# *Update on the Linked And Networked DRoneS project: APIs, and Ontologies*

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cvardema@nd.edu

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CENTER FOR RESEARCH COMPUTING

# LANDRS: Goals

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**Problem:** Complex and painful drone data pipeline costs significant data value

**Goal:** Allow users to capture the lost value by providing standards based APIs for building drone data wrangling tools.


**L**inked-data
**A**PI for
**N**etworked
**DR**one**S**

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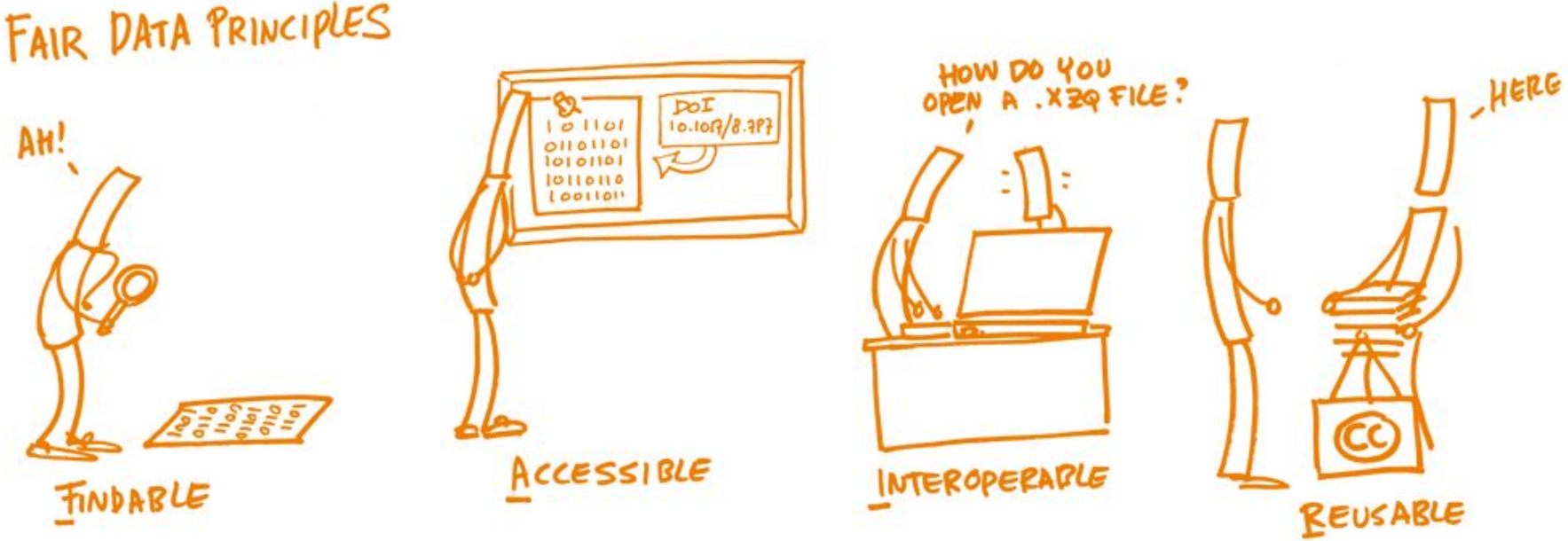
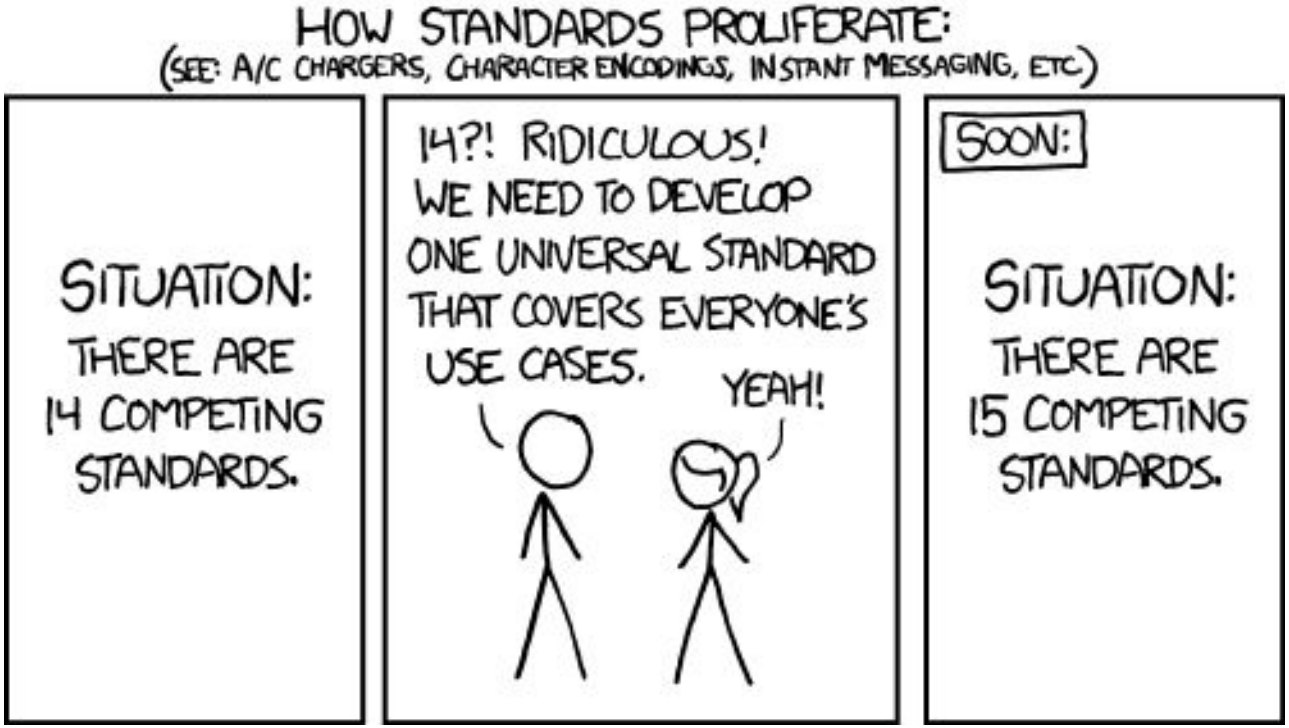
[Taking some steps towards enabling FAIR Drone Data]

# FAIR Data


FAIR DATA PRINCIPLES
AH!
FINDABLE
DOI
10.1017/8.7P7
ACCESSIBLE
HOW DO YOU OPEN A .XZQ FILE?
INTEROPERABLE
HERE
REUSABLE

# The problem with “standards”




https://xkcd.com/927/

# One “Ontology” to Rule Them All?

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0

Semantic Web - (2019) 0
IOS Press

## Are We Better Off With Just One Ontology on the Web?

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*E-mail: axel.polleres@wu.ac.at*

**Editors:** Pascal Hitzler, Wright State University, USA; Krzysztof Janowicz, University of California, Santa Barbara, USA

**Abstract.** Ontologies have been used on the Web to enable semantic interoperability between parties that publish information independently of each other. They have also played an important role in the emergence of Linked Data. However, many ontologies on the Web do not see much use beyond their initial deployment and purpose in one dataset and therefore should rather be called what they are – (local) schemas, which per se do not provide any interoperable semantics. Only few ontologies are truly used as a shared conceptualization between different parties, mostly in controlled environments such as the BioPortal. In this paper, we discuss open challenges relating to true re-use of ontologies on the Web and raise the question: “are we better off with just one ontology on the Web?”

Keywords: Ontology, Knowledge Representation

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http://www.semantic-web-journal.net/system/files/swj2307.pdf

# Levels of Abstraction in Ontology Design

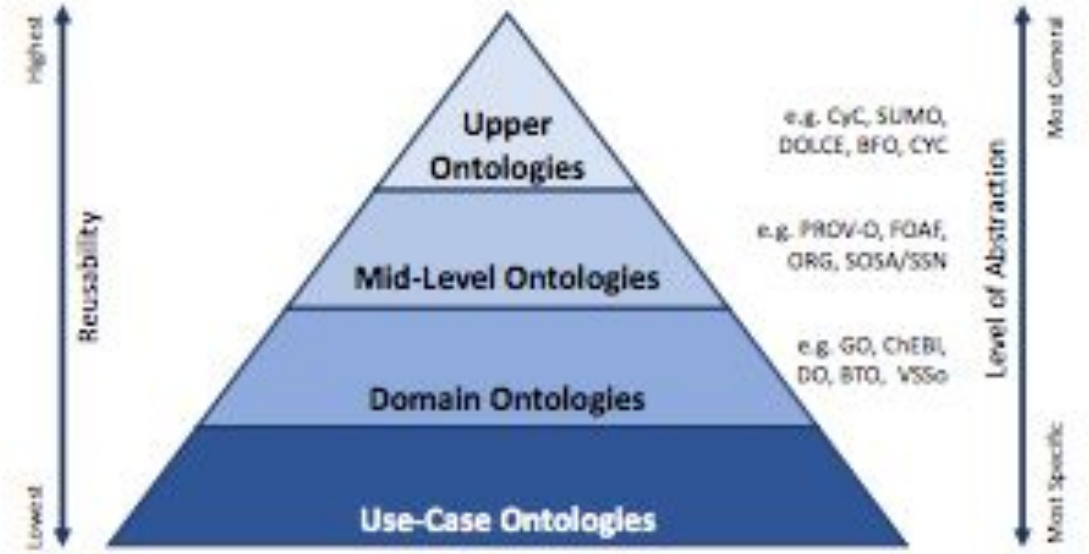



Fig. 1. Levels of Abstraction in Ontology Design

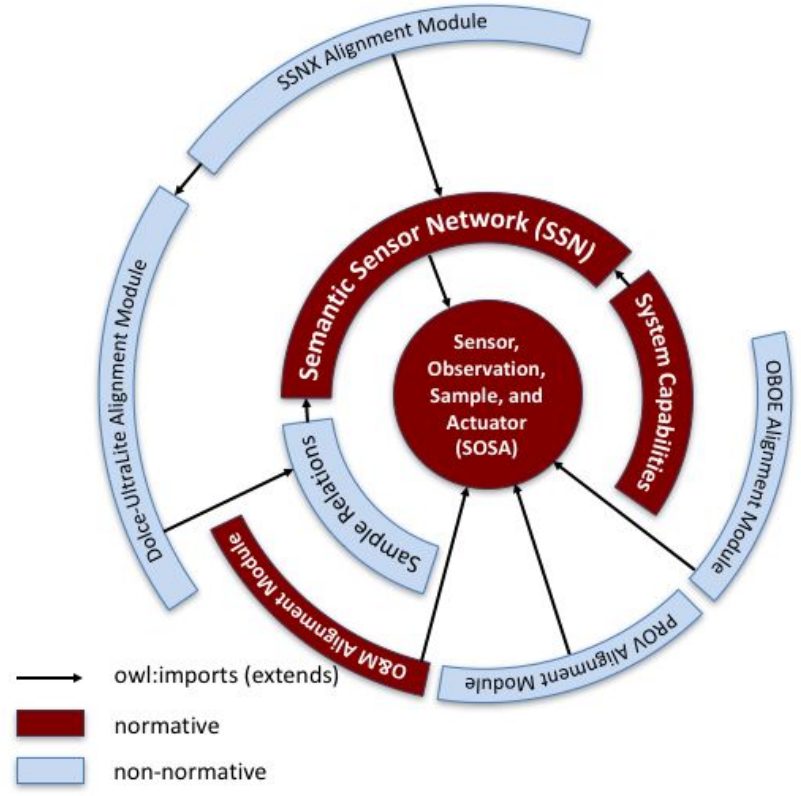
# If We Want Interoperability



| | schema.org | Wikidata ontology | DBpedia ontology |
|---|---|---|---|
| ***Availability*** | Highly available | Highly available | Highly available |
| ***Discoverability*** | Relatively easy | Relatively difficult<br>*Linked from Wikipedia, but ontology itself hard to retrieve* | Relatively difficult<br>*Only known in Semantic Web community* |
| ***Completeness & Adaptability*** | Domain specific<br>*Community extensions available* | Generic<br>*Combined Top-Down/Bottom-up creation process* | Generic<br>*Top-down ontology engineering process, combined with auto-generated entities* |
| ***Maintenance & Versioning*** | Continuous curation<br>Versions are not made explicit | Continuous curation<br>Explicit entity version, and version history available through version control | Continuous curation<br>Explicit ontology version |
| ***Modularization*** | Fully distributed ontology<br>*Easy access through Linked Data content negotiation* | Fully distributed ontology<br>*Difficult to access, through SPARQL endpoint and list pages* | Monolithic ontology<br>*Easy access through file and SPARQL endpoint* |
| ***Quality*** | High quality, but lightweight semantics | Variable quality in lower parts of the ontology<br>*No DL semantics, therefore few provable inconsistency* | Medium to Low Quality |
| ***Trust*** | High Trust<br>*Developed by major search engines* | Medium Trust<br>*Developed by community, maintained by Wikimedia Foundation* | Medium Trust<br>*Developed and maintained by University partners* |

Table 1
Evaluation of reuse criteria for schema.org, wikidata.org and dbpedia.org ontologies

# Modularity and Formalism




https://www.w3.org/TR/vocab-ssn/

# Five Stars of Linked Vocabularies

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Semantic Web 0 (2014) 1–0
IOS Press



## Five Stars of Linked Data Vocabulary Use

*Editorial*

Krzysztof Janowicz [a], Pascal Hitzler [b], Benjamin Adams [c], Dave Kolas [d], and Charles Vardeman II [e]

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**Abstract.** In 2010 Tim Berners-Lee introduced a 5 star rating to his Linked Data design issues page to encourage data publishers along the road to *good* Linked Data. What makes the star rating so effective is its simplicity, clarity, and a pinch of psychology – is **your** data 5 star? While there is an abundance of 5 star Linked Data available today, finding, querying, and integrating/interlinking these data is, to say the least, difficult. While the literature has largely focused on describing datasets, e.g., by adding provenance information, or interlinking them, e.g., by co-reference resolution tools, we would like to take Berners-Lee's original proposal to the next level by introducing a 5 star rating for Linked Data **vocabulary use**.

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# Five Stars of Linked Vocabulary Use

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– ☆☆☆☆☆ **The vocabulary is linked to other vocabularies**. We believe that explicit alignments, e.g., via subClassOf or equivalentClass axioms, are often better than direct reuse of external vocabularies but both are acceptable. When working with data providers and software engineers, we often observe that they prefer to have control over their local vocabulary instead of importing a wide variety of (often under-specified, not regularly maintained) external vocabularies.[5] It is important to note that we refer to vocabulary-level links between classes and properties, not to links between individuals (e.g., via owl:sameAs).

– ☆☆☆☆☆ **Metadata about the vocabulary is available** (in a dereferencable and machine-readable form). This can be in form of the Ontology Metadata Vocabulary (OMV) [9], Vocabulary of a Friend (VOAF)[6], or other approaches. This can include information about the license model, contact person, last modification date, the used ontology language, the knowledge management methodology used to arrive at the vocabulary, and so forth.

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# FAIR Vocabularies and Ontologies?

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## Best Practices for Implementing FAIR Vocabularies and Ontologies on the Web

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**Abstract.** With the adoption of Semantic Web technologies, an increasing number of vocabularies and ontologies have been developed in different domains, ranging from Biology to Agronomy or Geosciences. However, many of these ontologies are still difficult to find, access and understand by researchers due to a lack of documentation, URI resolving issues, versioning problems, etc. In this chapter we describe guidelines and best practices for creating accessible, understandable and reusable ontologies on the Web, using standard practices and pointing to existing tools and frameworks developed by the Semantic Web community. We illustrate our guidelines with concrete examples, in order to help researchers implement these practices in their future vocabularies.

**Keywords:** Ontology metadata · Ontology publication · Ontology access · FAIR principles · Linked Data principles.

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https://arxiv.org/abs/2003.13084

# W3C-OGC SOSA

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## Semantic Sensor Network Ontology

OGC® Making location count. W3C

W3C Recommendation 19 October 2017 (Link errors corrected 08 December 2017)

**This version:**
https://www.w3.org/TR/2017/REC-vocab-ssn-20171019/

**Latest published version:**
https://www.w3.org/TR/vocab-ssn/

**Latest editor's draft:**
https://w3c.github.io/sdw/ssn/

**Implementation report:**
https://w3c.github.io/sdw/ssn-usage/

**Previous version:**
https://www.w3.org/TR/2017/PR-vocab-ssn-20170907/

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# W3C DCAT-2

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## Data Catalog Vocabulary (DCAT) - Version 2

W3C Recommendation 04 February 2020

**This version:**
https://www.w3.org/TR/2020/REC-vocab-dcat-2-20200204/

**Latest published version:**
https://www.w3.org/TR/vocab-dcat-2/

**Latest editor's draft:**
https://w3c.github.io/dxwg/dcat/

**Implementation report:**
https://w3c.github.io/dxwg/dcat-implementation-report/

**Previous version:**
https://www.w3.org/TR/2019/PR-vocab-dcat-2-20191119/

**Previous Recommendation:**
https://www.w3.org/TR/2014/REC-vocab-dcat-20140116/

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**Former editors:**
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John Erickson (Tetherless World Constellation (RPI))

**Participate:**
GitHub w3c/dxwg
File a bug
Commit history
Pull requests

https://www.w3.org/TR/vocab-dcat-2/

# Prov-O

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## PROV-O: The PROV Ontology

### W3C Recommendation 30 April 2013

**This version:**
http://www.w3.org/TR/2013/REC-prov-o-20130430/
**Latest published version:**
http://www.w3.org/TR/prov-o/
**Implementation report:**
http://www.w3.org/TR/2013/NOTE-prov-implementations-20130430/
**Previous version:**
http://www.w3.org/TR/2013/PR-prov-o-20130312/
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Jun Zhao, University of Oxford, UK

Please refer to the **errata** for this document, which may include some normative corrections.

The English version of this specification is the only normative version. Non-normative translations may also be available.



https://www.w3.org/TR/prov-o/

# W3C OWL-Time

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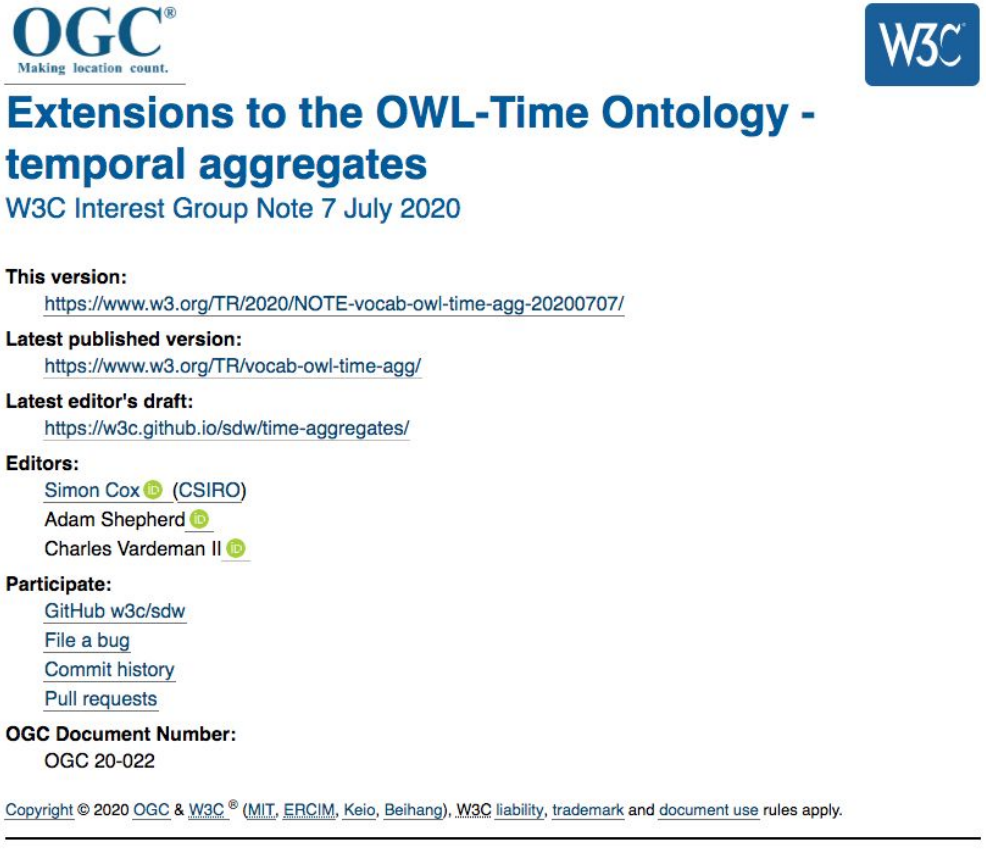

OGC®
Making location count.

W3C

## Extensions to the OWL-Time Ontology - temporal aggregates

W3C Interest Group Note 7 July 2020

**This version:**
https://www.w3.org/TR/2020/NOTE-vocab-owl-time-agg-20200707/

**Latest published version:**
https://www.w3.org/TR/vocab-owl-time-agg/

**Latest editor's draft:**
https://w3c.github.io/sdw/time-aggregates/

**Editors:**
Simon Cox (CSIRO)
Adam Shepherd
Charles Vardeman II

**Participate:**
GitHub w3c/sdw
File a bug
Commit history
Pull requests

**OGC Document Number:**
OGC 20-022

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https://www.w3.org/TR/vocab-owl-time-agg/

# Science on schema.org

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*This guide is a continuation of the P418 NSF EarthCube vocabulary guidance which ended in April 2018.*

## Guidance Documents - Table of Contents

Getting Started - explains some useful techniques that will be common across all schema.org types

- Data Repository - the research data repository
- Dataset - the scientific dataset

## Upcoming Work

v1.2 (issues, develop branch)

## Version DOIs

| Version | DOI |
| --- | --- |
| 1.1.0 | DOI 10.5281/zenodo.3736235 |
| 1.0.0 | DOI 10.5281/zenodo.2628756 |

https://github.com/esiPFed/science-on-schema.org

# DINGO: Projects and Grants

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## DINGO: A KNOWLEDGE GRAPH ONTOLOGY FOR PROJECTS AND GRANTS

**(WITH ONTOLOGY MAPPINGS)**

**Current Editors**: Diego Chialva

**Past Editors, Contributors**: Diego Chialva, Alexis-Michel Mugabushaka, Andra Waagmeester, Eric Prud'hommeaux, Thomas Baker, Dan Brickley, Katherine Thornton, Peter Murray-Rust, Mark Thompson

### Status Of This Document

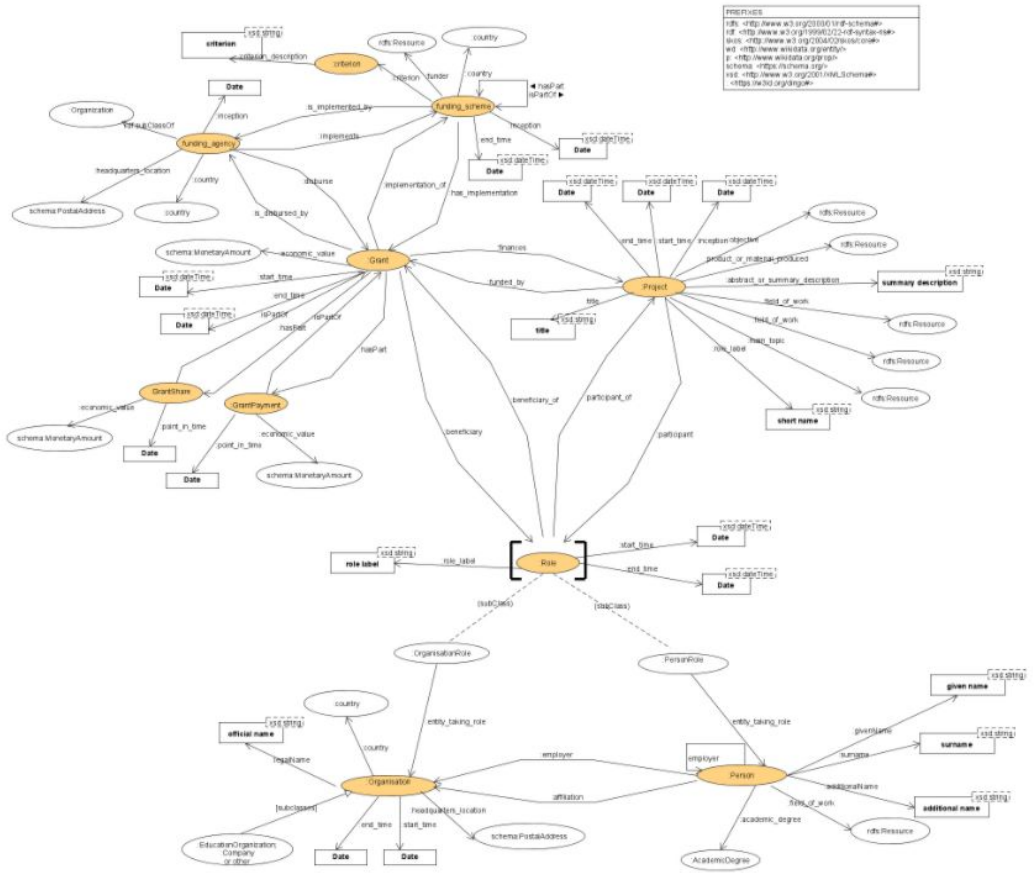
This document contains the specification of the ontology DINGO (Data Integration for Grant Ontology) in its latest form. The initial ontology by ERCEA was presented at the Meetup in Berlin on 17th-19th of June (WikiProject Wikidata for research), and discussed by a working group (whose members are now indicated as Past Editors and Contributors) including also members of schema.org and Dublin Core Metadata Initiative. The ontology was therefore immediately aligned with the Wikidata data model, schema.org and DublinCore. Later revisions have led to this final version of this document, which is maintained.

This document is a stable document and may be used as reference material or cited from another document. Its aim is to draw attention to the specification and to promote its widespread deployment. This enhances the functionality and interoperability of data dealing with research and/or other cultural activities, and their funding.

Commit history

https://dcodings.github.io/DINGO/

# DINGO: Projects and Grants



https://dcodings.github.io/DINGO/

# TERN Ontology

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made by pyLODE


## TERN SSN ontology extension and vocabulary

**IRI**

https://w3id.org/tern/ontologies/ssn/

**Publisher(s)**

Terrestrial Ecosystem Research Network

**Creator(s)**

Edmond Chuc ( e.chuc@uq.edu.au ) of Terrestrial Ecosystem Research Networ

**Created**

2020-01-07

**Modified**

2020-05-15

**Version Information**

0.0.13

**Version IRI**

https://w3id.org/tern/ontologies/ssn/0.0.13

**Imports**

https://raw.githack.com/w3c/sdw/gh-pages/ssn-extensions/rdf/ssn-ext.ttl
http://www.w3.org/2004/02/skos/core
sosa:
ssn:
loc:
tern-org:

**Ontology Source**

RDF (turtle)

# Tern SOSA/SSN Alignments

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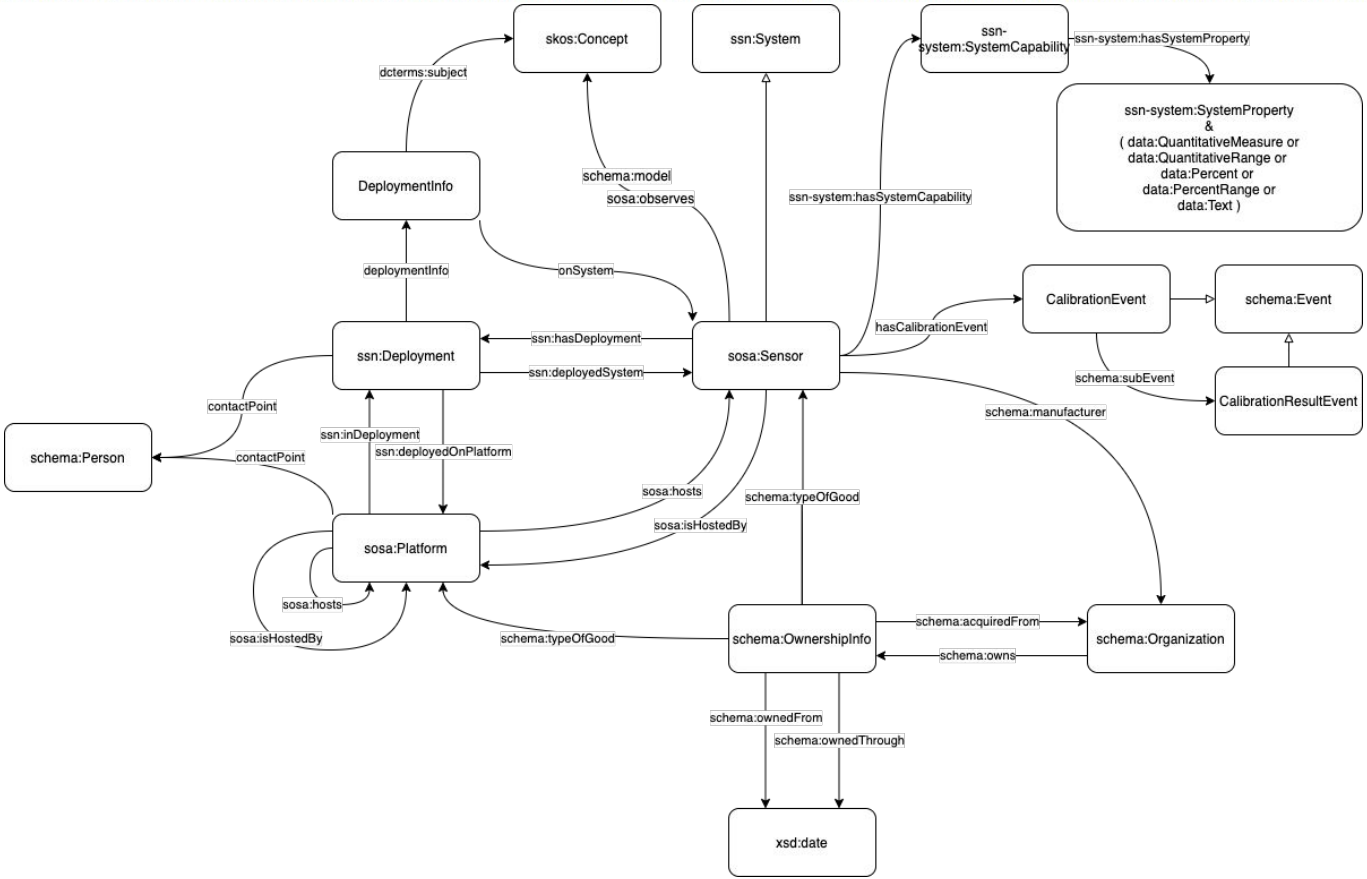
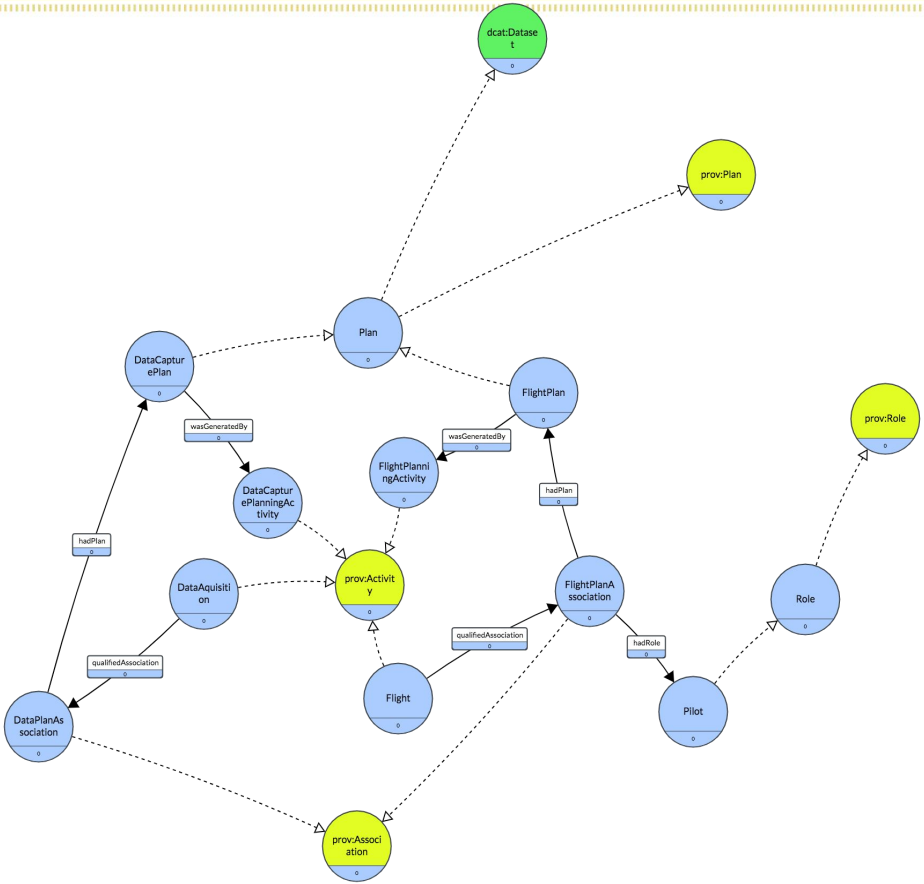


# Data Capture Plan and Prov

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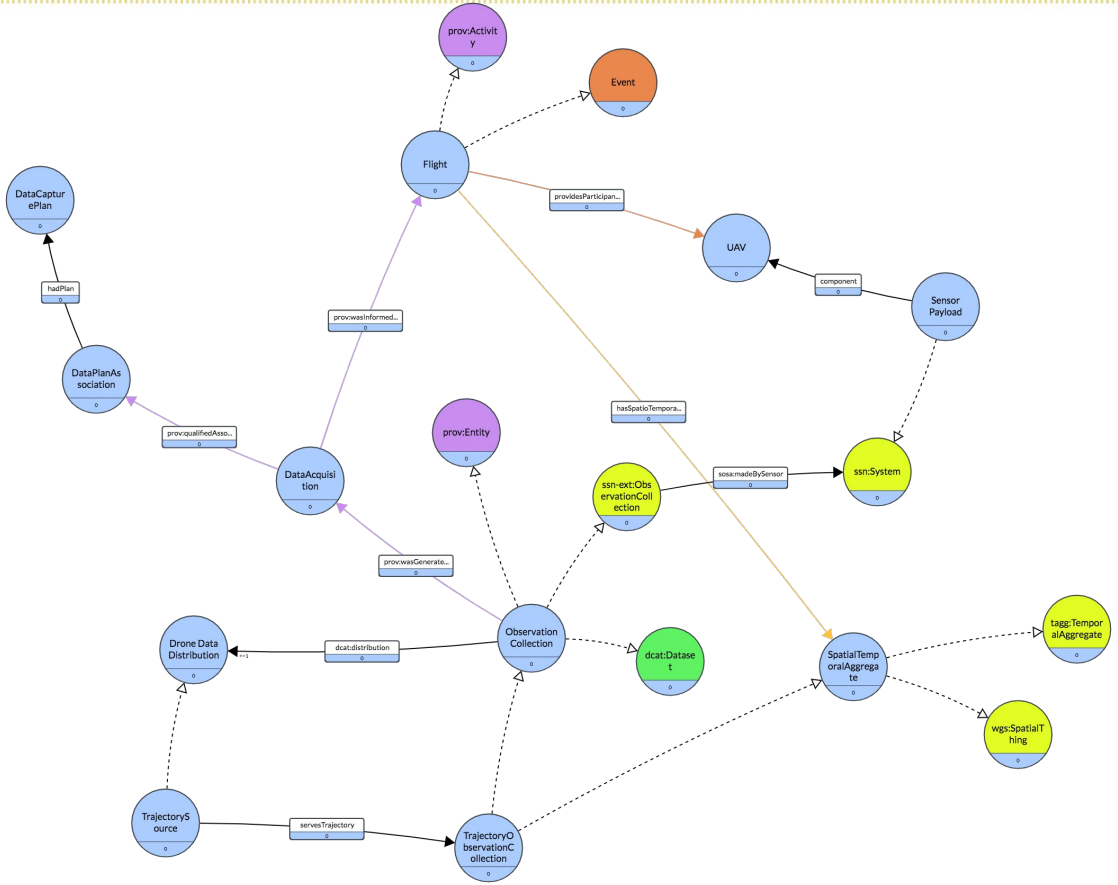
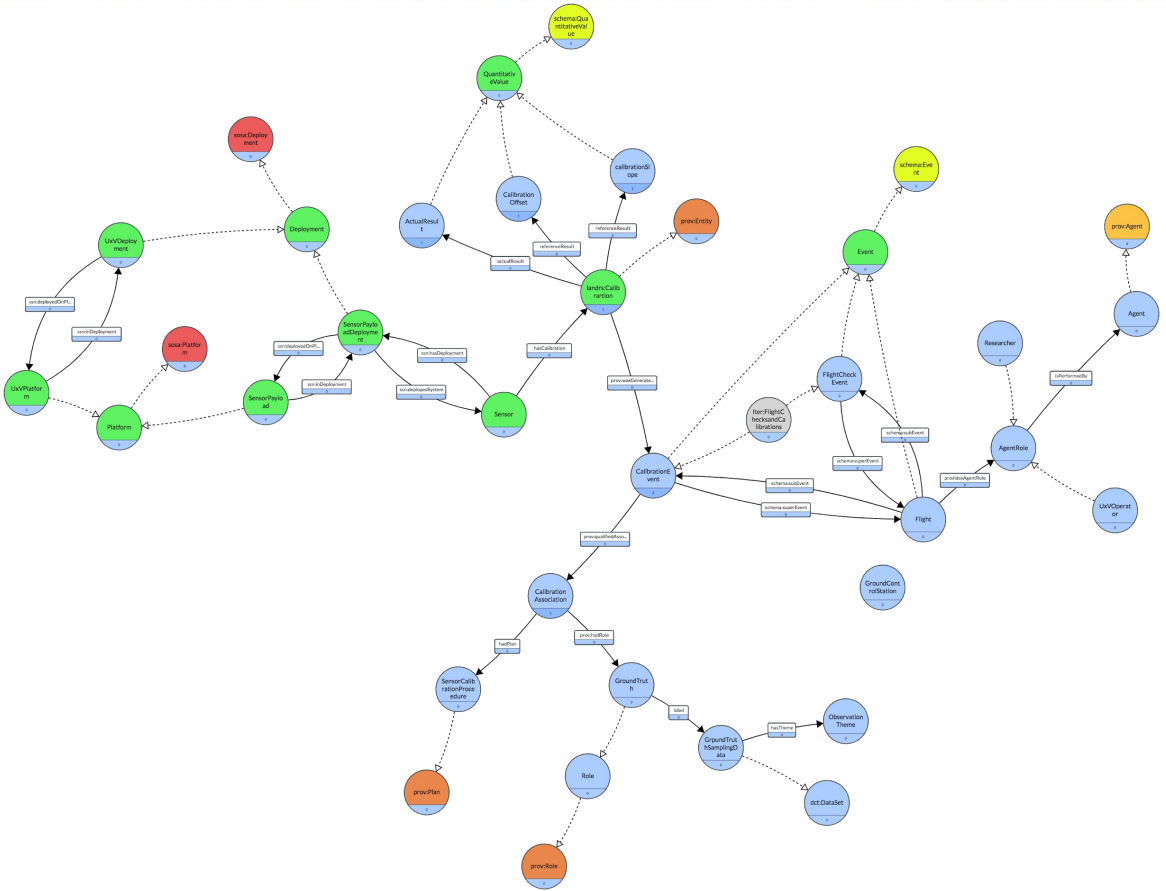
# Data Source


prov:Activity
Event
Flight
providesParticipan...
UAV
component
Sensor Payload
DataCapturePlan
hadPlan
DataPlanAssociation
prov:wasInformed...
prov:qualifiedAsso...
DataAcquisition
prov:Entity
hasSpatioTempora...
ssn-ext:ObservationCollection
sosa:madeBySensor
ssn:System
prov:wasGenerate...
Drone Data Distribution
dcat:distribution
Observation Collection
dcat:Dataset
SpatialTemporalAggregate
tagg:TemporalAggregate
wgs:SpatialThing
TrajectorySource
servesTrajectory
TrajectoryObservationCollection

# Minimum Information Model

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# Ontology Pattern Based Approach

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## Chapter 4

## Linked Ocean Data 2.0

**Adam Leadbetter**
*Marine Institute, Ireland*

**Adam Shepherd**
*Woods Hole Oceanographic Institution, USA*

**Michelle Cheatham**
*Wright State University, USA*

**Rob Thomas**
*British Oceanographic Data Centre, National Oceanography Centre, UK*

**ABSTRACT**

*Within the theme of sustainable development, it is not desirable to either have data siloed in one location where it cannot be reused for purposes beyond which it was originally collected, or in a state where it cannot be integrated into a holistic view of the marine environment. As such, the links between datasets should be formally documented and exploited as best as possible. Given this, the use of Semantic Web technology and information modelling patterns are explored in this chapter with reference to the marine domain. Further, new strategies for adding semantic annotation to data in real-time are discussed and prototyped.*

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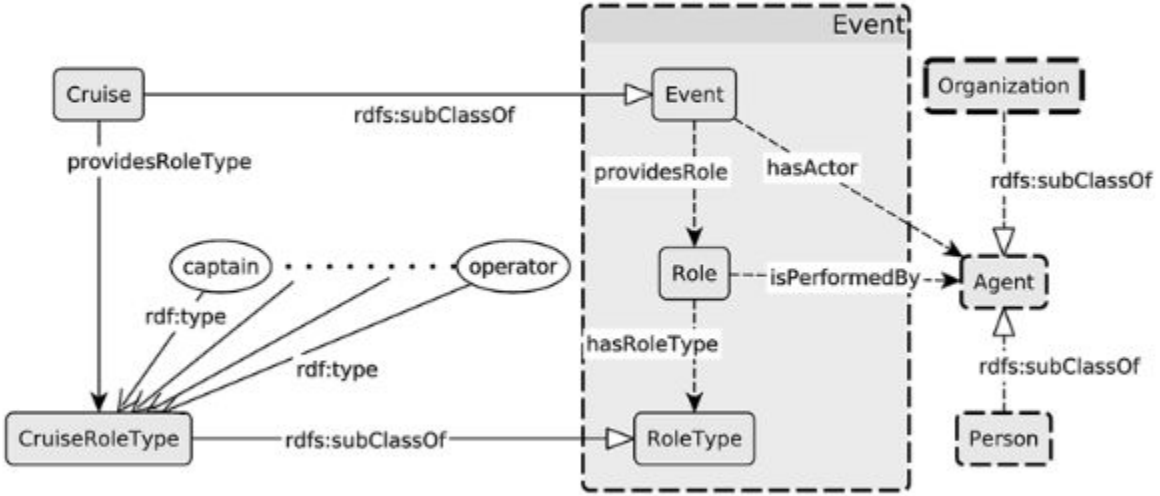
https://www.michellecheatham.com/files/linked-ocean-data.pdf

# Event ODP to Bridge the “Gap”

*Figure 5. The cruise ODP as a specialization of the event ODP*




https://www.michellecheatham.com/files/linked-ocean-data.pdf

“So, this is ‘great’ Chuck, but this all seems really complicated and I just want to know where to populate my data”

How Do We Build Applications?

# Shapes Constraint Language

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Application or Use Case ‘View’

[https://www.w3.org/TR/shacl/](https://www.w3.org/TR/shacl/)

## Shapes Constraint Language (SHACL)

W3C Recommendation 20 July 2017

**This version:**
https://www.w3.org/TR/2017/REC-shacl-20170720/

**Latest published version:**
https://www.w3.org/TR/shacl/

**Latest editor's draft:**
https://w3c.github.io/data-shapes/shacl/

**Implementation report:**
https://w3c.github.io/data-shapes/data-shapes-test-suite/

**Previous version:**
https://www.w3.org/TR/2017/PR-shacl-20170608/

**Editors:**
Holger Knublauch, TopQuadrant, Inc.
Dimitris Kontokostas, University of Leipzig

**Repository:**
GitHub
Issues

**Test Suite:**
SHACL Test Suite

Please check the **errata** for any errors or issues reported since publication.

See also **translations**.



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# Automatic Form Generation from SHACL

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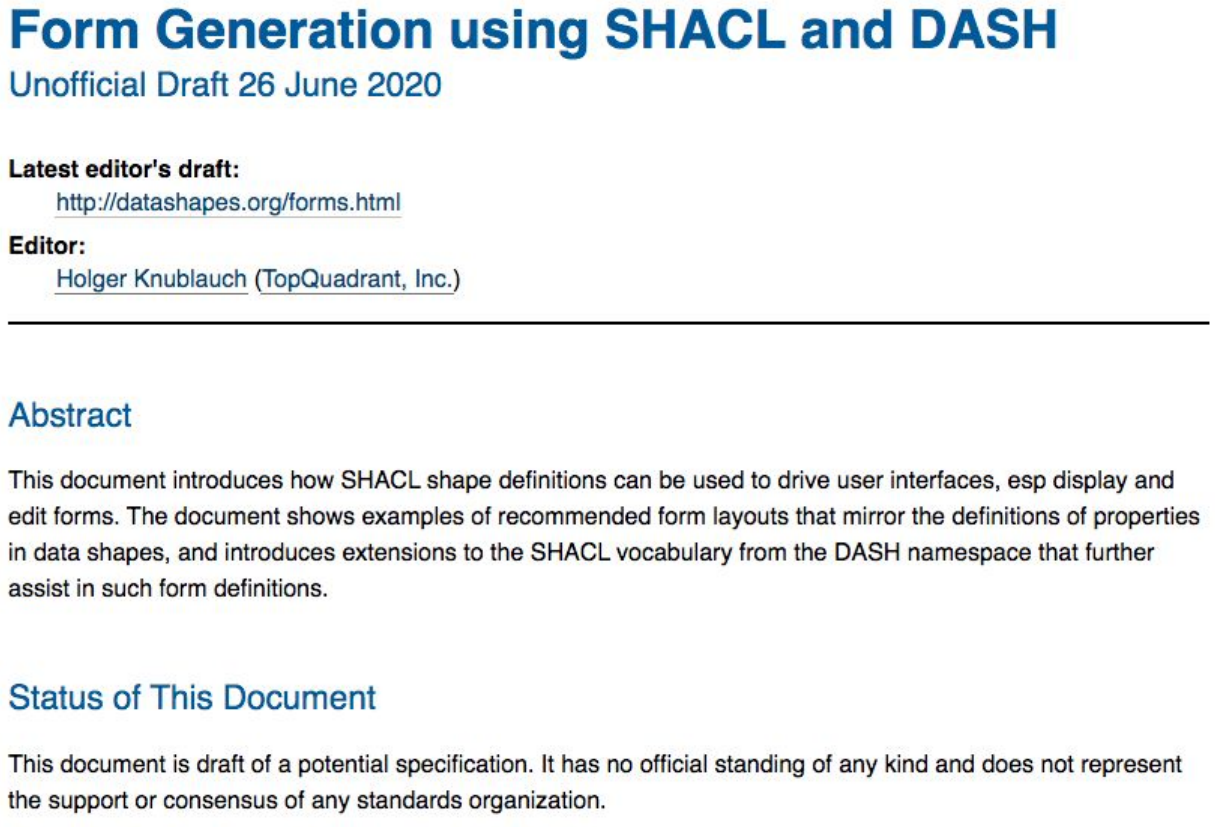
We can also use SHACL to generate human centric data entry and Schema.org markup for dataset landing pages facilitating code reuse



## Form Generation using SHACL and DASH

Unofficial Draft 26 June 2020

**Latest editor's draft:**
http://datashapes.org/forms.html

**Editor:**
Holger Knublauch (TopQuadrant, Inc.)

### Abstract

This document introduces how SHACL shape definitions can be used to drive user interfaces, esp display and edit forms. The document shows examples of recommended form layouts that mirror the definitions of properties in data shapes, and introduces extensions to the SHACL vocabulary from the DASH namespace that further assist in such form definitions.

### Status of This Document

This document is draft of a potential specification. It has no official standing of any kind and does not represent the support or consensus of any standards organization.

http://datashapes.org/forms.html

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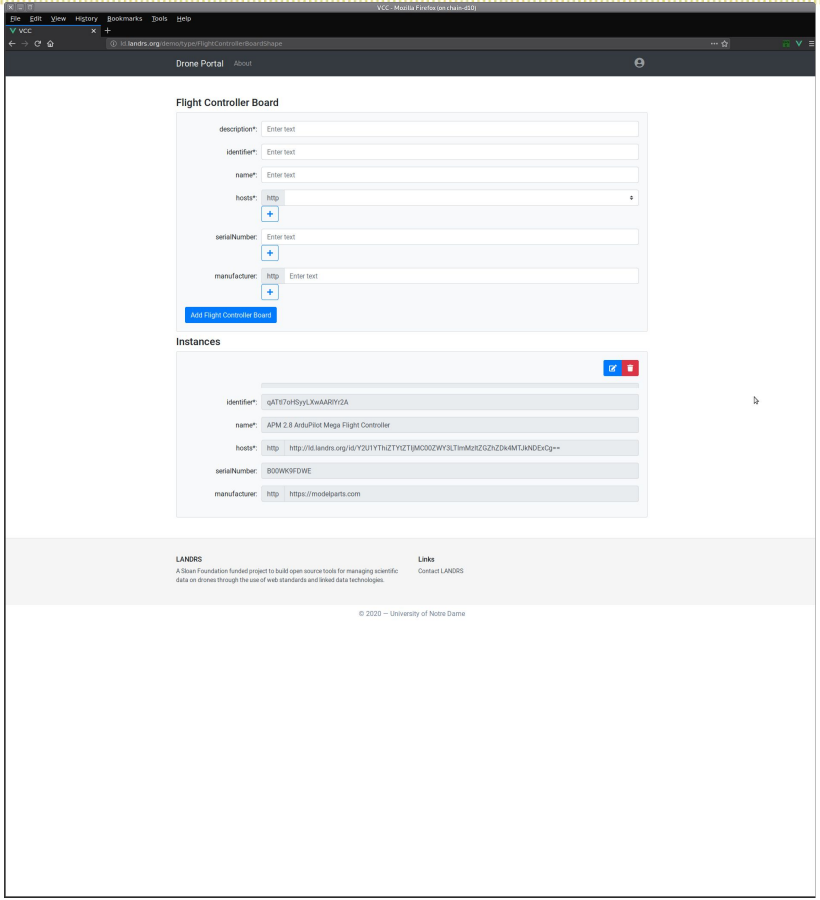
# Application Semantics

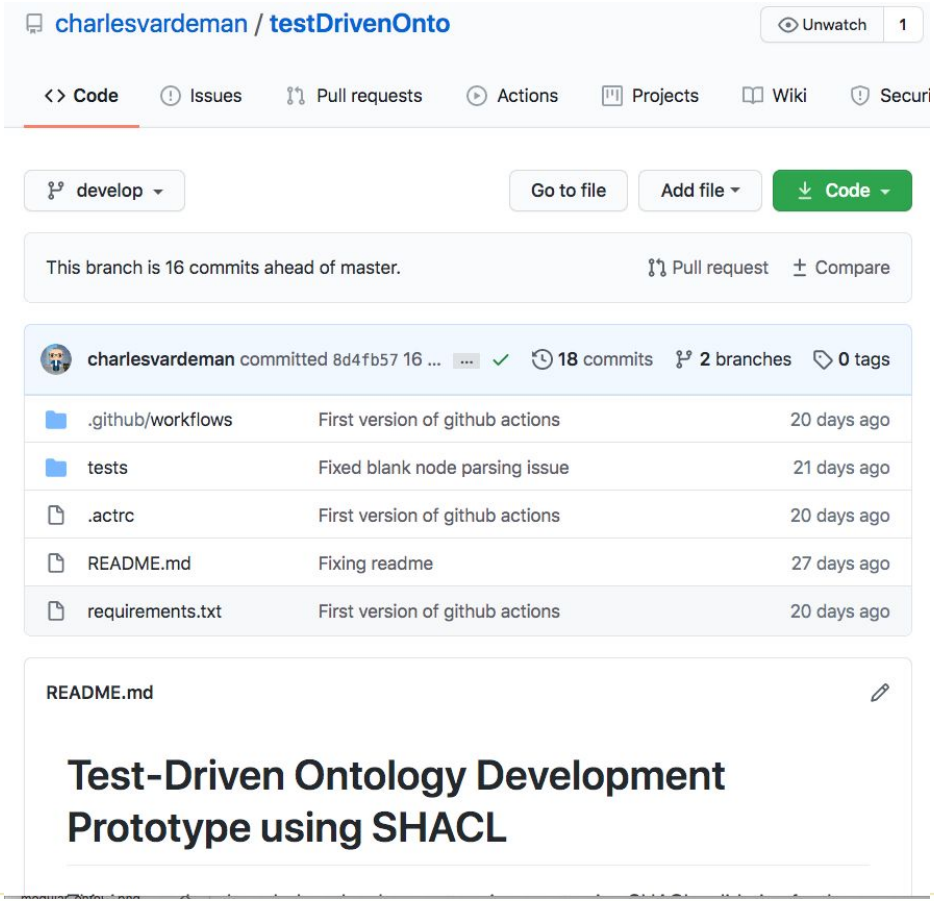
We want to be explicit to the agent the semantics of a “LANDRs Application”, akin to a “View” in the model, view, controller pattern (MVC), vs the broader semantics and the semantics provided by a mid and upper level ontology.

# VueJS form generated from LANDRS Shape

We want to be able “reuse” technologies not just for the semantic layer, but for the application layer. Start to combined web application development stacks with semantics. We should be able to use SPARQL and other REST endpoints to generate the “Page View” and page embedded schema.org markup for “findability” in FAIR.



# Continuous Integration



# Continuous Integration

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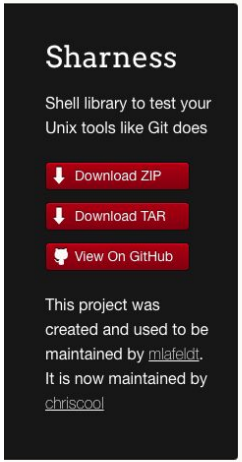


## Sharness

Sharness is a portable shell library to write, run, and analyze automated tests for Unix programs. Since all tests output TAP, the Test Anything Protocol, they can be run with any TAP harness.

Each test is written as a shell script, for example:

```
#!/bin/sh

test_description="Show basic features of Sharness"

. ./sharness.sh

test_expect_success "Success is reported like this" "
    echo hello world | grep hello
"

test_expect_success "Commands are chained this way" "
    test x = 'x' &&
    test 2 -gt 1 &&
    echo success
"

return_42() {
    echo "Will return soon"
    return 42
}

test_expect_success "You can test for a specific exit code" "
    test_expect_code 42 return_42
"

test_expect_failure "We expect this to fail" "
    test 1 = 2
"
```

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# pySHACL

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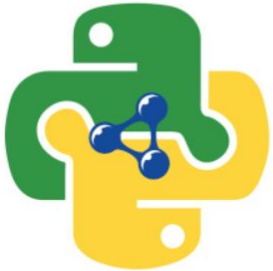
README.md



## pySHACL

A Python validator for SHACL.

pypi package 0.11.5 coverage 86%

This is a pure Python module which allows for the validation of RDF graphs against Shapes Constraint Language (SHACL) graphs. This module uses the rdflib Python library for working with RDF and is dependent on the OWL-RL Python module for OWL2 RL Profile-based expansion of data graphs.

This module is developed to adhere to the SHACL Recommendation:

> Holger Knublauch; Dimitris Kontokostas. *Shapes Constraint Language (SHACL)*. 20 July 2017. W3C Recommendation. URL: https://www.w3.org/TR/shacl/ ED: https://w3c.github.io/data-shapes/shacl/

https://github.com/RDFLib/pySHACL

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# For Instance Ontologies Should Have a Title

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```
#!/bin/sh
# vi: set ft=sh :


test_description="Ontology Title Metadata"

. ./sharness.sh

TITLE="$SHARNESS_TEST_DIRECTORY/title"

test_expect_failure "Test no metadata validation failure" "
    pyshacl -s '$TITLE/shape.ttl' '$TITLE/title_fail.ttl'
"

test_expect_success "Test title1 rdfs:label" "
    pyshacl -s '$TITLE/shape.ttl' '$TITLE/title1.ttl'
"

test_expect_success "Test title2 skos:prefLabel" "
    pyshacl -s '$TITLE/shape.ttl' '$TITLE/title2.ttl'
"

test_expect_success "Test title3 dct:title" "
    pyshacl -s '$TITLE/shape.ttl' '$TITLE/title3.ttl'
"

test_expect_success "Test title4 dc:title" "
    pyshacl -s '$TITLE/shape.ttl' '$TITLE/title4.ttl'
"


test_done
```

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# Create a Shape

```
test:ontoshape a sh:NodeShape ;
  sh:targetClass owl:Ontology ;
  # Ontology MUST contain a tile in rdfs:label or skos:prefLabel or dct:title or dc:title
  sh:or (
    [ sh:property [
        sh:path rdfs:label ;
        sh:datatype xsd:string ;
        sh:minCount 1 ;
        ]
    ]
     [ sh:property [
        sh:path skos:prefLabel ;
        sh:datatype xsd:string ;
        sh:minCount 1 ;
        ]
    ]
     [ sh:property [
        sh:path dct:title ;
        sh:datatype xsd:string ;
        sh:minCount 1 ;
        ]
    ]
     [ sh:property [
        sh:path dc:title ;
        sh:datatype xsd:string ;
        sh:minCount 1 ;
        ]
    ]
  ) .
```

# “Write” Turtle that passes

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```
# baseURI: http://linked.data.gov.au/def/plot/
# imports: http://purl.org/dc/elements/1.1/
# imports: http://www.w3.org/ns/ssn/ext
# prefix: plot

@prefix test: <https://w3id.org/test/> .
@prefix owl: <http://www.w3.org/2002/07/owl#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix xml: <http://www.w3.org/XML/1998/namespace> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix dct: <http://purl.org/dc/terms/> .
@prefix dc: <http://purl.org/dc/elements/1.1/> .
@prefix sdo: <https://schema.org/> .
@prefix dcat: <http://www.w3.org/ns/dcat#> .
@prefix reg: <http://purl.org/linked-data/registry> .


<test:title1> rdf:type owl:Ontology ;
  rdfs:label "My Great Ontology" .
```

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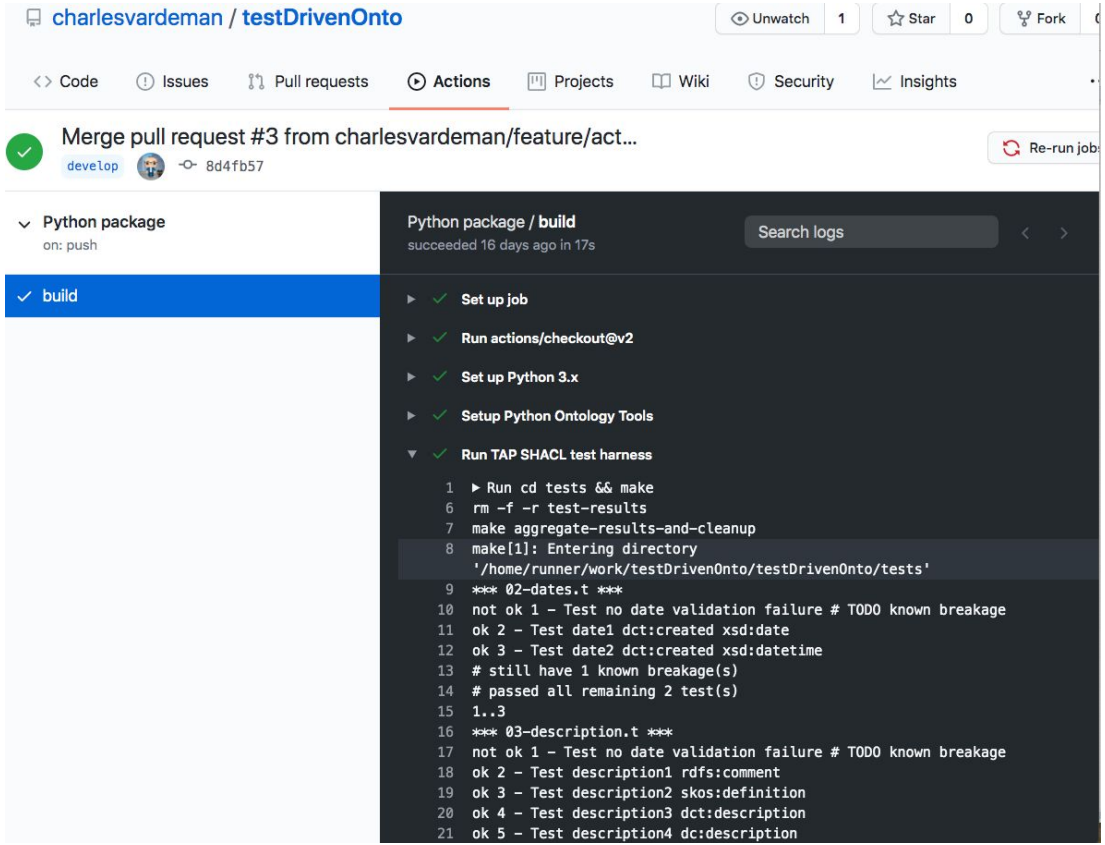
# Automate with Github Actions



# Linked Data and Web APIs

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Provide Bridge to non-Semantic web interfaces and still provide the power of RDF, OWL and SPARQL to more "Rich" Linked-Data Based Applications

information

MDPI

*Article*

## Integration of Web APIs and Linked Data Using SPARQL Micro-Services—Application to Biodiversity Use Cases †

**Franck Michel [1,*], Catherine Faron Zucker [1], Olivier Gargominy [2] and Fabien Gandon [1]**

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* Correspondence: fmichel@i3s.unice.fr
† This paper is an extended version of our conference paper: Michel F., Faron Zucker C. and Gandon F. (2018). SPARQL Micro-Services: Lightweight Integration of Web APIs and Linked Data. In Proceedings of the Linked Data on the Web (LDOW2018), Lyon, France, 23 April 2018.

Received: 9 November 2018; Accepted: 3 December 2018; Published: 6 December 2018

check for updates

https://www.researchgate.net/publication/329037925_Integration_of_Web_APIs_and_Linked_Data_using_SPARQL_Micro-Services_Application_to_Biodiversity_Use_Cases

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# SPARQL as an API interface

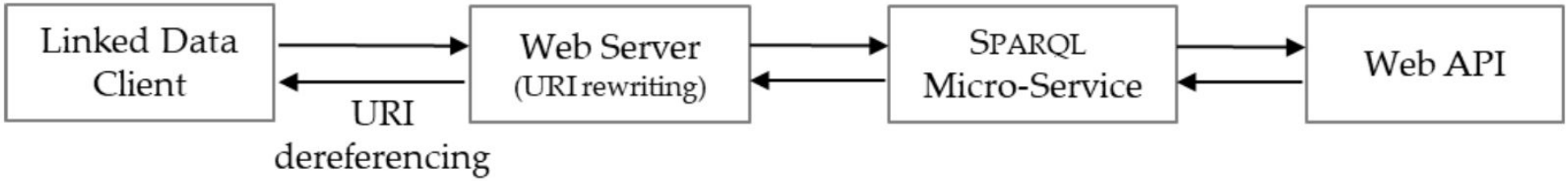


**Figure 2.** Using a SPARQL micro-service to dereference URIs to RDF content.

**Example 2.** *Let us assume that the getPhotoById SPARQL micro-service retrieves photos by their Flickr identifier (argument photo_id). When the Web server receives a look-up query for URI "http://example.org/ld/flickr/photo/38427227466", it invokes the getPhotoById service with the following inputs: (i) The photo identifier passed as argument photo_id; (ii) a SPARQL query to retrieve a graph representing the resource, typically a DESCRIBE query on the URI being looked up; (iii) the Accept HTTP header from the look-up query, to enable end-to-end content negotiation. An example of the URL generated by the Web server in response to this URI look-up is shown below:*

Key: Not everything "belongs" in the RDF graph. Here the semantics of a "Photo" are contained in a SPARQL Micro-Service but the Photo itself is de-referenced through an API.

# APIs “Wrap” Sparql

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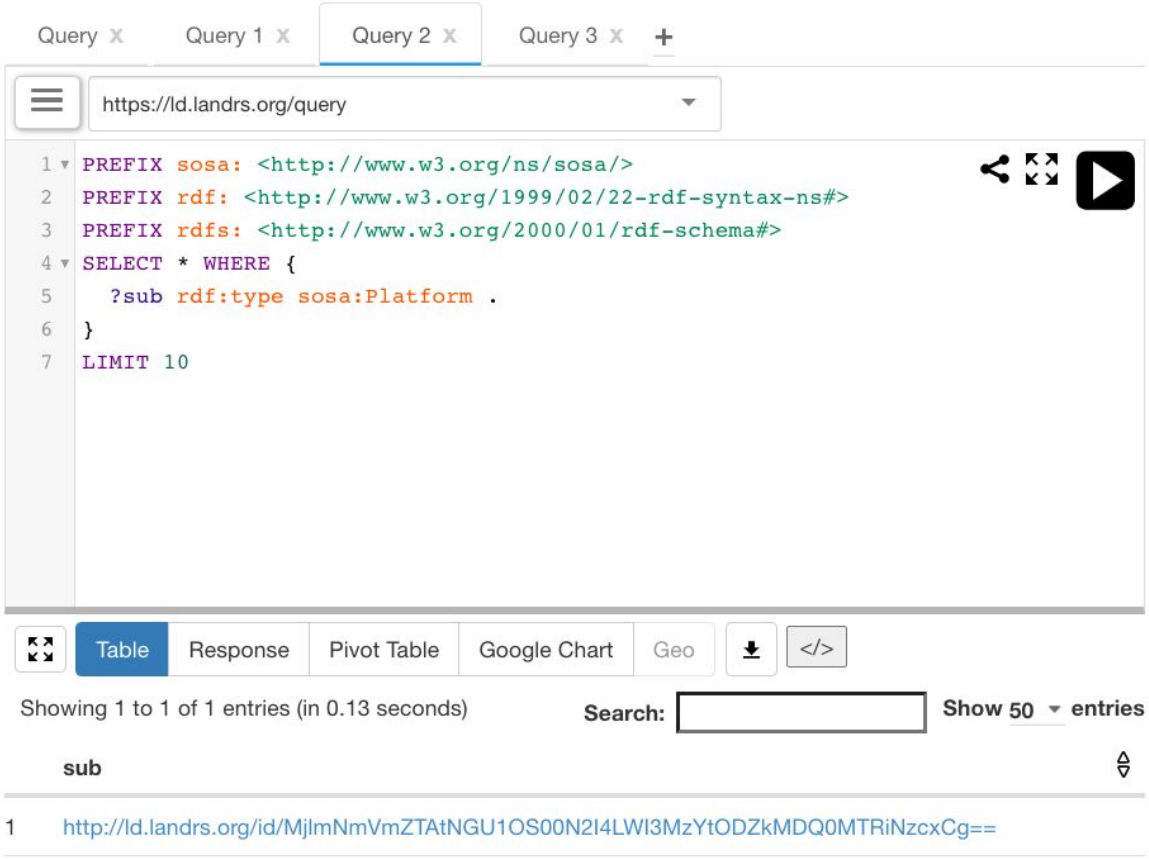


https://ld.landrs.org/sparql/

# Schema.org-DCAT2 WebAPI

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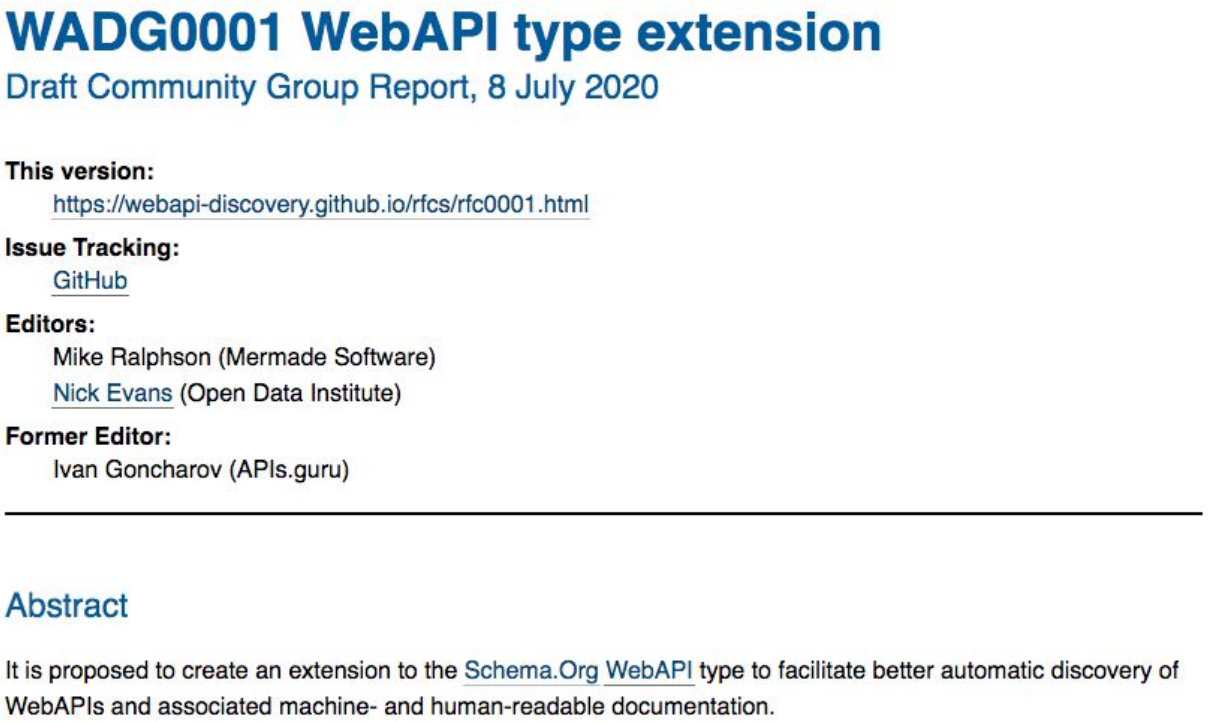
Defines semantics to query using SPARQL endpoint



## WADG0001 WebAPI type extension

Draft Community Group Report, 8 July 2020

**This version:**
https://webapi-discovery.github.io/rfcs/rfc0001.html

**Issue Tracking:**
GitHub

**Editors:**
Mike Ralphson (Mermade Software)
Nick Evans (Open Data Institute)

**Former Editor:**
Ivan Goncharov (APIs.guru)

---

### Abstract

It is proposed to create an extension to the Schema.Org WebAPI type to facilitate better automatic discovery of WebAPIs and associated machine- and human-readable documentation.

https://webapi-discovery.github.io/rfcs/rfc0001.html

# WebAPI Schema

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## § 3.3. New property `conformsTo`

### § 3.3.1. Proposal

| Property | Domain | Range | Description |
|---|---|---|---|
| `conformsTo` | `schema:WebAPI` | `schema:URL` | The URL reference of an established standard to which the described API conforms, for example `https://jsonapi.org/format/1.0/`, `https://grpc.io/`, or `http://www.hydra-cg.com/spec/latest/core/`. |

### § 3.3.2. Example

```
"conformsTo": [
  "https://jsonapi.org/format/1.0/"
],
```

### § 3.3.3. Notes

This proposal brings the property directly from DCAT v2.

The DCAT v2 to schema.org mapping does not include `conformsTo`. The mapping gap was recognised in previous mapping attempts and not addressed within DCAT v2 discussions.

# Hydra, OpenAPI to bridge to non-RDF data resources

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```
# Information Object pattern because observation collection can be repackaged as a dataset release or take other forms.
<:FlightObservationCollection> a sosa-ext:ObservationCollection, ir:InformationObject ;
sosa:madeBySensor <SolarPowerSensor> ;
sosa-ext:hasFeatureOfInterest <http://www.wikidata.org/entity/Q1353965#SolarArray> ;
ir:realizedBy <http://somehost/coverageAPI/collections> .


# Link between SensorThings and SOSA. Use Hydra-core to describe interactions.
# Realization of the Obs Collection since the collection can take different forms. For example a Dataset release, a API endpoint, etc.
# For example hydra-box https://github.com/zazuko/hydra-box/blob/master/examples/spaceprobes.api.jsonld
<http://somehost/coverageAPI/collections> a ir:InformationRealization, st:datastream, hydra:Resource ;
ir:hasInformationObject <FlightObservationCollection> ;
dct:isDescribedBy: http://somehost/api/apiDocumentation ;
hydra:operation [
  a hydra:Operation ;
  hydra:method "GET" ;
  hydra:expects [
    a hydra:RequestSpecification ;
    hydra:content [
      a hydra:rawContent ;
      # Content-negotiation type for api
      hydra:supportedContentType "application/coverage+json"
    ],
    [
      a hydra:rawContent ;
      # Content-negotiation type for api
      hydra:supportedContentType "application/json"
    ]
  ]
] .

http://somehost/api/apiDocumentation a hydra:apiDocumentation .
```

# Contact Details

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