Title:	Open Digital Rights Language (ODRL) Submission to the MPEG-21 CfP for a RDD-REL
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1   Introduction

This document outlines the response from the submitting organisations (IPR Systems and Nokia) to the MPEG Call for Requirements (CfR) for a "Rights Data Dictionary and a Rights Expression Language" (RDD-REL) [N4335].

The submission is based on extensive research, development, and implementation experience with digital rights management systems by the submitting organisations. Nokia's Mobile Rights Voucher (MRV) and Real Network's Extensible Media Commerce Language (XMCL) have been merged into IPR System's Open Digital Rights Language (ODRL). The submitting organisations are confident the resultant submission meets and exceeds the expectations of the CfP and is committed to working with MPEG-21 in developing the RDD-REL international standard.

Other supporters of the ODRL submission include IBM, Adobe, Panasonic, MarkAny, Simpsons Solicitors, OzAuthors, Pipers, ARPA, Vienna University, and Information Management Australia.

2   Submission Contents

This submission (m7598) consists of the following normative parts:
* Overview and Response (m7598.pdf)
* Open Digital Rights Language (ODRL) Version 1.0 (ODRL-10.pdf)
* ODRL REL XML Schema (ODRL-EX-10.xsd)
* ODRL RDD XML Schema (ODRL-DD-10.xsd)
* Registration Form (Rego.doc)

Additionally, this submission consists of the following informative parts:
* ODRL Examples ("ODRL-Examples" directory)
* ODRL REL XML Schema Documentation ("ODRL-EX-10-DOC" directory)
* ODRL RDD XML Schema Documentation ("ODRL-DD-10-DOC" directory)
* ODRL Version 1.0 HTML format ("ODRL-10-HTML" directory)

3   Requirements Assessment

The table below outlines the MPEG RDD-REL Requirements [N4336] (number and title) and indicates how these are satisfied by the Open Digital Rights Language (ODRL) as indicated in the following table columns:

- Requirement Met:
  - "F" indicates Fully addressed
  - "P" indicates Partially addressed
  - "N" indicates Not addressed
- ODRL Section Number - Indicates the appropriate sections in the ODRL Version 1.0 specification relevant to the requirement.
- Remarks - Information about how ODRL addresses the requirement.

Req No	Requirement Title	Req Met	ODRL Sect Nos	Remarks
General Requirements				
2.1.1	Support of Multiple Usage/Business Models	F	All	ODRL has been designed to meet flexible requirements for varied business models. Section 4.4 gives examples of such usage. There are no limiting aspects to ODRL that would impede such models.
2.1.2	Articulation of Roles	F	2.7 3.5	The <context> element enables the specification of <role> element including identifying the vocabulary scheme. Current support is for the MPEG7, MARC and ONIX roles terms.
2.1.3	Definition of Terms	F	3.0 4.0	ODRL's data dictionary uses a subset of the ISO 11179 (Data Elements) specification to support clear definitions. ODRL's XML syntax mandates the use of XML Namespaces to also identify the semantics.
2.1.4	Standard Identification Systems	F	3.5	The <uid> element supports multiple identification schemes, including all the ISO identification systems.
2.1.5	Interoperability	F	All	ODRL is designed for interoperability as it utilises a standard encoding syntax (XML) and schema (XML Schema). This enables systems to inter-operate on Users rights expressions.

Req No	Requirement Title	Req Met	ODRL Sect Nos	Remarks
2.1.6	Extensibility	F	5.0	ODRL is designed for extensibility as its Data Dictionary itself is designed as a plug-in module. Other communities can define their own Data Dictionaries that plug- into the ODRL expression language.
2.1.7	Customisability	F	All	ODRL is designed for customisability as profiles (subsets) of Data Dictionary can be utilised to meet different purposes.
2.1.8	Expressiveness	F	All	ODRL is designed for expressiveness as it allows any Users to make rights assertions over any Digital Items.
2.1.9	Machine Readable Language	F	4.0	ODRL statements are expressed in XML syntax and the ODRL schema is in the XML Schema language.
2.1.10	Adding New and Modifying Existing Expressions	F	All	Being based on XML, the ODRL language allows any rights expression to be created and/or modified.
2.1.11	Identification and Description of Rights Expressions	F	2.7 3.5	The <context> element allows rights expressions (including offers, agreements and permissions) to have unique identity assigned with the <uid> element.
2.1.12	Authentication of Expressions	F	2.11	ODRL security features include full support for Digital Signatures.
2.1.13	Verification of Expressions	F	2.11	ODRL security features include full support for Digital Signatures.
2.1.14	Multiple Expressions Conflict	P	2.7 3.5	Without a global rights repository, this requirement is difficult to provide an automated resolution service for conflicting rights expressions. A partial solution would be to use the <version> element (inside <context>) to indicate a priority number for particular rights expressions (coming from a trusted source). Digital Signatures must be used to ensure that the numbers can be trusted.
2.1.15	Permission by Contract and/or Legislation	F	2.9	ODRL supports the explicit expression of agreements (ie contract licenses).
2.1.16	Expression Language Support of Dictionary Terms	F	2.0 3.0	ODRL supports all the terms defined in its data dictionary.

Req No	Requirement Title	Req Met	ODRL Sect Nos	Remarks
2.1.17	Written in Open, Standard Meta-Language	F	4.0	The ODRL normative language is defined in W3C XML Schema.
2.1.18	Well-Defined Semantics	F	3.0	The ODRL data dictionary terms are well defined concepts.
2.1.19	A Core Set of Primitives	F	3.0	The ODRL data dictionary includes core terms that can be used to build more complex business models.
2.1.20	Sequencing	F	2.13	ODRL support total and partial sequence ordering.
2.1.21	Inheritance Semantics	F	2.15	ODRL supports the inheritance of rights expressions including override specification.
2.1.22	Minimising Overheads	F	4.5	As ODRL is based on XML, use of WBXML is recommended.
Digital Item Requirements				
2.2.1	Digital Item Description	F	3.5	The <reference> element can link to external descriptive metadata about the Digital Item.
2.2.2	Creation Types	F	2.1	The <asset> element can be associated with Work, Expression, Manifestation, and Item creation types (as defined by IFLA).
2.2.3	Composite Digital Items	F	3.5	ODRL supports identifying the Digital Item via unique identification (with the <uid> element). Any Digital Item that has composite parts with unique identification of those parts can thus be supported.
2.2.4	Fragments of Digital Items	F	3.2 4.4.1	ODRL supports the <unit> constraint which can limit a permission to a specific part of a Digital Item (via a "type" attribute). See the example in Section 4.4.1 for ebooks parts that uses terms from the ONIX namespace.
2.2.5	Digital Item Aggregations	F	3.5	ODRL support identifying the Digital Item via unique identification (with the <uid> element). Containers of Digital Items can similarly be identified. Additionally, a single ODRL expressions can be assigned to multiple Digital Items (by using multiple <context> elements).

Req No	Requirement Title	Req Met	ODRL Sect Nos	Remarks
2.2.6	Digital Item Protection	F	2.11	ODRL security features include full support for Digital Signatures and Encryption of expressions.
2.2.7	Digital Item Authentication	F	2.11	ODRL security features include full support for indicating the protection used for Digital Items.
2.2.8	Digital Item Confidentiality	F	2.11	ODRL security features include full support for Digital Signatures and Encryption of expressions to support confidentiality.
2.2.9	Digital Item Availability	F	3.5	The <dLocation> element can be used to indicate the digital location of a Digital Item.
2.2.10	Lifecycle of Digital Items	F	All	ODRL has been designed to support and enable the full end-to-end management of rights information about Digital Items.
2.2.11	Format and Delivery Independence	F		ODRL is not dependent on any format or delivery channel of permissions over Digital Items.
Usage Permissions Element Semantics				
2.3.1	Specification of Usage Permissions	F	2.2 3.1	ODRL supports various Usage Permissions.
2.3.2	Categorization of Permissions	F	2.2 3.1	ODRL supports the categorisation of Permissions.
2.3.3	Transport Permissions	F	2.2 3.1	ODRL supports various Digital Asset Permissions.
2.3.4	Render Permissions	F	2.2 3.1	ODRL supports various Usage Permissions.
2.3.5	Derivative Digital Item Permissions	F	2.2 3.1	ODRL supports various Reuse Permissions.
2.3.6	File Management Permissions	F	2.2 3.1	ODRL supports various Digital Asset Permissions.
2.3.7	Configuration Permissions	F	2.2 3.1	ODRL supports various Digital Asset Permissions.
2.3.8	Revocation of Issued Permissions	F	2.10	ODRL supports revoking rights expressions.

Req No	Requirement Title	Req Met	ODRL Sect Nos	Remarks
2.3.9	Conditional Update/ Refresh of Issued Permissions and Obligations	F	2.5	ODRL supports Conditions that specify exception events on Permissions/ Obligations.
Conditions				
2.4.1	Usage Conditions	F	2.3 3.2	ODRL supports various Constraints (conditions) based on the User, Devices, Bounds, Temporal, Aspect, and Target.
2.4.2	Rule Expiration Due to non-Temporal Constraints	F	2.5	ODRL supports Conditions that specify exception events.
Obligations				
2.5.1	Specification of Obligations	F	2.4 3.3	ODRL supports various Requirements (obligations) based on Payments, Interactions, and Usage.
2.5.2	Expression of Marks for Digital Items	F	3.2	ODRL supports the <watermark> element as a constraint on the permissions.
2.5.3	Obligations on Agents	F	2.3 2.4	ODRL supports various Requirements and Constraints that can be attributed to Users.
Governance				
2.6.1	Governance of the RDD-REL	N		It is recommended that the MPEG/ISO Governance procedures be adopted for the future maintenance of the MPEG-21 RDD-REL specification.

4   MPEG-21 Framework

ODRL is complementary to the emerging MPEG-21 specifications on:

- Digital Item Declaration (DID) [N4248]
- Digital Item Identification and Description (DIID) [N4249]
- Intellectual Property Management and Protection (IPMP) [N4315]

4.1   Digital Item Declaration

ODRL expressions can be utilised with the DID <STATEMENT> element to provide information about the rights over the Digital Item and/or any of its components. For example, the below specifies that the audio file can be played up to 100 times:

```
...
<ITEM>
    <DESCRIPTOR ID="SONG_TITLE">
        <STATEMENTTYPE="text/plain">
            I Haven't been Anywhere
        </STATEMENT>
    </DESCRIPTOR>
    <DESCRIPTOR>
        <STATEMENTTYPE="text/xml">
            <o-ex:permission>
                <o-dd:play/>
                <o-ex:constraint>
                    <o-dd:count>
                        <o-dd:end> 100 </o-dd:end>
                    </o-dd:count>
                </o-ex:constraint>
            </o-ex:permission>
        </STATEMENT>
    </DESCRIPTOR>
    <COMPONENT>
        <RESOURCE REF="http://example.com//02_I_Haven't_been_Anywhere.mp3"
                TYPE="audio/mp3"/>
    </COMPONENT>
</ITEM>
...
```

The above example shows the ODRL rights expression inline with the DID elements. Alternatively, external ODRL rights expressions should be able to be linked with the <REFERENCE> element and an appropriate URI.

4.2 Digital Item Identification and Description

ODRL expressions can be utilised with the DIID <IPMP> element to provide information about the rights over the Digital Item. The same ODRL expression from the above example is shown below:

```
...
<diid>
    ...
    <ipmp>
        <DataBlock>
            <Scheme>http://odrl.net/1.0/ODRL-EX</Scheme>
            <Scheme>http://odrl.net/1.0/ODRL-DD</Scheme>
            <Document>
                <o-ex:permission>
                    <o-dd:play/>
                    <o-ex:constraint>
                        <o-dd:count>
                            <o-dd:end> 100 </o-dd:end>
                        </o-dd:count>
                    </o-ex:constraint>
                </o-ex:permission>
            </Document>
        </DataBlock>
    </ipmp>
    ...
</diid>
....
```

The above example shows the ODRL rights expression inline with the DIID elements. Alternatively, external ODRL rights expressions can be linked with the <DocumentRef> element and an appropriate URI

4.3 Intellectual Property Management and Protection

ODRL can be specified as part of the Parametric Description for an IPMP system (to identify the language used by a RDD-REL Parser). ODRL is referenced as a possible candidate in the IPMP Committee Draft (see Section 5.1.1.4.1.1).

An example is shown below:

```
...
<PARAMETRIC_DESCRIPTON>
    <VERSION MAJOR_VERSION="1" MINOR_VERSION="0"/>
    <CLASS> RDD-REL Parser </CLASS>
    <SUBCLASS type="ODRL">
        <TYPEDATAtype="text/xml"/>
    </SUBCLASS>
</PARAMETRIC_DESCRIPTON>
...
```

5 References

[N4335]   Call for Proposals for a Rights Data Dictionary and a Rights Expression Language. Sydney, July 2001

[N4336]   MPEG-21 Requirements for a Rights Data Dictionary and a Rights Expression Language. Sydney, July 2001

[N4248]   MPEG-21 Digital Item Declaration, Committee Draft. Sydney, July 2001

[N4249]   MPEG-21 Digital Item Identification and Description, Working Draft 2.0. Sydney, July 2001

[N4315]   MPEG-21 Intellectual Property Management and Protection, Committee Draft. Sydney, July 2001