



ODRL2.0:

A Rights Expression Language and a Policy Language

Tutorial: Rights and Licenses for Linked Data
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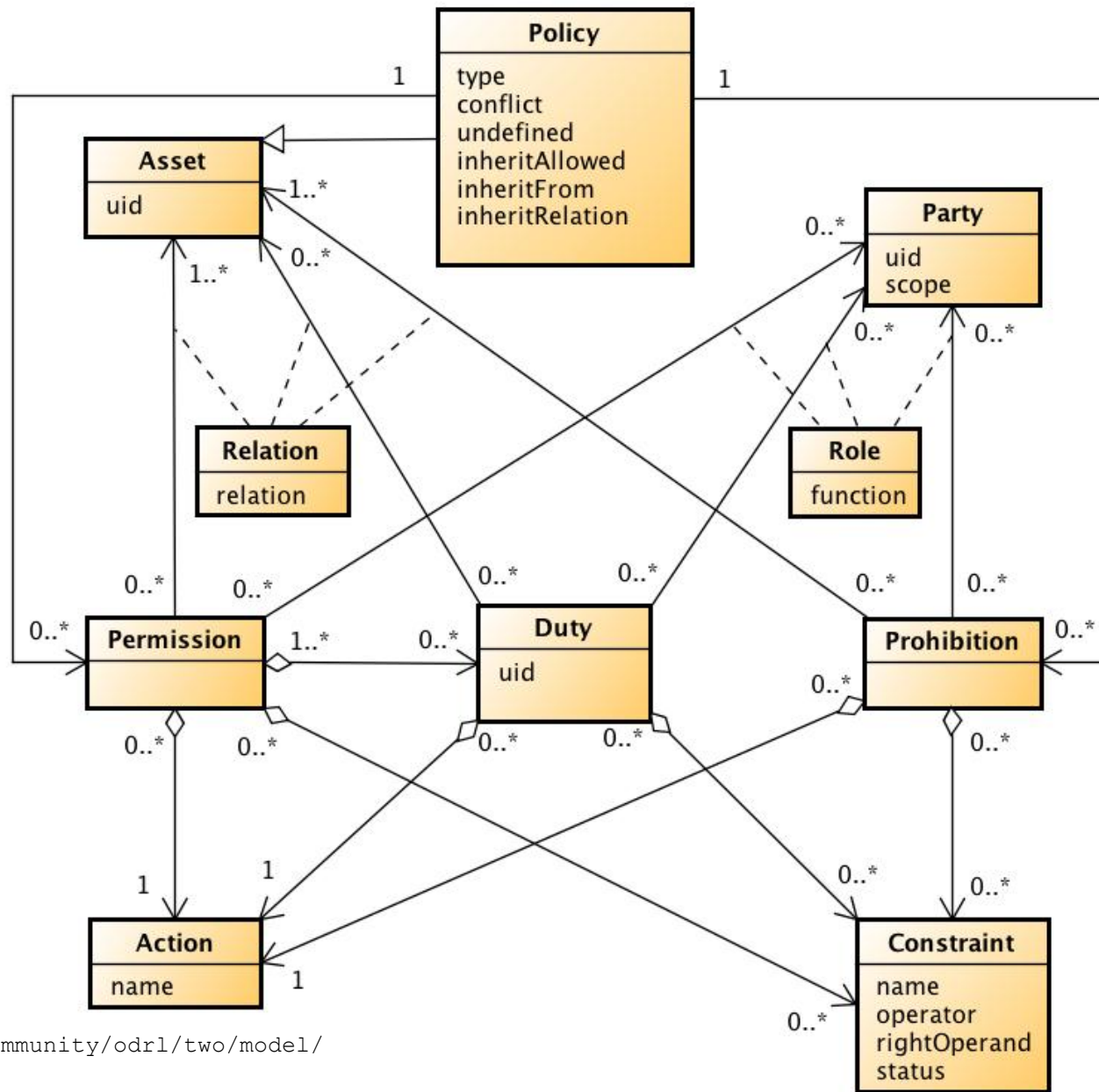
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2014.05.26

- What is ODRL
- ODRL2.0 Core Model
- ODRL2.0 Common Vocabulary
- ODRL2.0 Profiles
- Advanced ODRL 2.0
- Encodings
- Examples
- ODRL 2.0 for Linked Data



- ODRL: Open Digital Rights Language
- ODRL1.1
 - ODRL created in 2000 as a Rights Expression Language, having in mind DRM (Digital Rights Management)
 - Among others, adopted by OMA (Open Mobile Alliance) for media content protection and management
 - XML language, consisting of Assets, Rights and Parties
- ODRL2.0
 - Specification in April 2012
 - Currently a W3C Community Group
 - Adopted by the eBook and news industry
 - More focused on being a policy language
 - Specified as UML, serializations as XML, RDF (draft) and JSON (draft)



- Types of policies

Identifier	Semantics	Comment
agreement	formal contracts (or licenses) stipulating all the terms of usage and all the parties involved.	Must contain at least the Party entity with Assigner role and a Party with Assignee role. The latter being granted the terms of the Agreement from the former.
offer	propose terms of usage from an Asset owner	Must contain a Party entity with Assigner role. The Offer may contain a Party entity with Assignee role, but does not grant any privileges to that Party.
privacy	stipulate the terms of usage over personal information.	Must contain at least the Party entity with Assigner role and a Party with Assignee role. Must also contain a Duty on the assignee related to obligations towards managing the assigner's Asset containing personal information. The Assignee is being granted the terms of the Privacy
request	propose terms of usage to an Asset owner	Must contain a Party entity with Assignee role. The Request may also contain the Party entity with Assigner role if this is known. No privileges are granted to any Party.
set	consists of entities from the complete model	The Set is aimed at scenarios where there is an open criteria for the semantics of the policy expressions and typically refined by other systems/profiles that process the information at a later time. No privileges are granted to any Party.
ticket	stipulate the terms of usage and is redeemable by any Party who currently holds the Ticket in their possession	May contain the Party entity with Assigner role and the Party entity with Assignee role. A Ticket (or Voucher) may be anonymous or personalised, where the holder of that Ticket may remain unknown or has to be identified. The holder, or if known, the Assignee, is being granted the terms of the Ticket from the Assigner (in known).

Main elements

- A *Policy* contains *Permissions* and *Prohibitions*
- *Permissions* and *Prohibitions* to act an *Action*, executed over an *Asset* by a *Party*
- A *Permission* may imply *Duties*, and can be limited by *Constraints*
- *Constraints* have a *name* (e.g. count), an *operator* (e.g. leq), a *right operand* (e.g. '5') and possibly an *status* (e.g. '3'). The example reads: “*The action may be exercised 5 times, and currently it has already been executed 3*”

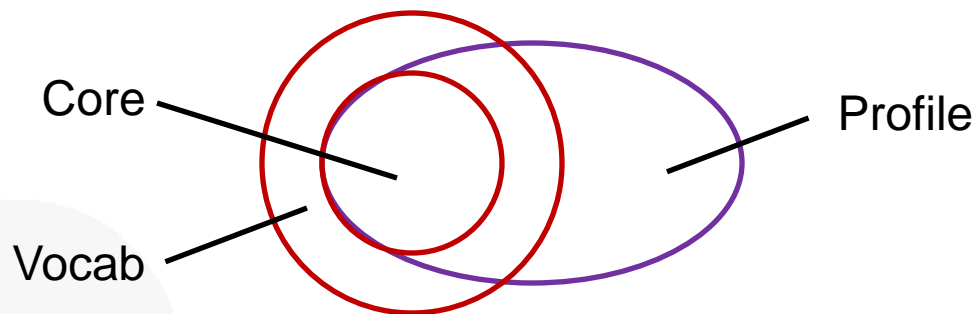
- Provides with common vocabulary
 - 60 actions, to be used in permissions, prohibitions and duties:
 - **copy, delete, modify, inform, pay, share...**
 - 30 constraints: **language, count, dateTime, industry, media, spatial**, etc.
 - A dozen of operators: **eq, gt, isPartOf, isAnyOf, isAllOf**, etc.
 - 7 kinds of roles: **assigner, assignee...**
 - 6 scopes for the roles: **individual, all, group**,
 - Asset/relation: **target** (asset upon which the action is performed), **output**

- CreativeCommons profile (draft)
 - It aims to express the core Creative Commons semantics in ODRL 2.0

CC licenses value	Characteristic type	ODRL 2.0 vocabulary term	Description
Reproduction	Permission	copy reproduce	the work may be reproduced
Distribution	Permission	distribute	the work (and, if authorized, derivative works) may be distributed, publicly displayed, and publicly performed
DerivativeWorks	Permission	derive modify	derivative works may be created and reproduced
Sharing	Permission	share	sharing the work
CommercialUse	Prohibition	commercialize	non commercial reproduction and distribution (like file-sharing) of the entire work are allowed
Attribution	Duty	attribute	credit must be given to copyright holder and/or author
Notice	Duty	attachPolicy	copyright and license notices must be kept intact
ShareAlike	Duty	shareAlike	derivative works must be licensed under the same terms as the original work
SourceCode	Duty	attachSource	the source code has to be provided



- RightsML 1.1 profile
 - IPTC: International Press Telecommunications Council
 - RightsML is IPTC's Rights Expression Language for the media industry, based on ODRL
 - It does not add any features to the Core Model.
 - A subset of ODRL Common Vocabulary terms is recommended, some terms are redefined

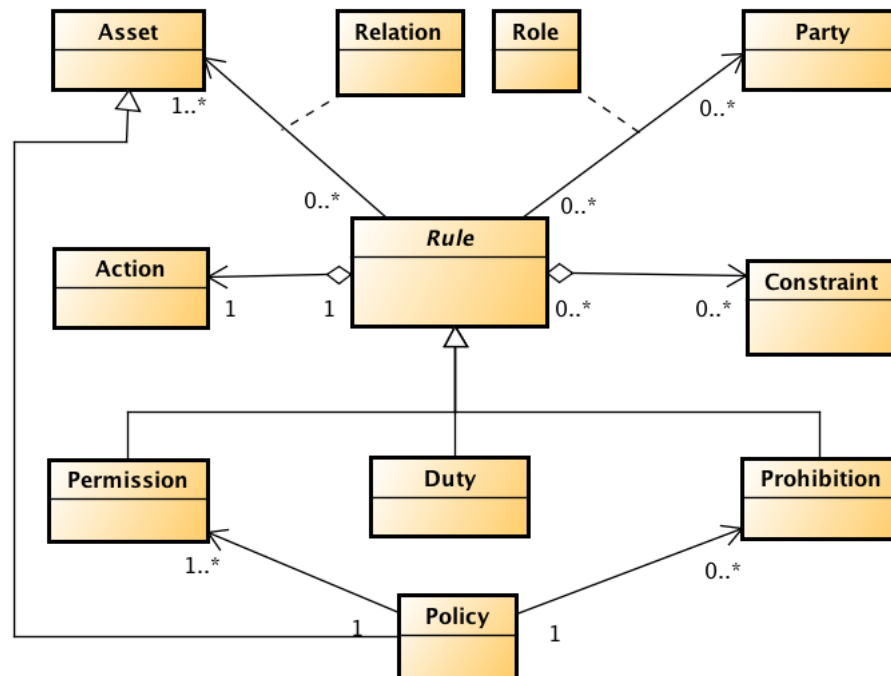


- **Boolean operators**

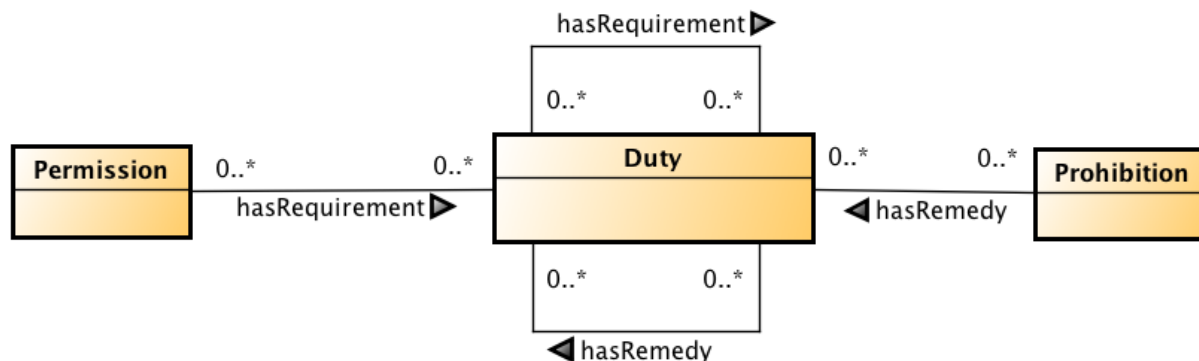
- Extended Relations may tie Permission, Prohibition, Duty, and Constraint entities together with an AND, OR or XOR relationship.

- **Rule as an abstraction**

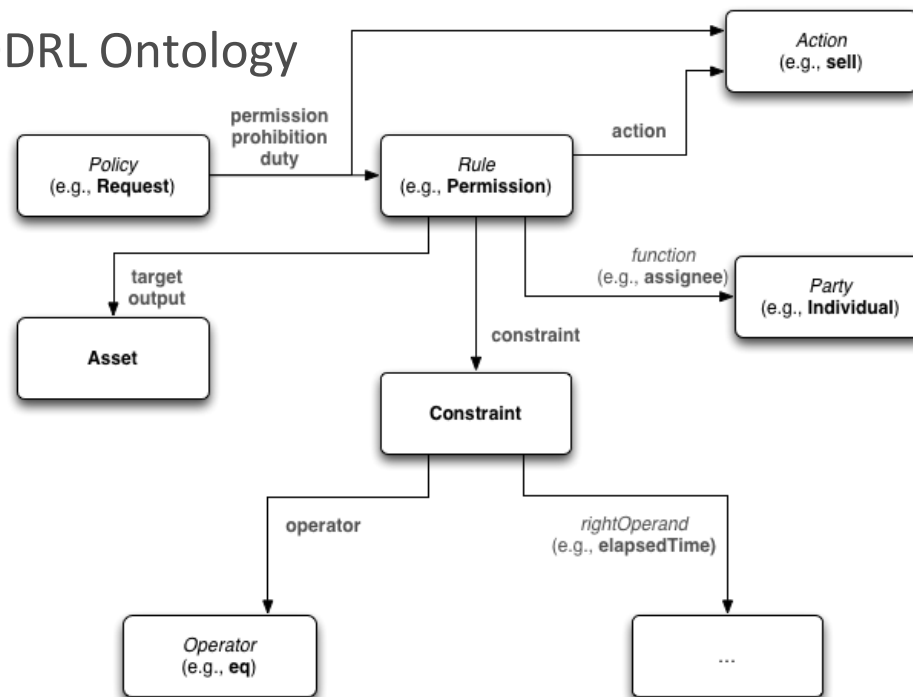
- Superclass Permission, Prohibition and Duty



- Conflict management
 - The precedence between policies can be declared
 - Default handling of policies
- Inheritance in policies:
 - Policies can be inherited
- Subsequent policies can be defined (nextPolicy)
 - Useful to impose restrictions on re-distribution
- Remedies (informative)



- XML encoding
 - The only finished specification
- JSON encoding
 - Suitable to be embedded in XMP
- RDF encoding
 - Based on the ODRL Ontology



- A first example of ODRL RDF policy

```
@base <http://example.com/> .
@prefix odr1: <http://w3.org/ns/odrl/2/> .
@prefix dct: <http://purl.org/dc/terms/> .

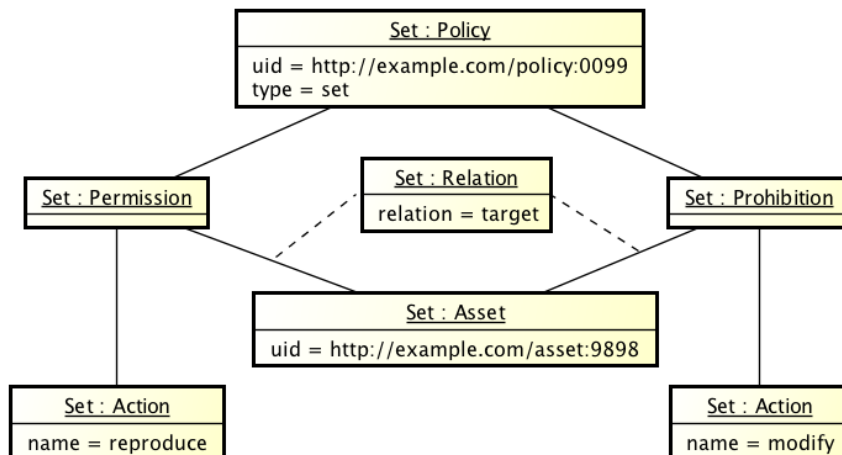
</asset:9898> dct:license </policy:0099> .

</policy:0099>
  a odr1:Set;
  odr1:permission odr1:reproduce ;
  odr1:prohibition odr1:modify .
```

The Dublin Core license element can introduce the policy

The Set element asserts the permissions and prohibitions

Equivalent, verbose version

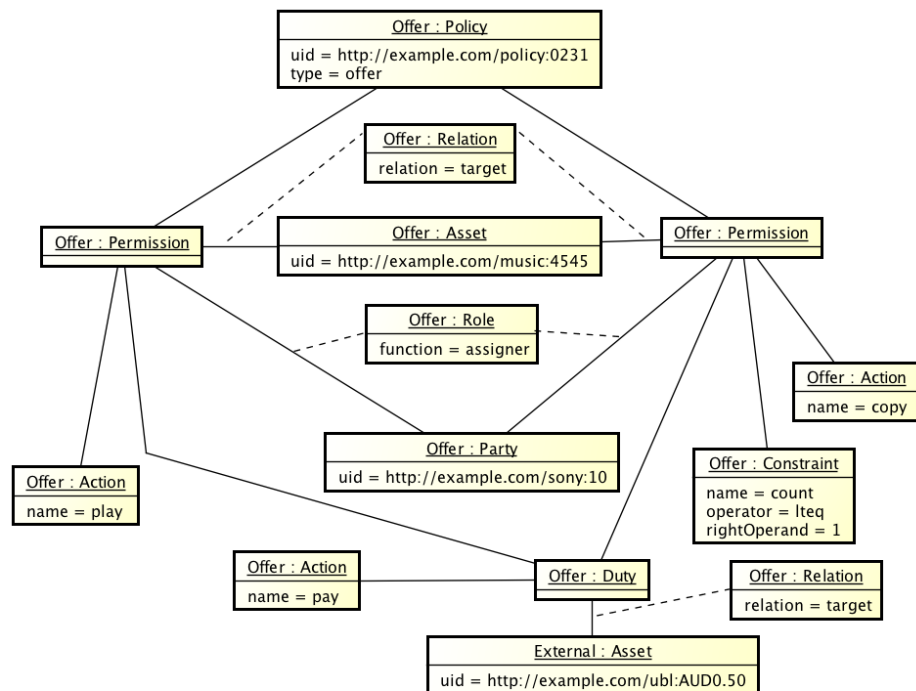


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```
</policy:0099>
  a odr1:Set;
  odr1:permission [
    a odr1:Permission ;
    odr1:target </asset:9898> ;
    odr1:action odr1:reproduce
  ] ;
  odr1:prohibition [
    a odr1:Prohibition ;
    odr1:target </asset:9898> ;
    odr1:action odr1:modify
  ] .
```

In the absence of assignee, it means "all"

• Example of Offer



</policy:0231>

```
a odr1:Offer ;
odrl:permission [
  a odr1:Permission ;
  odr1:target </music:4545> ;
  odr1:assigner </sony:10> ;
  odr1:action odr1:play ;
  odr1:duty _:requirements
```

The offer is personalized

```
] ;
odrl:permission [
  a odr1:Permission ;
  odr1:target </music:4545> ;
  odr1:assigner </sony:10> ;
  odr1:action odr1:copy ;
  odr1:duty _:requirements ;
  odr1:constraint [
    a odr1:Constraint ;
    odr1:count 1 ;
    odr1:operator odr1:lteq
```

]

] .

_:requirements

Payment

```
a odr1:Duty ;
odrl:action odr1:pay ;
odrl:target </ubl:AUD0.50> .
```

</sony:10> a odr1:Party .

• Example of agreement

```
</policy:9001>
```

```
  a odr1:Agreement ;
  odr1:permission [
    a odr1:Permission ;
    odr1:target </music:4545> ;
    odr1:assigner </sony:10> ;
    odr1:assignee </billie:888> ;
    odr1:action odr1:play ;
    odr1:duty _:requirements
```

```
  ] ;
```

```
  odr1:permission [
    odr1:target </music:4545> ;
    odr1:assigner </sony:10> ;
    odr1:assignee </billie:888> ;
    odr1:action odr1:copy ;
    odr1:duty _:requirements ;
    odr1:constraint [
      a odr1:Constraint ;
      odr1:count 1 ;
      odr1:operator odr1:lteq
```

```
    ]
```

```
  ] .
```

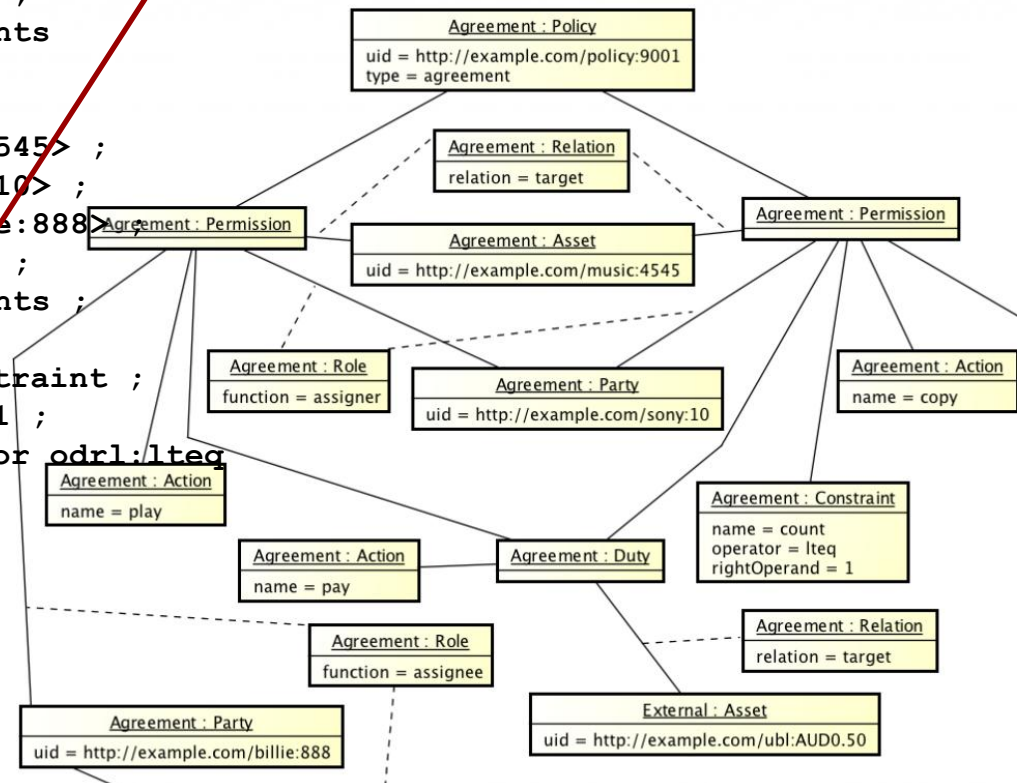
```
_:requirements
```

```
  a odr1:Duty ;
  odr1:action odr1:pay ;
  odr1:target </ubl:AUD0.50> .
```

```
</sony:10> a odr1:Party .
```

```
</billie:888> a odr1:Party .
```

Multiple constraints are understood as “all of them must be satisfied”

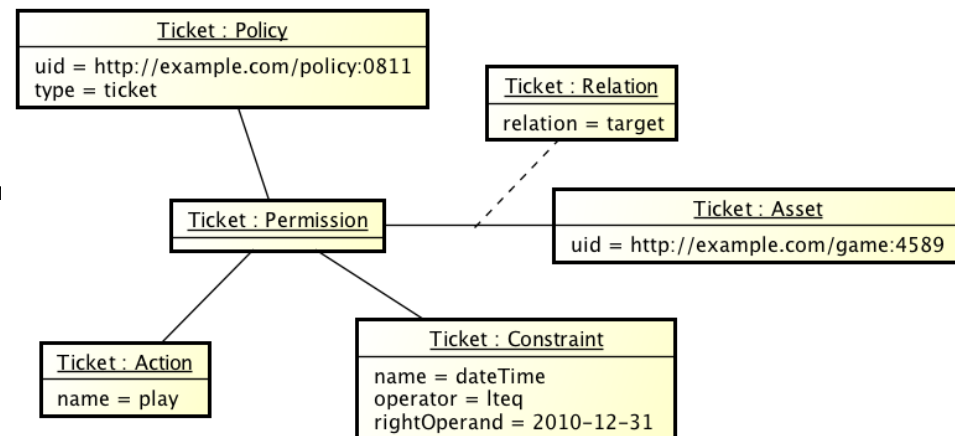


- Example of ticket

- A ticket is a token: expresses the play permission for the target asset; any valid holder of this ticket may exercise this permission before the end of the year.

```
@base <http://example.com/> .
@prefix odr1: <http://w3.org/ns/odr1/2/> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

</policy:0811>
  a odr1:Ticket ;
  odr1:permission [
    a odr1:Permission ;
    odr1:action odr1:play ;
    odr1:target </game:4589>
    odr1:constraint [
      a odr1:Constraint ;
      odr1:operator odr1:lteq ;
      odr1:dateTime "2014-12-31"^^xsd:date
    ]
  ] .
```

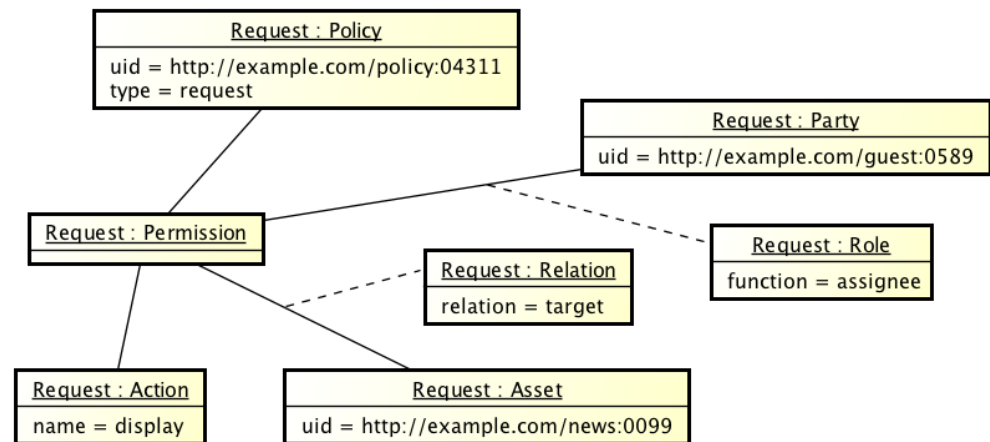


- Example of request
 - The Party has requested the Permission to display the target Asset

```
@base <http://example.com/> .
@prefix odr1: <http://w3.org/ns/odr1/2/> .
```

```
</policy:04311>
  a odr1:Request ;
  odr1:permission [
    a odr1:Permission ;
    odr1:action odr1:display ;
    odr1:assignee </guest:0589> ;
    odr1:target </news:0099>
  ] .
```

```
</guest:0589> a odr1:Party .
```



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- ODRL 2.0 policies can be used to govern access to Linked Data

Example of access to Linked Data for a price (15EUR for the dataset or 0.01EUR for a triple thereof)

```
@prefix gr:    <http://purl.org/goodrelations/> .
@prefix dcat:  <http://www.w3.org/ns/dcat#> .
<http://salonica.dia.fi.upm.es/ldr/policy/cdaddba4-fc2e-4ee0-a784-e62f1db259bf>
  a              odrl:Set ;
  rdfs:label      "License Offering Paid Linked Data" ;
  odrl:permission [ a              odrl:Permission ;
                    odrl:target    <http://example.org/dataset/ds01> ;
                    odrl:action    odrl:reproduce ;
                    odrl:duty      [ a              odrl:Duty ;
                                    rdfs:label        "Pay" ;
                                    gr:UnitOfMeasurement dcat:Dataset ;
                                    gr:amountOfThisGood "1" ;
                                    odrl:action        odrl:pay ;
                                    odrl:target        "15,00 EUR"
                                  ]
                  ] , [ a              odrl:Permission ;
                    odrl:action    odrl:reproduce ;
                    odrl:target    <http://example.org/dataset/ds01> ;
                    odrl:duty      [ a              odrl:Duty ;
                                    rdfs:label        "Pay" ;
                                    gr:UnitOfMeasurement rdf:Statement ;
                                    gr:amountOfThisGood "1" ;
                                    odrl:action        odrl:pay ;
                                    odrl:target        "0,01 EUR"
                                  ]
                  ]
```

The target can be an ontology, a dataset, a SPARQL endpoint...
...or a SPARQL query itself or a triple pattern: {mysubject, ?p , ?o}

Resources can be provided with **provenance** and flexible **licenses**. For example, specifying availability only for research institutions of a territory.

```
@prefix rdf:    <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs:   <http://www.w3.org/2000/01/rdf-schema#> .
@prefix dcat:   <http://www.w3.org/ns/dcat#> .
@prefix dct:    <http://purl.org/dc/terms/> .
@prefix odrl:   <http://www.w3.org/ns/odrl/2/> .
@prefix prov:   <http://www.w3.org/ns/prov#> .
```

Provenance information together with licenses and digital signature provides a strong mechanism of TRUST

```
<http://example-lr.com> a dcat:Dataset ;
    dct:license [ a          odrl:Policy;
        rdfs:comment  "Gives access to the resource to Spanish research institutions.
                        Redistributing or transforming the work is forbidden" ;
        odrl:permission [ a odrl:Permission;
            odrl:action odrl:reproduce;
            odrl:constraint [ a          odrl:Constraint;
                odrl:industry  "Research"
            ],
            [ a          odrl:Constraint;
                odrl:location  "ES"
            ]
        ] ;
        odrl:prohibition [ a odrl:Prohibition;
            odrl:action odrl:derive, odrl:distribute
        ] ;
    ];
    prov:wasGeneratedBy [
        prov:endedAtTime "Thu Apr 03 00:07:07 CEST2014"^^xsd:date ;
        prov:wasAssociatedWith "http://lr-provider.com"
    ] .
```

(see the live example)

Thanks!

