

Using VO registry and Semantics Vocabularies in the Semantic web

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Include VO registry metadata in dataset landing pages

Findable of FAIR means "in the VO registry" for us, and "findable on the web" for the rest of the world. Exposing registry metadata on dataset landing-page is a way to fill the gap.

Case of a repository publishing datasets:

- There is a DOI per dataset. Datasets usually include many files.
- On each dataset landing page, need to advertise the VO Registry related metadata.
- In this case, the metadata of the dataset individual products are exposed in an EPNcore table.
- That table describes products from several datasets.

So we want to expose that **"Table blah.epn_core contains EPNcore metadata of dataset doi:10.25935/aaaa-bbbb and is served by TAP interface ivo://ccc/ddd/tap"**.

```
@prefix sdo: <https://schema.org/> .
@prefix vor: <http://www.ivoa.net/xml/VOResource/v1.0#> .
@prefix vods: <http://www.ivoa.net/xml/VODataService/v1.0#> .
@prefix dcat: <http://www.w3.org/ns/dcat#> .
@prefix prov: <http://www.w3.org/ns/prov#> .
@prefix dct: <http://purl.org/dc/elements/1.1/> .

<doi:10.25935/aaaa-bbbb> a sdo:Dataset, vor:Resource,
dcat:Dataset ;
    dcat:inCatalog [ a dcat:Catalog ;
        dcat:distribution [a dcat:Distribution ;
            prov:wasGeneratedBy [
                sdo:SearchAction, prov:Activity ;
                sdo:query "SELECT * FROM blah.epn_core WHERE
dataset_ref = '10.25935/aaaa-bbbb'" ;
                dct:conformsTo <ivo://ivoa.net/std/ADQL> ;
                prov:used <ivo://ccc/ddd/tap>
            ] ;
            dct:conformsTo <ivo://ivoa.net/std/epntap#table-2.0> ;
            dcat:accessService <ivo://ccc/ddd/tap> ;
            vods:tableName "blah.epn_core"
        ]
    ] .

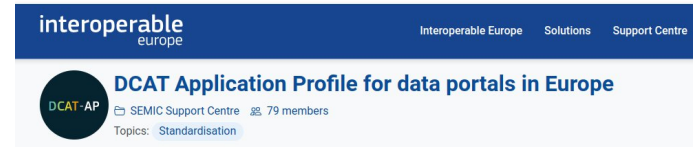
<ivo://ccc/ddd/tap> a dcat:DataService ;
    dct:conformsTo <ivo://ivoa.net/std/TAP> ;
    dcat:endpointURL <http://voparis-tap-astro.obspm.fr/tap> .
```

Describing Resources with DCAT

DCP-Semantic, G.Landais

Motivations

- Dublin Core extension including Datasets and services description
 - Accepted by “Recherche Data Gouv” (France)
- Describe linked resources made of Datasets and Services
 - Allow Collection of datasets in a Catalogue
 - Links Dataset with Datasets
 - Link Dataset with Services
- A Rich (W3C) semantic used in Open Data
 - Format recognized by Google dataset search
 - Many implementation: Earth sciences (Ifremer, EPOS ...)
 - Open sources framework: GEONetwork, INVENIO (Zenodoo)
 - Many implementation (DCAT-AP):
Recherche DataGouv, DataGov.uk, Resources.data.gov, etc
- Serialization in TTL, JSON-LD, RDF/XML



...and
a lot of
others...

Exploiting DCAT mapping versus OAI

DCP-Semantic, G.Landais

Tests scope: DCAT terms in CDS OAI server

Warning : The natural format used for DCAT serialization are Turtle or JSON-LD

We explored a DCAT XML serialisation provided by **OAI-PMH**



OAI metadataPrefix=dcat

<https://cds.unistra.fr/registry/?verb=GetRecord&metadataPrefix=dcat&identifier=ivo://cds.vizier/J/AJ/165/61>

- Serialization choice
- Data access and Datasets are serialized as child nodes of the VO Resource (Catalogue)
 - - The record = 1 catalogue
 - - Catalogue includes Datasets
 - - Datasets includes Distribution (=Service)
 - Use a **selection of DCAT terms** (exploit “only” Catalog, Dataset and Service classes)
- Mapping with VORegistry using VOResource, VODataService, VOConcSearch

OK vores:curation

OK vores:content

Partially vores:capability *(Basic description of parameters/protocols)*

NOT vores:coverage *(No MOC serialization)*

Partially vods:tablesets *(No columns descriptions)*

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Data record :

<https://cds.unistra.fr/registry/?verb=GetRecord&metadataPrefix=dc&identifier=ivo://cds.vizier/J/AJ/165/61>

```
<dc:identifier>ivo://CDS.VizieR/J/AJ/165/61</dc:identifier>
<dc:type>http://purl.org/dc/dcmitype/Dataset</dc:type>
<dc:identifier>doi:10.26093/cds/vizier.51650061</dc:identifier>
<dc:title>12 transiting Kepler exoplanet properties</dc:title>
<foaf:homepage>https://cdsarc.cds.unistra.fr/viz-bin/cat/J/AJ/165/61</foaf:homepage>
<dc:publisher>
  <foaf:Organization>
    <foaf:name>CDS</foaf:name>
  </foaf:Organization>
</dc:publisher>
<dc:contactPoint>
  <foaf:Organization>
    <vcard:name>CDS support team</vcard:name>
    <vcard:hasEmail>cds-question@unistra.fr</vcard:hasEmail>
  </foaf:Organization>
</dc:contactPoint>
<dc:creator>
  <foaf:Agent>
    <foaf:name>Sheikh S.Z.</foaf:name>
  </foaf:Agent>
</dc:creator>
<dc:creator>
  <foaf:Agent>
    <foaf:name>Kanodia S.</foaf:name>
  </foaf:Agent>
</dc:creator>
<dc:modified>2023-09-27</dc:modified>
<dc:subject>Exoplanets</dc:subject>
<dc:subject>Radio spectroscopy</dc:subject>
<dc:qualifiedRelation>
  <dc:relation>https://ui.adsabs.harvard.edu/abs//2023AJ...165...61S</dc:relation>
  <dc:hadRole>http://purl.org/dc/terms/bibliographicCitation</dc:hadRole>
</dc:qualifiedRelation>
```

TODO Add ORCID

TODO Add UAT URI

dc:Catalog

dct:identifier
dcterms:type
dcterms:title
dcterms:publisher
dcterms:creator
dcterms:issued
dcterms:modified
dc:contactPoint
dc:keyword
dcterms:description
dcterms:license
dc:qualifiedRelation
foaf:homepage
dc:dataset

```
<dc:dataset>
  <dc:identifier>J/AJ/165/61/table1</dc:identifier>
  <dc:title>Stellar and planetary properties for the twelve transiting Kepler planets observed in this work</dc:title>
  <dc:distribution>
    <dc:Distribution>
      <dc:accessURL>http://vizier.cds.unistra.fr/viz-bin/conesearch/J/AJ/165/61/table1?
      </dc:accessURL>
      <dc:mediaType>text/xml+votable</dc:mediaType>
      <dc:conformTo>ivo://ivoa.net/std/ConeSearch</dc:conformTo>
      <dc:title>Simple Cone Search</dc:title>
    </dc:Distribution>
  </dc:distribution>
</dc:dataset>
```

TODO Describe tablesets

Specifies protocols

dc:Dataset

dc:identifier
dc:description
dc:distribution

dc:Distribution

dc:accessURL
dc:mediaType
dc:conformTo
dc:title

```
<dc:Distribution>
  <dc:accessURL>http://tapvizier.cds.unistra.fr/TAPVizieR/tap</dc:accessURL>
  <dc:conformTo>ivo://ivoa.net/std/TAP</dc:conformTo>
  <dc:title>Table access protocol</dc:title>
</dc:Distribution>
```

Link external resources

experimental version