# Open Digital Rights Language (ODRL)

Version: 0.7
Date: 2000-10-13
This Version: <http://odrl.net/ODRL-07.pdf>
Previous Versions: <http://odrl.net/ODRL-05.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 0.5

## 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.

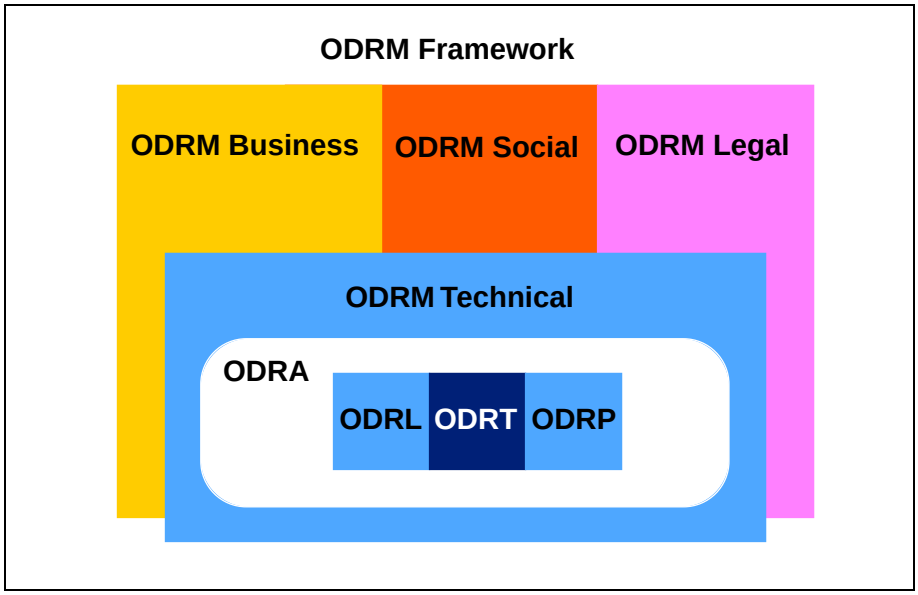


Figure 1. ODRM Framework

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
- MPEG
- IMS
- Dublin Core Metadata Initiative [DCMI]

***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.

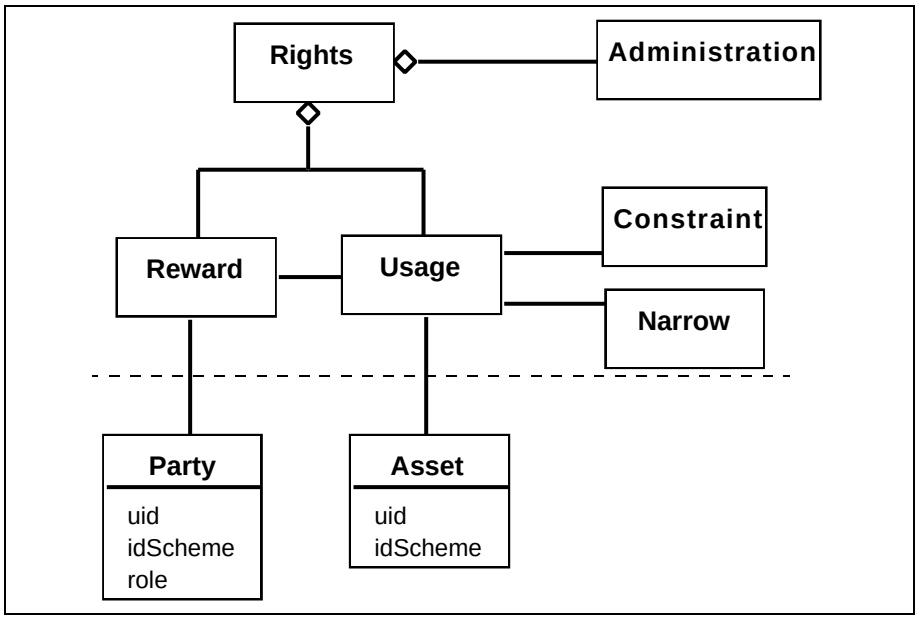


Figure 2. ODRL Foundation Model

The Rights entity consists of Usage, Constraint, Narrow, and Reward which together enable the expression of digital rights over the identified Asset and their Rights Holders (parties). The Parties' Role with respect to their Rewards 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>
    <reward>
        <reward-type>
            <party>
            ...
                <role> ... </role>
            </party>
        </reward-type>
        ...
    </reward>
    <admin>
        <party> ... </party>
        <datetime> .. </datetime>
    </admin>
</rights>
```

Complete and formal syntactical examples are given in Section 4 "Syntax" on page 21.

## 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.

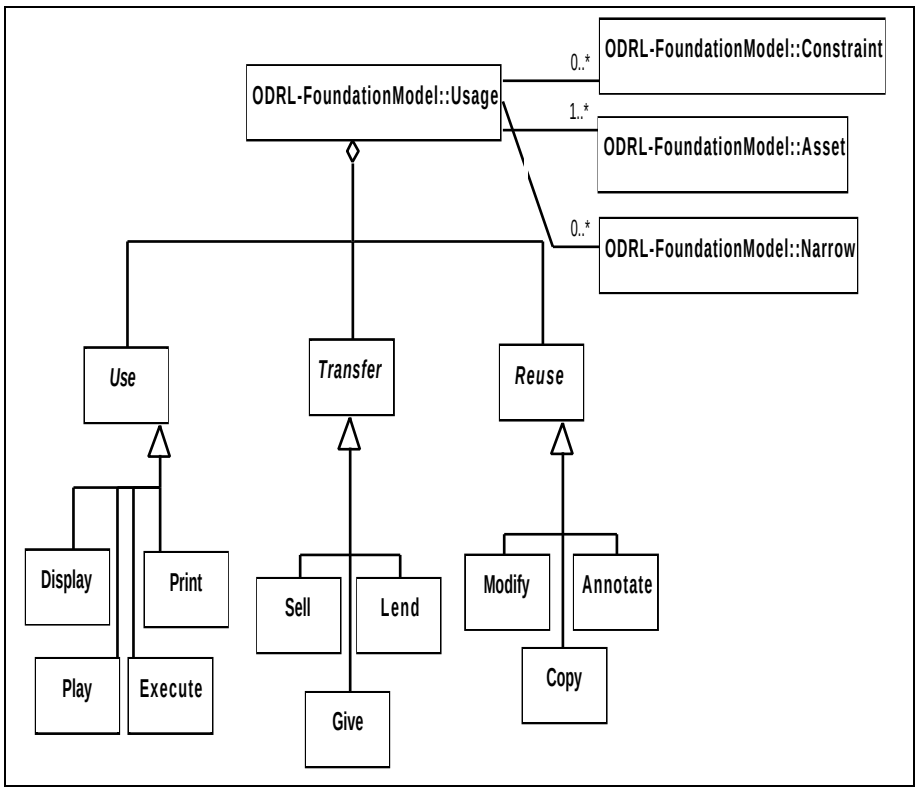


Figure 3. ODRL Usages Model

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.

*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 21.

## 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.

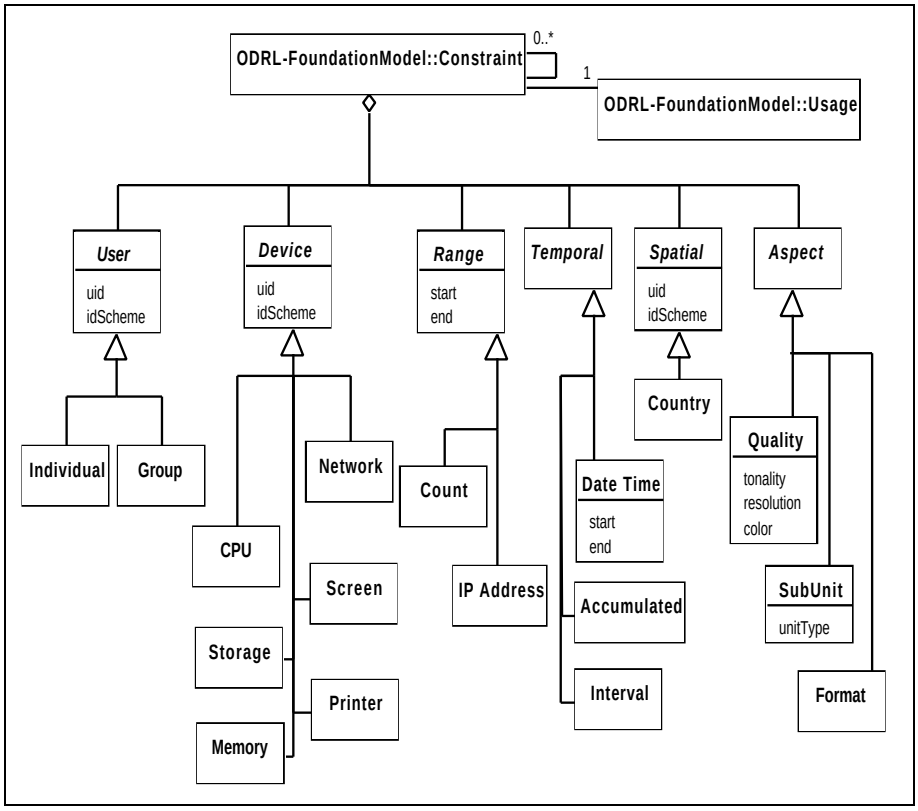


Figure 4. ODRL Constraints Model

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).
- Range - indicates a set of constraints which limits usage to a fixed number or extent (realised with: Count, 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 Usages. Constraints can also have zero or more other Constraints.

*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 an all.

Complete and formal semantics for the ***ODRL*** Constraint Model properties and attributes are specified in Section 3.3 "Constraint Semantics" on page 15.

### 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 21.

## 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 a Rights expression. This is shown in Figure 5.

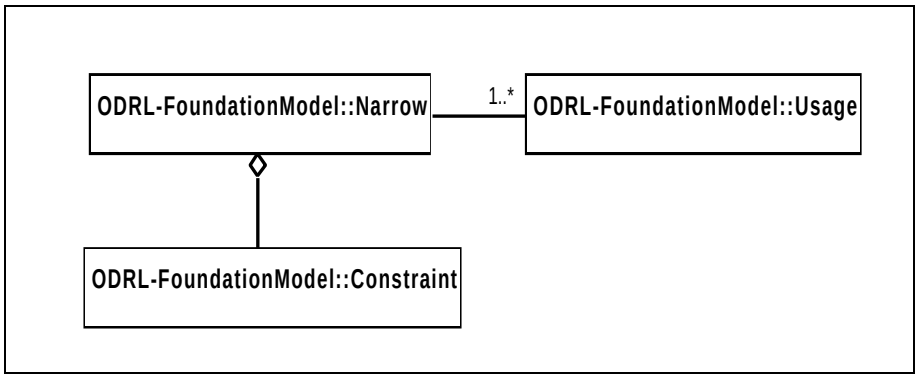


Figure 5. ODRL Narrow Model

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/>
    </usage>
    <narrow>
        <constraint>
            <country>
                <uid idscheme=”ISO3166”> AU </uid>
            </country>
        </constraint>
    </narrow>
</rights>
```

Complete and formal syntactical examples are given in Section 4 "Syntax" on page 21.

## 2.6 Rights Reward Model

***ODRL*** supports the expression of Rights Rewards. This is the recognised set of rewarding mechanisms for the usage of the Asset and the Rights Holders (parties). This is shown in Figure 6.

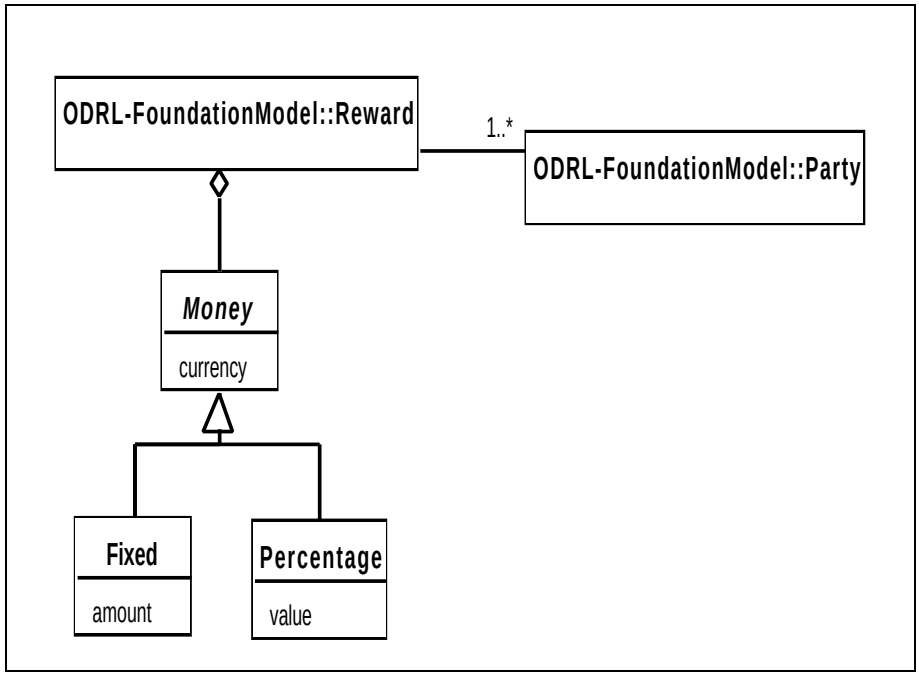


Figure 6. ODRL Rewards Model

The Reward entity is an aggregation of one abstract entity:

- Money - indicates a set of financial rewards associated with the usage of an Asset (realised with: Fixed, Percentage).

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

Complete and formal semantics for the ***ODRL*** Reward Model properties and attributes are specified in Section 3.5 "Reward Semantics" on page 20.

### 2.6.1 Example

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

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

```
        </percentage>
    </reward>
```

Complete and formal syntactical examples are given in Section 4 "Syntax" on page 21.

## 2.7 Rights Administration Model

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

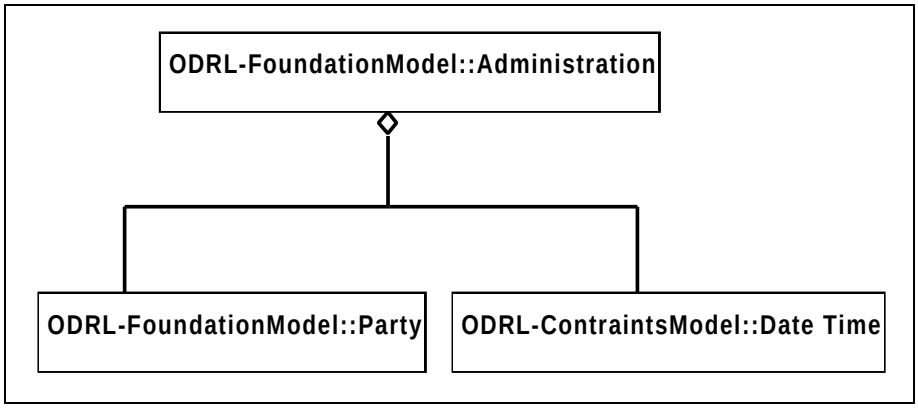


Figure 7. ODRL Administration Model

The Administration entity is an aggregation of two other existing entities:

- Party - indicates who is responsible for maintenance of this Rights expression).
- Date Time - indicates the valid date range 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>
        <datetime start="2000-01-01" end="2001-12-31"/>
    </admin>
    ...
</rights>
```

Complete and formal syntactical examples are given in Section 4 "Syntax" on page 21.

# 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<br>reward<br>administration<br>asset<br>narrow |

### Usage Rights

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

### Reward

| | |
|---|---|
| Identifier | reward |
| Definition | Any form of value that may be exchanged for agreement to the conditions of the rights expressions |
| Cardinality | optional |
| Content (entities) | money<br>party |

### Asset

| | |
|---|---|
| Identifier | asset |
| Definition | Any object (digital or physical) of value which rights can be assigned |
| Comment | Must be uniquely identifiable |
| Cardinality | mandatory |
| Content | uid - unique identifier (entity)<br>idScheme - scheme used for the uid (attribute) |

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 | uid - unique identifier (entity)<br>idScheme - scheme used for the uid (attribute)<br>role - role played by the party (entity) |

## 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<br>print<br>play<br>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<br>lend<br>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<br>copy<br>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<br>device<br>range<br>temporal<br>spatial<br>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<br>group |

User: Individual

| | |
|---|---|
| Identifier | individual |
| Definition | An identifiable party acting as an individual |
| Cardinality | optional |
| Content | uid - unique identifier (entity)<br>idScheme - scheme used for the uid (attribute) |

User: Group

| | |
|---|---|
| Identifier | group |
| Definition | A number of identifiable party acting as a collection of individuals |
| Cardinality | optional |
| Content | uid - unique identifier (entity)<br>idScheme - scheme used for the uid (attribute) |

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<br>CPU<br>Screen<br>Storage<br>Printer<br>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 | uid - unique identifier (entity)<br>idScheme - scheme used for the uid (attribute) |

Device: CPU

| | |
|---|---|
| Identifier | cpu |
| Definition | An identifiable system with a central processing unit (CPU) |
| Cardinality | optional |
| Content | uid - unique identifier (entity)<br>idScheme - scheme used for the uid (attribute) |

Device: Screen

| | |
|---|---|
| Identifier | screen |
| Definition | An identifiable display output screen device |
| Comment | For example, a screen reader or braille device |
| Cardinality | optional |
| Content | uid - unique identifier (entity)<br>idScheme - scheme used for the uid (attribute) |

Device: Storage

| | |
|---|---|
| Identifier | storage |
| Definition | An identifiable storage media device |
| Comment | For example, a hard disk or removable cartridge |
| Cardinality | optional |
| Content | uid - unique identifier (entity)<br>idScheme - scheme used for the uid (attribute) |

Device: Printer

| | |
|---|---|
| Identifier | printer |
| Definition | An identifiable hard copy printer |
| Cardinality | optional |
| Content | uid - unique identifier (entity)<br>idScheme - scheme used for the uid (attribute) |

Device: Memory

| | |
|---|---|
| Identifier | memory |
| Definition | An identifiable memory device |
| Comment | For example, the clipboard |
| Cardinality | optional |
| Content | uid - unique identifier (entity)<br>idScheme - scheme used for the uid (attribute) |

Range

| | |
|---|---|
| Identifier | range |
| 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<br>IP Address |

Range: Count

| | |
|---|---|
| Identifier | count |
| Definition | A numeric value range |
| Comment | If there is no “start” or “end” value, then the range is open-ended. Integer, Floats and negative numbers must be supported. Start / End are also synonyms for Minimum / Maximum. |
| Cardinality | optional |
| Content (attributes) | start - the beginning of the range (inclusive)<br>end - the end of the range (inclusive) |

Range: 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)<br>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<br>Accumulated<br>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)<br>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 | uid - unique identifier (entity)<br>idScheme - scheme used for the uid (attribute) |

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<br>SubUnit<br>Format |

Aspect: Quality

| | |
|---|---|
| Identifier | quality |
| Definition | Specification of quality aspects of the asset |
| Cardinality | optional |
| Content (attributes) | tonality - the bit-depth<br>resolution - the pixel size<br>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)<br>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 Reward Semantics

Money

| | |
|---|---|
| Identifier | money |
| Definition | Rewards in the form of financial payments |
| Comment | This entity is abstract and used to group common Reward types. |
| Cardinality | optional |
| Content (entities) | Fixed<br>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)<br>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<br>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<br>datetime |

## 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/0.7/

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 a new URI 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.

All elements can also have optional Name and Remark elements for human-readable documentation.

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/0.7/"
           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”>
      <reward 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>
   <reward href=”#003”>
      <fixed amout=”10.00” currency=”AUD”>
         <party>
            <uid idscheme=”DOI”>doi://10.9999/EP/crossi-001</uid>
            <role>Author</role>
         </party>
      </fixed>
      <fixed amout=”2.00” currency=”AUD”>
         <party>
            <uid idscheme=”DOI”>doi://10.9999/EP/arossi-001</uid>
            <role>Illustrator</role>
         </party>
      </fixed>
      <fixed amout=”8.00” currency=”AUD”>
         <party>
            <uid idscheme=”DOI”>doi://10.9999/EP/ebooksrus-01</uid>
            <role>Publisher</role>
         </party>
```

```
        </fixed>
    </reward>
    <usage ID="004">
        <asset xlink:href="#001">
        <remark> Allow the first 5 pages to be viewable. Note that there
                are no Rewards associated with this Usage and hence
                no payments required </remark>
        <display>
            <constraint>
                <subunit unittype="page">
                    <constraint>
                        <count 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/0.7/"
           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>
    <reward ID="002">
        <party>
            <uid idscheme="X500">c=ZZ;o=Bye Me;cn=R Owner</uid>
            <role>Distributor</role>
        </party>
    </reward>
    <usage>
        <remark> This usage associates the Distributor with the Sell rights
                of the assets </remark>
        <asset xlink:href="#001"/>
        <reward 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>
```

### 4.3 Image Use Case

To do...

### 4.4 Video Use Case

To do...

### 4.5 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>

- [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>
- [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+ | reward* | name? | remark? |
narrow* )>
<!ATTLIST    rights      xmlns:xlink    CDATA    #REQUIRED
                         xmlns          CDATA    #REQUIRED >

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

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

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

<!ELEMENT uid  (#PCDATA )>
```

```
<!ATTLIST uid  idscheme CDATA  #REQUIRED >

<!ELEMENT role  (#PCDATA )>

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

<!ELEMENT usage  (asset* | display* | reward* | print* | play* | execute* | sell* |
lend* | give* | modify* | annotate* | copy* | name? | remark? )>

<!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* | 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     #REQUIRED
                start   CDATA     #REQUIRED >

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

<!ELEMENT datetime EMPTY>
<!ATTLIST datetime  end     CDATA     #REQUIRED
                    start   CDATA     #REQUIRED >
```

```
<!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 reward  (fixed* | percentage* | name? | remark? )>
<!ATTLIST reward    ID         CDATA    #IMPLIED
                    xlink:href CDATA    #IMPLIED >

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

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

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

## Appendix: B ODRL XML Schema (Non-Normative)

NOTE: The XML Schema will become Normative when the XML Schema becomes a W3C Recommendation.

To do...