechanisms (such as [URI], [DOI], [ISBN] etc).

The Asset entity (sometimes referred to as a Work, Content, Creation, or Intellectual Property), is viewed as a whole entity. If the Rights are assigned at the Asset's subpart level, then such parts would require to also be uniquely identifiable. However, ***ODRL*** can specify constraints on subparts of the asset.

The Rights entity also consists of an Administration entity that captures the responsible parties and valid dates of the Rights expression.

Complete and formal semantics for the ***ODRL*** Foundation Model properties and attributes are specified in Section 3.1 "Foundation Semantics" on page 12.

2.2.1 Example

The ***ODRL*** Foundation Model can be expressed using XML. A pseudo-example is shown below:

```
<rights>
    <asset>
        <uid idscheme="URI">http://byeme.com/myasset.pdf</uid>
    </asset>
    <usage>
        <usage-type>
            ...
            <constraint> ... </constraint>
        </usage-type>
        <usage-type>
            ...
            <constraint> ... </constraint>
        </usage-type>
        ...
    </usage>
    <narrow> ... </narrow>
    <rightsholder>
        <party>
            ...
            <role> ... </role>
        </party>
        ...
    </rightsholder>
    <admin>
        <party> ... </party>
        <datetime> .. </datetime>
    </admin>
</rights>
```

Complete and formal syntactical examples are given in Section 4 "Syntax" on page 22.

2.3 Rights Usage Model

ODRL supports the expression of Rights Usages. This is the recognised set of allowable usage rights over the Asset. This is shown in Figure 3.

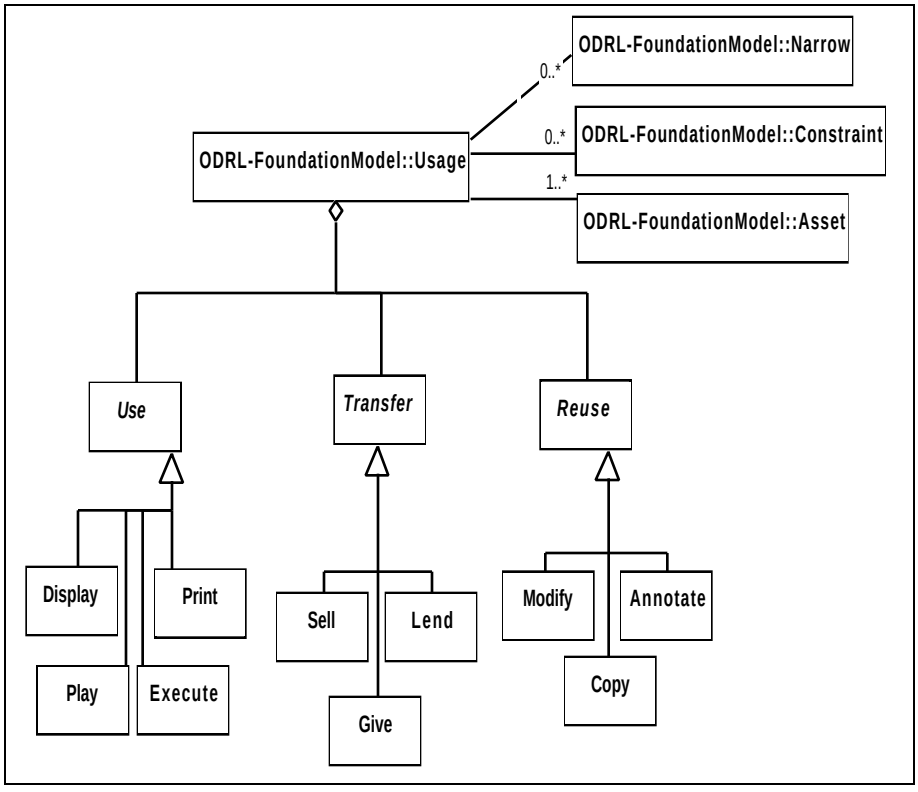

Figure 3. ODRL Usages Model

The Usage entity consists of an aggregation of three abstract entities:

- Use - indicates a set of usages in which the Asset can be consumed (realised with: Display, Print, Play, Execute).
- Transfer - indicates a set of usages in which the rights over the Asset can be transferred (realised with: Sell, Lend, Give).
- Reuse - indicates a set of usages in which the Asset (or portions of it) can be re-utilised (realised with: Modify, Copy, Annotate).

A Usage must be associated with one or more Assets. A Usage can be associated with zero or more Constraints. For any rights expression, all Usages are “and-ed” together including their constraints.

Important Note

A Usage Right that is not specified in any Rights Expressions is not granted. That is, no assumptions should be made in regard to Usage Rights if they are not explicitly mentioned.

Additionally, all Usages can be subject to an “Exclusivity” attribute that indicates if the constraint is exclusive or not.

Complete and formal semantics for the ***ODRL*** Usage Model properties and attributes are specified in Section 3.2 "Usage Semantics" on page 13.

2.3.1 Example

The ***ODRL*** Usage Model can be expressed using XML. A pseudo-example is shown below in which the identified asset has display, print (with constraints), and annotate rights.

```
<usage>
    <asset>
        <uid idscheme="URI">http://byeme.com/myasset.pdf</uid>
    </asset>
    <display/>
    <print>
        <constraint> ... </constraint>
    </print>
    <annotate/>
    ...
</usage>
```

Complete and formal syntactical examples are given in Section 4 "Syntax" on page 22.

2.4 Rights Constraint Model

ODRL supports the expression of Rights Constraints. This is the recognised set of restrictions on the usage rights over the Asset. This is shown in Figure 4.

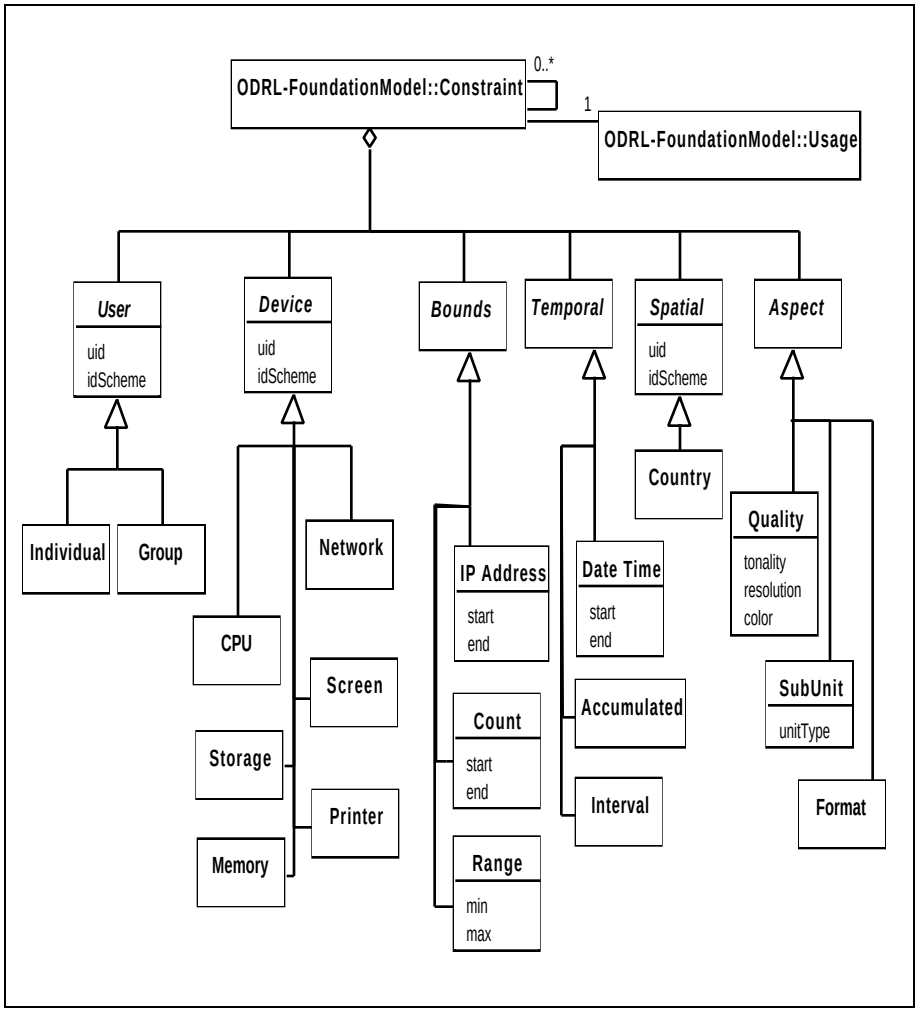

Figure 4. ODRL Constraints Model

The Constraint entity consists of an aggregation of six abstract entities:

- User - indicates a set of constraints which limits usage to identified user(s) (realised with: Individual, Group).
- Device - indicates a set of constraints which limits usage to physical devices (realised with: Network, CPU, Screen, Storage, Printer, Memory).
- Bounds - indicates a set of constraints which limits usage to a fixed number or extent (realised with: Count, Range, IP Address).
- Temporal - indicates a set of constraints which limits usage to temporal boundaries (realised with: Date Time, Accumulated, Interval).
- Spatial - indicates a set of constraints which limits usage to spatial boundaries (realised with: Country).
- Aspect - indicates a set of constraints which limits usage to distinct features of the asset (realised with: Quality, SubUnit, Format).

Additionally, all Constraints can be subject to an “Exclusivity” attribute that indicates if the constraint is exclusive or not.

A Constraint is associated with one Usage. If a Constraint appears at the same level as a number of Usages, then the Constraint applies to all of the Usages. Constraints can also have zero or more other Constraints. For Usages with multiple constraints, all contraints must be “and-ed” together and no conflicts should arise. An error must be generated if the latter is true.

Important Note

Any Constraint that is expressed but can not be performed by the consuming system, must not be granted. That is, if a system does not understand how to guarantee that a specified constraint be honoured it must not grant the Usage right at all.

Complete and formal semantics for the ***ODRL*** Constraint Model properties and attributes are specified in Section 3.3 "Constraint Semantics" on page 16.

2.4.1 Example

The ***ODRL*** Constraint Model can be expressed using XML. A pseudo-example is shown below in which the display usage right is constrained to a particular network within an identified IP address range.

```
<display>
    <constraint>
        <network>
            <constraint>
                <ipaddress start=”111.222.333.1” end =”111.222.333.255” />
            <constraint>
        </network>
    </constraint>
</display>
```

Complete and formal syntactical examples are given in Section 4 "Syntax" on page 22.

2.5 Rights Narrow Model

ODRL supports the expression of Narrowing of Rights. This is the ability to specify if the current Rights can be modified (narrowed or removed) when re-issuing the Rights expression. This is shown in Figure 5.

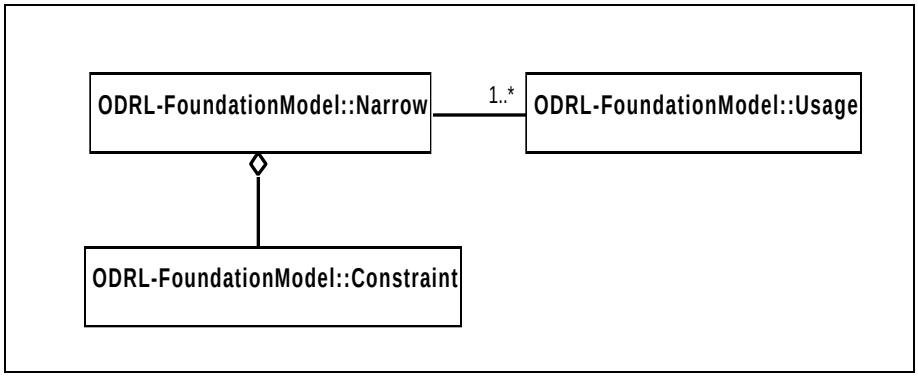

Figure 5. ODRL Narrow Model

The Narrow entity is an aggregation of one other existing entity:

- Constraint - indicates any constraints that the Narrow rights must conform to.

Complete and formal semantics for the ***ODRL*** Narrow Model properties and attributes are specified in Section 3.4 "Narrow Semantics" on page 20.

2.5.1 Example

The ***ODRL*** Narrow Model can be expressed using XML. A pseudo-example is shown below in which sell and lend transfer rights exist for the identified asset and narrow rights are applicable and are also constrained to a particular country.

```
<rights>
    <asset>
        <uid idscheme="URI">http://byeme.com/myasset.pdf</uid>
    </asset>
    <usage>
        <sell/>
        <lend/>
        <narrow>
            <constraint>
                <country>
                    <uid idscheme="ISO3166"> AU </uid>
                </country>
            </constraint>
        </narrow>
    </usage>
</rights>
```

Complete and formal syntactical examples are given in Section 4 "Syntax" on page 22.

2.6 RightsHolder Model

ODRL supports the identification of Rights Holders. This is the recognised Party, their (optional) Role, and any set of rewarding

mechanisms for the usage of the Asset for the Rights Holder. This is shown in Figure 6.

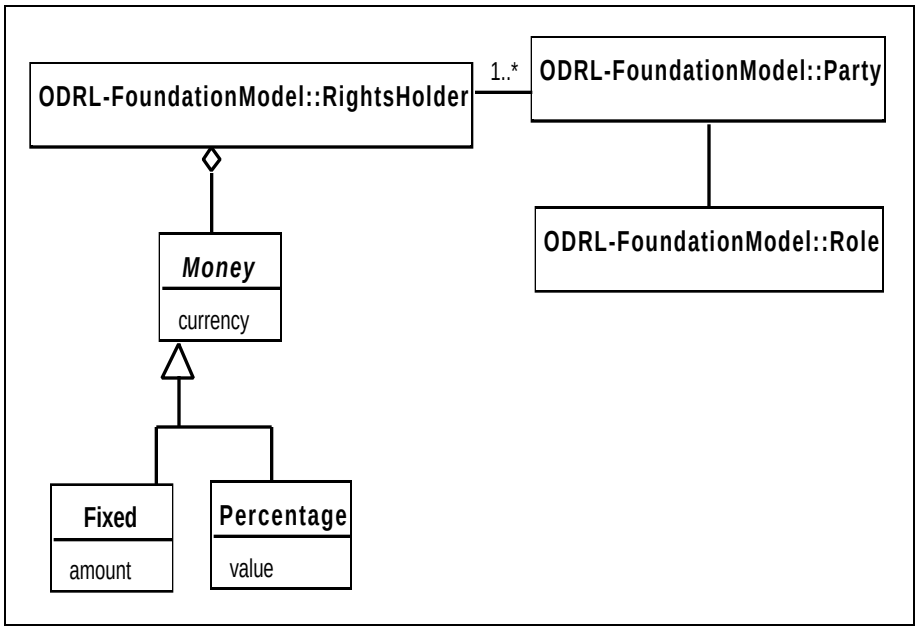

Figure 6. ODRL Rights Holder Model

The RightsHolder entity is an aggregation of one abstract and one existing entity:

- Money - indicates a set of financial rewards associated with the usage of an Asset (realised with: Fixed, Percentage).
- Party - indicates the Rights Holder and the role they play.

One or more Parties must be identified with the RightsHolder expression. The Role of the Party may also be indicated.

Complete and formal semantics for the ***ODRL*** RightsHolder Model properties and attributes are specified in Section 3.5 "RightsHolder Semantics" on page 21.

2.6.1 Example

The ***ODRL*** RightsHolder Model can be expressed using XML. A pseudo-example is shown below in which two identified Rights Holders (parties) share the financial rewards with 90% to the Author and 10% to the Publisher.

```
<rightsholder>
    <party>
        <uid idscheme="X500">c=FOO;o=Federal Library;ou=Registry;
                                cn=Maria Brown</uid>
        <role>Author</role>
        <percentage value="90" currency="AUD"/>
    </party>
    <party>
        <uid idscheme="X500"> c=FOO;o=Federal Library;ou=Registry;
                                cn=Bye Me Inc</uid>
        <role>Publisher</role>
        <percentage value="10" currency="AUD"/>
    </party>
</rightsholder>
```

Complete and formal syntactical examples are given in Section 4 "Syntax" on page 22.

2.7 Rights Administration Model

ODRL supports the Administrative information about the Rights expression. This is shown in Figure 7.

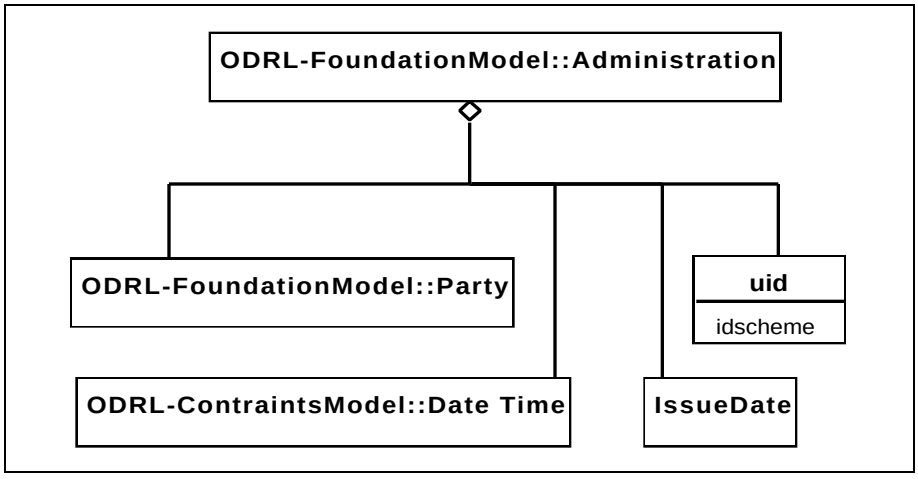

Figure 7. ODRL Administration Model

The Administration entity is an aggregation of three other existing entities and one new entity:

- Party - indicates who is responsible for maintenance of this Rights expression and the (optional) role they play.
- Date Time - indicates the valid date range for the Rights expression.
- Issue Date - indicates the date / time that the Rights expression was issued.
- UID - a unique identification number for the Rights expression

Complete and formal semantics for the ***ODRL*** Administration Model properties and attributes are specified in Section 3.6 "Administration Semantics" on page 21.

2.7.1 Example

The ***ODRL*** Administration Model can be expressed using XML. A pseudo-example is shown below in which the Rights expression is managed by the identified party (the Rights Cataloguer) and is valid for a two year period.

```
<rights>
    <admin>
        <party>
            <uid idscheme="X500"> c=FOO;o=Federal Library;ou=Registry;
                                  cn=Maria Brown</uid>
            <role>Rights Cataloguer</role>
        </party>
        <issuedate> 2000-12-31 </issuedate>
        <datetime start="2001-01-01" end="2001-12-31"/>
        <uid idscheme="URI"> http://byeme.com/mybook-rights.xml</uid>
    </admin>
    ...
</rights>
```

Complete and formal syntactical examples are given in Section 4 "Syntax" on page 22.

3 Semantics

This section details the semantics of all the properties and attributes used in the ***ODRL*** Models.

3.1 Foundation Semantics

Rights

Identifier	rights
Definition	The digital expression of intellectual property rights over an asset
Cardinality	mandatory
Content (entities)	usage rightsholder administration asset narrow

Usage Rights

Identifier	usage
Definition	A defined set of actions or operations allowed over an asset
Cardinality	mandatory
Content (entities)	use transfer reuse

Rights Holder

Identifier	rightsholder
Definition	Any party that holds any form of Rights over the asset
Cardinality	optional
Content (entities)	money party role

Asset

Identifier	asset
Definition	Any object (digital or physical) of value which rights can be assigned
Comment	Must be uniquely identifiable
Cardinality	mandatory
Content (entity)	uid - unique identifier

Party

Identifier	party
Definition	An identifiable person or organisation to which rights may be assigned over assets
Comment	Must be uniquely identifiable
Cardinality	optional
Content (entities)	uid - unique identifier role - role played by the party

UID

Identifier	uid
Definition	The unique identification number / code for the entity
Comment	The uid may be applied to assets, parties, constraints and admin entities.
Cardinality	optional
Content (attribute)	idScheme - encoding scheme used for the unique identifier value

Role

Identifier	role
Definition	The role played by the Party
Comment	The role values may be selected from existing vocabulary schemes. For example: • marc - MARC Code List for Relators [MARC] • onix - ONIX International Contributor Role Code List [ONIX]
Cardinality	optional
Content (attribute)	idScheme - identifies the vocabulary scheme used for the role value

3.2 Usage Semantics

Use

Identifier	use
Definition	A set of Usage rights pertaining to the end use of an asset
Comment	This entity is abstract and used to group common Rights Usages.
Cardinality	optional
Content (entities)	display print play execute

Use: Display

Identifier	display
Definition	The act of rendering the asset onto a screen or visual device
Cardinality	optional
Content (entities)	constraint

Use: Print

Identifier	print
Definition	The act of rendering the asset onto paper or hard copy form
Cardinality	optional
Content (entities)	constraint

Use: Play

Identifier	play
Definition	The act of rendering the asset into audio/video form
Cardinality	optional
Content (entities)	constraint

Use: Execute

Identifier	execute
Definition	The act of rendering the asset into machine-readable form
Cardinality	optional
Content (entities)	constraint

Transfer

Identifier	transfer
Definition	A set of Usage rights pertaining to the transfer of ownership of an asset
Comment	This entity is abstract and used to group common Rights Usages
Cardinality	optional
Content (entities)	sell lend give

Transfer: Sell

Identifier	sell
Definition	The act of allowing the asset to be sold for exchange of value
Cardinality	optional
Content (entities)	constraint

Transfer: Lend

Identifier	lend
Definition	The act of allowing the asset to be available for temporary use then returned
Comment	Time-based constraints are required
Cardinality	optional
Content (entities)	constraint (mandatory)

Transfer: Give

Identifier	give
Definition	The act of allowing the asset to be given away (without exchange of value)
Cardinality	optional
Content (entities)	constraint

Reuse

Identifier	reuse
Definition	A set of Usage rights pertaining to the re-utilisation of an asset
Comment	This entity is abstract and used to group common Rights Usages.
Cardinality	optional
Content (entities)	modify copy annotate

Reuse: Modify

Identifier	modify
Definition	The act of changing parts of the asset creating a new asset
Cardinality	optional
Content (entities)	constraint

Reuse: Copy

Identifier	copy
Definition	The act of extracting parts (or all) of the asset for reuse into another asset
Cardinality	optional
Content (entities)	constraint

Reuse: Annotate

Identifier	annotate
Definition	The act of adding notations/commentaries to the asset creating a new asset
Cardinality	optional
Content (entities)	constraint

3.3 Constraint Semantics

Constraint

Identifier	constraint
Definition	A restriction that applies to the Usage of an asset
Cardinality	optional
Content (entities)	user device bounds temporal spatial aspect

User

Identifier	user
Definition	Any human or organisation
Comment	This entity is abstract and used to group common Constraints
Cardinality	optional
Content (entities)	individual group

User: Individual

Identifier	individual
Definition	An identifiable party acting as an individual
Cardinality	optional
Content (entity)	uid - unique identifier

User: Group

Identifier	group
Definition	A number of identifiable party acting as a collection of individuals
Cardinality	optional
Content (entity)	uid - unique identifier

Device

Identifier	device
Definition	Any electronic or digital equipment
Comment	This entity is abstract and used to group common Constraints
Cardinality	optional
Content (entities)	network cpu screen storage printer memory

Device: Network

Identifier	network
Definition	An identifiable data network
Comment	If below attributes are not sufficient, then IP Address Range can also be used to limit the network.
Cardinality	optional
Content (entity)	uid - unique identifier

Device: CPU

Identifier	cpu
Definition	An identifiable system with a central processing unit (CPU)
Cardinality	optional
Content (entity)	uid - unique identifier

Device: Screen

Identifier	screen
Definition	An identifiable display output screen device
Comment	For example, a screen reader or braille device
Cardinality	optional
Content (entity)	uid - unique identifier

Device: Storage

Identifier	storage
Definition	An identifiable storage media device
Comment	For example, a hard disk or removable cartridge
Cardinality	optional
Content (entity)	uid - unique identifier

Device: Printer

Identifier	printer
Definition	An identifiable hard copy printer
Cardinality	optional
Content (entity)	uid - unique identifier

Device: Memory

Identifier	memory
Definition	An identifiable memory device
Comment	For example, the clipboard
Cardinality	optional
Content (entity)	uid - unique identifier

Bounds

Identifier	bounds
Definition	The numeric limits within which any entity can function
Comment	This entity is abstract and used to group common Constraints.
Cardinality	optional
Content (entities)	Count Range IP Address

Bounds: Count

Identifier	count
Definition	A numeric count indicating the number of times the corresponding entity may be exercised
Comment	For example, the Print usage may be constraint with a count of 1 to 10 meaning that the asset can be printed once or up to 10 times. If there is no “start” or “end” value, then the count is open-ended. Integer, Floats must be supported. Note, “start” must always be less than or equal to “end” and one must always be present.
Cardinality	optional
Content (attributes)	start - the beginning of the count (inclusive) end - the end of the count (inclusive)

Bounds: Range

Identifier	range
Definition	A numeric range indicating the min / max values of the corresponding entity that the constraint applies to
Comment	For example, this is used to specify that only pages numbered 1 to 10 may be printed (using the subunit entity). If there is no “min” or “max” value, then the range is open-ended. Integer, Floats and negative numbers must be supported. Note, “min” must always be less than or equal to “max” and one must always be present.
Cardinality	optional
Content (attributes)	min - the beginning of the range (inclusive) max - the end of the range (inclusive)

Bounds: IP Address

Identifier	ipaddress
Definition	A network IP address range
Comment	There must be “start” and “end” values specified. The IP address format must be supported (Eg xxx.xxx.xxx.xxx).
Cardinality	optional
Content (attributes)	start - the beginning of the range (inclusive) end - the end of the range (inclusive)

Temporal

Identifier	temporal
Definition	The time limits within which any entity can function
Comment	This entity is abstract and used to group common Constraints. [ISO8601] Date format must be supported for all values.
Cardinality	optional
Content (entities)	Date Time Accumulated Interval

Temporal: Date Time

Identifier	datetime
Definition	A date / time-based range
Comment	If there is no “start” and / or “end” value, then the range is open-ended.
Cardinality	optional
Content (attributes)	start - the beginning of the range (inclusive) end - the end of the range (inclusive)

Temporal: Accumulated

Identifier	accumulated
Definition	The maximum amount of metered usage time
Cardinality	optional
Content	data value

Temporal: Interval

Identifier	interval
Definition	Recurring period of time in which rights can be exercised
Cardinality	optional
Content	data value

Spatial

Identifier	spatial
Definition	Any geographical range or extent
Comment	This entity is abstract and used to group common Constraints.
Cardinality	optional
Content (entities)	Country

Spatial: Country

Identifier	country
Definition	Specification of a Country code
Comment	Recommended best practice is to use the codes specified by the [ISO3166] Scheme.
Cardinality	optional
Content (entity)	uid - unique identifier

Aspect

Identifier	aspect
Definition	Any distinct feature of the Asset
Comment	This entity is abstract and used to group common Constraints
Cardinality	optional
Content (entities)	Quality SubUnit Format

Aspect: Quality

Identifier	quality
Definition	Specification of quality aspects of the asset
Cardinality	optional
Content (attributes)	tonality - the bit-depth resolution - the pixel size color - the number of colors

Aspect: SubUnit

Identifier	subunit
Definition	Specification of any sub-part of the asset
Comment	The values for the unittype attribute should be from a well known vocabulary and the source clearly identified.
Cardinality	optional
Content	unittype (attribute) constraint (entity)

Aspect: Format

Identifier	format
Definition	Specification of format(s) of the asset
Comment	The values are taken from the Internet Media Type [IMT] list.
Cardinality	optional
Content	data value

3.4 Narrow Semantics

Narrow

Identifier	narrow
Definition	Specifies modification of down-stream Rights
Cardinality	optional
Content (entities)	constraint

3.5 RightsHolder Semantics

Money

Identifier	money
Definition	Rewards in the form of financial payments
Comment	This entity is abstract and used to group common Reward types for Rights Holders
Cardinality	optional
Content (entities)	Fixed Percentage

Money: Fixed

Identifier	fixed
Definition	A fixed monetary value
Comment	The total of the Fixed values for a single asset must not exceed the Retail Price.
Cardinality	optional
Content (attributes)	amount - the value of the payment (an positive integer to two decimal places) currency - the currency for the amount (use [ISO4217] codes)

Money: Percentage

Identifier	percentage
Definition	A proportion of the value of the asset
Comment	The total of the Percentage values for a single asset must not exceed 100%.
Cardinality	optional
Content (attributes)	value - a number from 0 to 100 inclusive currency - the currency for the amount (use [ISO4217] codes)

3.6 Administration Semantics

Administration

Identifier	admin
Definition	Administrative information about the Rights expression
Cardinality	optional
Content (entities)	party datetime uid issuedate

Administration:
Issue Date

Identifier	issuedate
Definition	The date the Rights expression was issued / released
Comment	[ISO8601] Date format must be supported for all values.
Cardinality	optional
Content	data value

4 Syntax

ODRL can be expressed in [XML] (see [DTD] in Appendix A and [XML SCHEMA] in Appendix B for formal definitions). However, it is also conceivable that ***ODRL*** could be expressed in other syntaxes.

ODRL is XML Namespace aware as its primary target is use with other content description and management systems. The ***ODRL*** XML Namespace URI for *this version* is:

http://odrl.net/0.8/

The final Version 1.0 ***ODRL*** XML Namespace URI will be:

http://odrl.net/1.0/

NOTE: These URIs should be considered *experimental* until the ***ODRL*** specification is formalised by an appropriate body and the new URI is assigned.

ODRL uses XML XLink [XLINK] to refer from XML fragments to other fragments. This is used to express the relationship between the core ***ODRL*** entities such as Asset, Reward, and Usage. Such elements can be identified with the standard ID attribute then referred to via XLink's href attribute. Note, only the "xlink:href" attribute is required to be recognised to support ***ODRL*** expressions.

It is important to recognise that as the ***ODRL*** expressions become more complicated, the need to partition and express linkages (using XLink) becomes paramount in order to have manageable and reusable rights expressions. The linking mechanism allows for quite complex expressions to be generated whilst preserving the interpretability of the overall rights language.

All elements can also have optional Name and Remark elements for human-readable documentation. If the human language needs to be specified for any elements, then the use of the "xml:lang" attribute is recommended.

The XML syntax will be explained via a serious of Use Cases covering different content sectors (ebooks, image, audio, video).

4.1 Ebook Use Case #1

Corky Rossi (an author) and Addison Rossi (an illustrator) publish their ebook via "EBooksRUS Publishers". They wish to allow consumers to purchase the ebook which is restricted to a single CPU only and they are allowed to print a maximum of 2 copies. They will

also allow the first 5 pages (SubUnits) of the ebook to be viewed online for free.

The revenue split is $AUD 10.00 to the Author, $AUD 2.00 to the Illustrator and $AUD 8.00 to the Publisher.

Massimo DiAngelo from “EBooksRUS Publishers” is responsible for maintaining the Rights metadata which has a policy of one year validity on all its metadata.

The XML encoding of this in ***ODRL*** would be:

```
<?xml version="1.0"?>
<rights    xmlns="http://odrl.net/0.8/"
           xmlns:xlink="http://www.w3.org/1999/xlink">

    <admin>
        <party>
            <uid idscheme=”DOI”>doi://10.9999/EP/mdiangelo-001</uid>
            <role>Rights Manager</role>
        </party>
        <datetime start=”2000-07-01” end=”2001-06-30”/>
    </admin>

    <asset ID=”001”>
        <uid idscheme=”DOI”>doi://10.9999/EB/rossi-0001</uid>
        <name> How to Wash Cats </name>
    </asset>

    <usage ID=”002”>
        <asset xlink:href=”#001”/>
        <rightsholder xlink:href=”#003”/>
        <display>
            <remark> Constrain to a particular CPU only </remark>
            <constraint>
                <cpu/>
            </constraint>
        </display>
        <print>
            <remark> Can only Print 2 Copies </remark>
            <constraint>
                <count start=”0” end=”2”/>
            </constraint>
        </print>
    </usage>

    <rightsholder ID=”003”>
        <party>
            <uid idscheme=”DOI”>doi://10.9999/EP/crossi-001</uid>
            <role>Author</role>
            <fixed amount=”10.00” currency=”AUD”/>
        </party>
        <party>
            <uid idscheme=”DOI”>doi://10.9999/EP/arossi-001</uid>
            <role>Illustrator</role>
```

```
            <fixed amount=”2.00” currency=”AUD”/>
        </party>
        <party>
            <uid idscheme=”DOI”>doi://10.9999/EP/ebooksrus-01</uid>
            <role>Publisher</role>
            <fixed amout=”8.00” currency=”AUD”/>
        </party>
    </rightsholder>

    <usage ID=”004”>
        <asset xlink:href=”#001”/>
        <remark> Allow the first 5 pages to be viewable </remark>
        <display>
            <constraint>
                <subunit unittype=”page”>
                    <constraint>
                        <range start=”1” end =”5”/>
                    </constraint>
                </subunit>
            </constraint>
        </display>
    </usage>

</rights>
```

4.2 Ebook Use Case #2

ByeMe.Com is a distributor of ebooks. The ***ODRL*** expression below indicates that they have Sell rights for the identified ebook assets. The next Usage right is constrained to a particular individual (Mary Smith). Mary can also only print the HTML format of the asset for one to a maximum of 100 times. Mary is also limited to a maximum accumulated time of 10 hours of Display rights every 4 days.

```
<?xml version="1.0"?>
<rights    xmlns="http://odrl.net/0.8/"
           xmlns:xlink="http://www.w3.org/1999/xlink">

    <asset ID=”001”>
        <uid idscheme=”URI”>http://byeme.com/mybook.pdf</uid>
        <uid idscheme=”URI”>http://byeme.com/mybook.html</uid>
    </asset>

    <rightsholder ID=”002”>
        <party>
            <uid idscheme=”X500”>c=ZZ;o=Bye Me;cn=R Owner</uid>
            <role idscheme=”marc”> dst </role>
        </party>
    </rightsholder>

    <usage>
        <remark> This usage associates the Distributor with the Sell rights
                 of the assets </remark>
        <asset xlink:href=”#001”/>
        <rightsholder xlink:href=”#002”/>
```

```
        <sell/>
    </usage>

    <usage ID=”003>
        <asset xlink:href=”#001”/>
        <display>
            <constraint>
                <individual>
                    <uid idscheme=”X500” >c=ZZ;o=People Directory;
                                        cn=Mary Smith</uid>
                </individual>
                <accumulated> P10H </accumulated>
                <interval> P4D </interval>
            </constraint>
        </display>
        <print>
            <constraint>
                <format>text/html</format>
                <count start=”1” end=”100”/>
            </constraint>
        </print>
    </usage>

</rights>
```

4.3 Ebook Use Case #3

The ebook for an “Electronic Book Exchange” voucher is entitled “XML: A Manager’s Guide” by “Kevin Dick”. The rights owner is Addison-Wesley.

The Distributor of this book is a company called “XYZ”. They have rights to Sell up to 5000 copies of the book. The have “Narrow” rights for Sell.

The licensed end user for this book is “John Doe”. He has rights to view the book for 30 days before the end of 2004. He can print up to 5 copies on a “trusted printer” before the end of the year 2004. He can print up to 5 pages between page 1 and 100 every week - up to a total of 100 pages - on a “conventional printer” - before the end of 2004. He can also extract 5000 bytes every week up to a total of 1,000,000 bytes onto the Clipboard before the end of 2004. He has a right to Give the book away after one year of the usage starting.

```
<?xml version="1.0"?>
<rights    xmlns="http://odrl.net/0.8/"
           xmlns:xlink="http://www.w3.org/1999/xlink"
           xmlns:ebx="http://ebxwg.org/voucher/1.0/">

    <admin>
        <remark> Info about the Voucher </remark>
        <datetime start=“2000-06-07” end=“2001-06-07”/>
    </admin>

    <asset ID=“Ebook-0001”>
        <remark> The product ID info </remark>
```

```
    <uid idscheme="ISBN"> 0201433354 </uid>
    <name> XML: A Managers Guide </name>
</asset>

<rightsholder ID="RH-PUB-1">
    <remark> The Rights Holder (publisher) info </remark>
    <party>
        <uid idscheme="URL"> http://www.awl.com/ </uid>
        <name> Addison-Wesley </name>
        <role> Publisher </role>
    </party>
</rightsholder>

<usage ID="USE-DIST-1">
    <remark> Usage Rights for the Distributor </remark>
    <asset xlink:href="#Ebook-0001"/>

    <rightsholder>
        <remark> The Rights Holder (distributor) info </remark>
        <party>
            <uid idscheme="CG-ID"> ABDC-1234 </uid>
            <name> XYZ </name>
            <role> Distributor </role>
        </party>
    </rightsholder>

    <sell>
        <constraint> <count start="0" end ="5000"/> </constraint>
        <narrow/>
    </sell>
    <remark> Distributor also has Narrow rights over the End User
                rights </remark>
    <narrow xlink:href="EU-00001"/>
</usage>

<usage ID="EU-00001">
    <remark> Usage Rights for a typical End User</remark>
    <asset xlink:href="#Ebook-0001"/>

    <constraint>
        <remark> All usages are Licensed to Mr Doe </remark>
        <datetime start="1999-10-13"/>
        <individual>
            <uid idscheme="Lic-ID"> 92840-AA9-39849-00 </uid>
            <name> John Doe</name>
        </individual>
    </constraint>

    <display>
        <remark> View the work for 30 day period until 2004 </remark>
        <constraint>
            <accumulated> P30D </accumulated>
            <datetime end="2004-12-31"/>
```

```
    </constraint>
</display>

<print>
    <remark> Print the work up to 5 times on a trusted printer
                until 2004 </remark>
    <constraint>
        <count start=”0” end =”5”/>
        <printer>
            <uid idscheme=”ABC”> MyTrustedPrinterID </uid>
        </printer>
        <datetime end=“2004-12-31”/>
    </constraint>
</print>

<print>
    <remark> Print up to 5 pages in any week period - between the
                pages 1 and 100 - up to a total of 100 pages - on a
                conventional printer - until 2004 </remark>
    <constraint>
        <subunit unittype=“ebx:page”>
            <constraint> <count end = “100”/> </constraint>
        </subunit>
        <subunit unittype=“ebx:page”>
            <constraint>
                <count end = “5”/>
                <range min= “1” max = “100”/>
                <interval> P7D </interval>
            </constraint>
        </subunit>
        <printer>
            <uid idscheme = “ABC”> AnyPrinterID </uid>
        </printer>
        <datetime end=“2004-12-31”/>
    </constraint>
</print>

<copy>
    <remark> Extract 5000 Bytes onto the Clipboard every
        week - up to a total of 1,000,000 Bytes - until 2004 </remark>
    <constraint>
        <memory/>
        <subunit unittype=“ebx:byte”>
            <constraint>
                <count end =”5000”/>
                <interval> P7D </interval>
            </constraint>
        </subunit>
        <subunit unittype=“ebx:byte”>
            <constraint>
                <count end =”1,000,000”/>
            </constraint>
        </subunit>
```

```
            <datetime end="2004-12-31"/>
        </constraint>
    </copy>

    <remark> All the ebook to be given away (after one year) </remark>
    <give>
        <constraint>
            <datetime start="2000-10-13"/>
        </constraint>
    </give>

  </usage>

</rights>
```

4.4 Image Use Case

To do...

4.5 Video Use Case

To do...

4.6 Audio Use Case

To do...

5 References

Technical Standards:

- [DCMI] Dublin Core Metadata Initiative
  <http://purl.org/DC/>
- [DOI] Digital Object Identifier
  <http://www.doi.org/>
- [DTD] Document Type Definition
- [EBX] Electronic Book Exchange
  <http://www.ebxwg.org/>
- [IFLA] Functional Requirements for Bibliographic Records
  <http://www.ifla.org/VII/s13/frbr/frbr.htm>
- [IMS] Instructional Management Systems
  <http://www.imsproject.org/>
- [IMT] Internet Media Types
  <http://www.isi.edu/in-notes/iana/assignments/media-types/media-types>
- [INDECS] Interoperability of Data in Ecommerce Systems
  <http://www.indecs.org/>
- [ISBN] International Standard Book Number
- [ISO3166] Country Names and Code Elements
  <http://www.din.de/gremien/nas/nabd/iso3166ma/codlstp1/>
- [ISO4217] Currency Names
  <http://www.xe.net/gen/iso4217.htm>

- [ISO8601] ISO (International Organization for Standardization). Representations of dates and times
  <http://www.iso.ch/markete/8601.pdf>
- [MARC] MARC Code List for Relators
  <http://www.loc.gov/marc/relators/re0002r1.html>
- [MPEG] Moving Picture Experts Group (WG 4,7,21)
  <http://www.cselt.it/leonardo/mpeg/>
- [ONIX] ONIC International V1.1
  <http://www.editeur.org/onix.html>
- [PROPAGATE] Propagate Project
  <http://www.propagate.net/>
- [RFC2119] Key words for use in RFCs to Indicate Requirement Levels
  <http://www.ietf.org/rfc/rfc2119.txt>
- [URI] Uniform Resource Identifiers (URI): Generic Syntax
  <http://www.ietf.org/rfc/rfc2396.txt>
- [VCARD] vCard MIME Directory Profile
  <http://www.ietf.org/rfc/rfc2426.txt>
- [XLINK] XML Linking Language (XLink) Version 1.0
  <http://www.w3.org/TR/xlink/>
- [XML] Extensible Markup Language 1.0
  <http://www.w3.org/TR/REC-xml>
- [XML NAMESPACE] Namespaces in XML
  <http://www.w3.org/TR/REC-xml-names/>
- [XML SCHEMA] XMl Schemas Part 1: Structures
  <http://www.w3.org/TR/xmlschema-1/>

Position Papers:

- [ERICKSON] Toward an Open Rights Management Interoperability Framework, John S Erickson.
  <http://www.oasis-open.org/cover/ericksonRT19990624.pdf>
- [HIGGS] The Nature of Knowledge and Rights Management Systems, Peter Higgs.
  <http://www.iprsystems.com/html/rights_management.html>

6 Acknowledgements

The editors wish to acknowledge contributions and feedback to this document from:

- Peter Higgs, IPR Systems
- David Parrott, Reuters
- Robert Bolick, McGraw-Hill

Appendix: A ODRL DTD (Normative)

```
<!ELEMENT rights  (admin? | asset+ | usage+ | rightsholder* | name? | remark? |
narrow* )>
<!ATTLIST    rights    xmlns:xlink    CDATA    #REQUIRED
                       xmlns          CDATA    #REQUIRED >
```

```
<!ELEMENT name  (#PCDATA )>
<!ELEMENT remark  (#PCDATA )>

<!ELEMENT admin  (name? | remark? | party* | datetime? | issuedate? | uid?)>

<!ELEMENT party  (name? | remark? | uid+ | role? | percentage? | fixed? )>

<!ELEMENT uid  (#PCDATA )>
<!ATTLIST uid  idscheme CDATA  #REQUIRED >

<!ELEMENT role  (#PCDATA )>
<!ATTLIST role idscheme CDATA  #IMPLIED >

<!ELEMENT issuedate (#PCDATA )>

<!ELEMENT asset  (uid+ | name? | remark? )>
<!ATTLIST asset      xlink:href  CDATA     #IMPLIED
                      ID         CDATA     #IMPLIED >

<!ELEMENT usage  (asset* | display* | rightsholder* | print* | play* | execute* | sell*
| lend* | give* | modify* | annotate* | copy* | constraint* | name? | remark? )>
<!ATTLIST usage      xlink:href  CDATA     #IMPLIED
                      ID         CDATA     #IMPLIED >


<!ELEMENT print  (name? | remark? | constraint* )>

<!ELEMENT display  (name? | remark? | constraint* )>

<!ELEMENT play  (name? | remark? | constraint* )>

<!ELEMENT execute  (name? | remark? | constraint* )>

<!ELEMENT sell  (name? | remark? | constraint* )>

<!ELEMENT lend  (name? | remark? | constraint* )>

<!ELEMENT give  (name? | remark? | constraint* )>

<!ELEMENT modify  (name? | remark? | constraint* )>

<!ELEMENT annotate  (name? | remark? | constraint* )>

<!ELEMENT copy  (name? | remark? | constraint* )>

<!ELEMENT constraint  (accumulated* | interval* | datetime* | country* | quality* |
count* | range* | ipaddress* | subunit* | individual* | group* | format* | cpu* |
network* | screen* | storage* | memory* | printer* | name? | remark? )>

<!ELEMENT individual  (uid+ | name? | remark? | constraint* )>

<!ELEMENT group  (uid+ | name? | remark? | constraint* )>

<!ELEMENT cpu  (uid+ | name? | remark? | constraint* )>

<!ELEMENT network  (uid+ | name? | remark? | constraint* )>

<!ELEMENT screen  (uid+ | name? | remark? | constraint* )>

<!ELEMENT storage  (uid+ | name? | remark? | constraint* )>

<!ELEMENT memory  (uid+ | name? | remark? | constraint* )>
```

```
<!ELEMENT printer  (uid+ | name? | remark? | constraint* )>

<!ELEMENT count EMPTY>
<!ATTLIST count end     CDATA     #IMPLIED
                start   CDATA     #IMPLIED >

<!ELEMENT range EMPTY>
<!ATTLIST range min     CDATA     #IMPLIED
                max     CDATA     #IMPLIED >

<!ELEMENT ipaddress EMPTY>
<!ATTLIST ipaddress     end     CDATA     #REQUIRED
                        start   CDATA     #REQUIRED >

<!ELEMENT datetime EMPTY>
<!ATTLIST datetime  end     CDATA     #IMPLIED
                    start   CDATA     #IMPLIED >

<!ELEMENT accumulated  (#PCDATA )>

<!ELEMENT interval  (#PCDATA )>

<!ELEMENT country  (uid+ | name? | remark? | constraint* )>

<!ELEMENT quality EMPTY>
<!ATTLIST quality   resolution  CDATA     #IMPLIED
                    color       CDATA     #IMPLIED
                    tonality    CDATA     #IMPLIED >

<!ELEMENT subunit  (name? | remark? | constraint* )>
<!ATTLIST subunit  unittype CDATA  #REQUIRED >

<!ELEMENT format  (#PCDATA )>

<!ELEMENT rightsholder (party+ | fixed* | percentage* | name? | remark? )>
<!ATTLIST rightsholder  ID          CDATA     #IMPLIED
                        xlink:href  CDATA     #IMPLIED >

<!ELEMENT fixed  (name? | remark? | party+ )>
<!ATTLIST fixed   currency   CDATA     #REQUIRED
                  amount     CDATA     #REQUIRED >

<!ELEMENT percentage  (name? | remark? | party+ )>
<!ATTLIST percentage   currency   CDATA     #REQUIRED
                       value      CDATA     #REQUIRED >

<!ELEMENT narrow EMPTY>
<!ATTLIST narrow  xlink:href CDATA  #IMPLIED >
```

Appendix: B ODRL XML Schema (Non-Normative)

NOTE: The XML Schema will become Normative when the XML Schema becomes a W3C Recommendation. Version 0.9 of ODRL will contain the XML Schema based on its current “Candidate Recommendation” status.