Expressing licenses by ODRL and RightsML

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The Challenge
To express a granted license or ownership transfer for an asset – a media asset – in a machine readable way.
To narrow down for the news industry: to express only a media asset specific part of a generic license applying to a (large) group of media assets.

The Solution
Use the ODRL 2.2 (Open Digital Rights Language, a W3C Recommendation) with the IPTC RightsML 2.0 profile.
ODRL – in short

ODRL is

• a machine-readable language to communicate permissions, prohibitions and duties from an assigner to an assignee

• NOT a language to control the access to assets directly

ODRL has …

• … a minimal basic set of terms used with permissions, prohibitions and duties

• … profiles which allow to define additional terms which are relevant for a specific business sector

• … processing rules which apply to building blocks regardless of the profile

Find the full Information Model at https://www.w3.org/TR/odrl-model/
Network of ODRL Building Blocks
ODRL Design

• Basics:
W3C ODRL is based on RDF, any building block is defined as Class with Properties.

• The **Policy** = the container of one to many Rules

• A **Rule** defines what action be (not) be taken.

• These Rule sub-classes are in use: Permission, Prohibition and Duty

• A Rule has to define an **action**
  – It may apply **constraints** to the action
  – It may require that a **duty** is fulfilled to consume the granted action
ODRL Building Block: Policy

Container of Rules
Is of a specific type (Set, Offer, Agreement)
Has a globally unique ID
Needs a Profile
ODRL Building Block: Rule

Is essential for Policies. 3 sub-classes for use in practice … … with key messages:
- Something is permitted
- A Duty has to be fulfilled
- Something is prohibited
An instance of Duty can be used as:
- duty of a Permission
- remedy if a prohibited action was exercised
- consequence of a duty with a not-exercised action
ODRL Building Block: Action

Defines what action - is permitted
- should be fulfilled
- is prohibited
ODRL Building Block: Asset

Defines the thing(s) related to the action: e.g. media assets like text, photo, graphic, video etc and collections or feeds thereof.
ODRL Building Block: Party

Defines the involved parties:
- **assigner** permits, prohibits or obliges something
- **assignee** is permitted, prohibited or obliged
Could be a group of party entities.
ODRL Building Block: Constraint

Defines conditions for:
- executing a permission
- not-executing a prohibition
- fulfilling a Duty

OR
Refines the semantics of an Action. (e.g. how to "compensate")

OR
Narrows down the scope of an Asset-Collection or Party-Collection.

A logic relationship (and, or ...) of multiple Constraints can be set.
Network of ODRL Building Blocks
The ODRL message:

Many Building Blocks are available.

They can be combined in many ways to cover many different needs.
But how ????
Building a Permission

Status: ✅ or ✖️

Final Status: Permitted action
Policy

Duty

Constraint
Building an Obligation duty

Not exercised action

Final Status
Obliged action

Consequence

Constraint
The ODRL message:

“This is a very flexible framework for rights expressions”

But it needs Profiles to gain its full power

...as the list of normative terms is quite slim.

(See it at https://www.w3.org/TR/odrl-vocab/)
RightsML 2.0

The IPTC Standard RightsML 2.0 defines a profile for the W3C Recommendation ODRL 2.2.
See https://iptc.org/standards/rightsml/
RightsML ODRL Profile

It defines these terms:
• 37 actions, like Present, Display, Play, Print, Archive, Index, Modify for the usage and Sell or Give for the ownership transfer of an asset
• 27 definitions of a constraint, like Datetime, Geospatial area, Delivery Channel or Event
• 9 parties, like Attributed Party, Compensated Party, Informed Party

Find the full specification at https://iptc.org/std/RightsML/2.0/RightsML_2.0-specification.html
Typical RightsML Context

IPTC is the global standards body for news media. The typical design of licensing contracts for a stream of news is:

- A generic licensing contract defines basic terms and conditions and is written in human language.
- It may include a term “Specific license terms may be applied to a single media asset”.
- In this case the “specific license term” comes with the asset …
- … as machine-readable ODRL/RightsML policy.
The use case: The Example Photo Agency EPA (assigner) offers any EPA picture contract holder (assignee) the option to distribute (action) this picture (target-asset) - but only within Germany (constraint).

The Policy:
- target: "urn:newsml:example.com:20120101:180106-999-000013"
  assigner: "http://example.com/cv/party/epa"
  assignee:
    type: "http://www.w3.org/ns/odrl/2/PartyCollection"
    uid: "http://example.com/cv/partygroup/epapartners"
  action: "http://www.w3.org/ns/odrl/2/distribute"
  constraint:
    - leftOperand: "http://www.w3.org/ns/odrl/2/spatial"
      operator: "http://www.w3.org/ns/odrl/2/eq"
      rightOperand: "http://cvx.iptc.org/iso3166-1a3/DEU"

Find details at http://dev.iptc.org/RightsML-Simple-Example-Geographic
The use case:

Getty Images (assigner) grants (permission) its clients (assignees) that a photo of a specific group may be used (action) in any country except the UK (spatial constraint). In addition to the spatial constraint the grant is limited to a period of 14 days (temporal constraint) after submission of the image by Getty Images.
Example 2 Policy

Policy:

(Fact: the image is submitted on 1 June 2018)

- type: "http://www.w3.org/ns/odrl/2/Set"
- uid: "http://gimages.info/cv/policy/2"
- profile: "https://iptc.org/std/RightsML/odrl-profile/"

permission:
- target:
  - type: "http://www.w3.org/ns/odrl/2/AssetCollection"
  - uid: "http://gimages.info/assetgroup/grpid4711"
  - assigner: "http://companyreg.com/gim"
  - assignee:
    - type: "http://www.w3.org/ns/odrl/2/PartyCollection"
    - uid: "http://gimages.info/partygroup/clients1"
  - action: "http://www.w3.org/ns/odrl/2/use"

constraint:
- leftOperand: "http://www.w3.org/ns/odrl/2/spatial"
  - operator: "http://www.w3.org/ns/odrl/2/neq"
  - rightOperand: "http://cvx.iptc.org/iso3166-1a3/GBR"
- leftOperand: "http://www.w3.org/ns/odrl/2/dateTime"
  - operator: "http://www.w3.org/ns/odrl/2/lt"
  - rightOperand: "2018-06-15"
  - dataType: "http://www.w3.org/2001/XMLSchema#date"

Find details at http://dev.iptc.org/RightsML-Combined-Example-geographic-and-time-period
Example 3 Use Case

The use case:

The Example Photo Agency EPA (assigner) allows (permission) the Italian news agency ANSA (assignee) to grant the use (action) of the picture (target asset) in Italy (constraint) to any third-party under the condition (expressed by a next policy-duty) that the third-party pays some money (duty-target-asset) to ANSA (which through the revenue share concept gets back to EPA)
Policy:
  type: "http://www.w3.org/ns/odrl/2/Set"
  uid: "http://epa.eu/cv/policy/2"
  profile: "https://iptc.org/std/RightsML/odrl-profile/"
  permission:
    - target: "urn:newsml:example.com:20120101:180106-999-000013"
      assigner: "http://example.com/cv/party/epa"
      assignee: "http://example.com/cv/party/ansa"
      action: "http://www.w3.org/ns/odrl/2/grantUse"
  constraint:
    - leftOperand: "http://www.w3.org/ns/odrl/2/spatial"
      operator: "http://www.w3.org/ns/odrl/2/eq"
      rightOperand: "http://cvx.iptc.org/iso3166-1a3/ITA"
  duty:
    - target: "http://epa.eu/cv/policy/3"
      action: "http://www.w3.org/ns/odrl/2/nextPolicy"
Example 3 (next) Policy 2

Policy:
  type: "http://www.w3.org/ns/odrl/2/Set"
  uid: "http://epa.eu/cv/policy/3"
  profile: "https://iptc.org/std/RightsML/odrl-profile/

permission:
  - target: "urn:newsml:epa.eu:20120101:180106-999-000013"
    assigner: "http://example.com/cv/party/ansa"
    action: "http://www.w3.org/ns/odrl/2/use"

duty:
  - compensatetParty: "http://example.com/cv/party/ansa"
    action:
      value: "http://www.w3.org/ns/odrl/2/compensate"
    refinement:
      - leftOperand: "http://www.w3.org/ns/odrl/2/payAmount"
        operator: "http://www.w3.org/ns/odrl/2/eq"
        rightOperand: "http://epa.eu/cv/revshare/A2800"

Find details at http://dev.iptc.org/RightsML-Combined-Example-geographic-and-duty-to-pay
View from the assignee’s side

Those who are the target person of a rule – the assignees – have to evaluate a policy with “their” rule(s).

An ODRL evaluation processor needs to be able
• to interpret a policy …
• … with any profile applied to it – e.g. RightsML
• to provide the required facts for a constraint. E.g. “at what date and time should the target asset be use”, “at which location or in which geospatial area should the target asset be use”
Evaluation and State of a Building Block

Each building block has a state as result of its evaluation, ODRL defines terms and rules for each one:

- Permission: is allowed or not-allowed
- Prohibition: is not-infringed or infringed
- Duty: is fulfilled or not-fulfilled or not-active
- Constraint/Refinement: is satisfied or not-satisfied
Short View on Evaluation

• To evaluate a specific Rule it is required to set values for properties and use them with or match them against the Rule:
  – **assigner** and **assignee**: must be the covered by the Rule
  – **target** asset: must be covered by the Rule
  – **action**: must be the same in the Rule
  – **data for constraints** – depending on the type of constraint
  – “**has action been exercised**” for a Prohibition and all kinds of Duty: as reality tells
ODRL/RightsML Tools


• Node.js app for evaluating an existing ODRL Policy, different scenarios of use can be applied to it, results as defined by ODRL are delivered: [https://github.com/nitmws/odrl-wprofile-evaltest1](https://github.com/nitmws/odrl-wprofile-evaltest1)
Thanks for digging into ODRL and RightsML.