

# How can you contribute to the W3C and the AGLDWG?

Dr Armin Haller

*Co-Chair AGLDWG, Office Manager W3C Australia*

*Senior Lecturer, ANU*

# ABOUT W3C:

## *“LEADING THE WEB TO ITS FULL POTENTIAL”*



Tim Berners-Lee  
WEB INVENTOR  
AND  
W3C DIRECTOR

- Founded 1994; celebrating 25 years
- Membership organization with more than 400 members
- 70 staff in US (MIT), China (Beihang), France (ERCIM) and Japan (Keio)
- Focus on Web ecosystem: users, developers, browsers, etc.
- Developing new technologies for Open Web Platform that are transforming industries like Mobile, Entertainment, Automotive, Digital Publishing, Web Payments and Manufacturing (Web of Things)
- W3C focuses both on the Open Web, as well as specific industry requirements brought by industry segments

# W3C DEVELOPS ROYALTY-FREE STANDARDS

- Standard platform levels playing field; reduces development costs
- Level playing field enables greater, faster innovation
- Participation allows organizations to shape platform, ensure their needs are met, standardize best practices across complex ecosystems
- Participants gain early access to insights and successful standards implementations



# GLOBAL PARTICIPATION

	2014	2015	2016	2017
Members	406	405	427	471
Full	86	94	95	87
Community & Business Groups / People	180 >4.4K	225 >6.3K	251 >7.4K	292 > 9K
Students enrolled in W3C courses	2.6K	48K	300K	600K

# WORKING GROUPS

- W3C has at any point 20+ open working groups (e.g. CSS, Web Authentication, Automotive, Web of Things etc.)
- Relevant open working groups:
  - Dataset Exchange Working Group
  - Web of Things Working Group
  - Spatial Data on the Web (SDW) Interest Group

# SDW INTEREST GROUP

## Joint W3C/OGC interest group

- Builds upon the outcomes of the *Spatial Data on the Web Working Group*
- The Spatial Data on the Web IG is scoped to realize the W3C side of the Joint W3C/OGC Organizing Committee (JWOC), i.e.:
  - to facilitate direct cooperation between the spatial information and Web communities, allowing each to benefit from the other's data, technologies and methods.
  - to publish joint work where appropriate and may recommend the creation of formal standards-defining working groups where necessary in one or both standards development organizations.

# SDW WORKING GROUP

## Was chartered to:

- determine how spatial information can best be integrated with other data on the Web;
- determine how machines and people can discover that different facts in different datasets relate to the same place, especially when 'place' is expressed in different ways and at different levels of granularity;
- identify and assess existing methods and tools and then create a set of best practices for their use;
- complete the standardization of informal technologies already in widespread use.



# WHAT WAS ACHIEVED?

## Spatial Data on the Web Best Practices

W3C Working Group Note 28 September 2017

This version:

<https://www.w3.org/TR/2017/NOTE-sdw-bp-20170928/>

Latest published version:

<https://www.w3.org/TR/2017/NOTE-sdw-bp-20170928/>



## Overview of the CoverageJSON format

W3C Working Group Note 11 July 2017

This version:

<https://www.w3.org/TR/2017/NOTE-coveragejson-20170711/>

Latest published version:

<https://www.w3.org/TR/2017/NOTE-coveragejson-20170711/>

Latest editor's draft:

<https://www.w3.org/TR/2017/NOTE-coveragejson-20170711/>

## QB4ST: RDF Data Cube extensions for spatio-temporal components

W3C Working Group Note 28 September 2017



## Spatial Data on the Web Use Cases & Requirements

W3C Working Group Note 25 October 2016

This version:

<https://www.w3.org/TR/2016/NOTE-sdw-uc-20161025/>

Latest published version:

<https://www.w3.org/TR/2016/NOTE-sdw-uc-20161025/>

Latest editor's draft:

<http://www.w3.org/TR/2016/NOTE-sdw-uc-20161025/>

Previous version:

<https://www.w3.org/TR/2016/NOTE-sdw-uc-20161025/>

Editors:

Frans Knibbe

Alejandro

OGC Document

OGC 15-09

Repository:

We are on

Changes:

Change to

Diff to previous

Commit history

Copyright © 2016

## Abstract

This document

describes the

use cases and

requirements

for the

spatial data on the web

## Semantic Sensor Network Ontology

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/2017/REC-vocab-ssn-20171019/>

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/>

Editors:

Armin Haller, [Australian National University](#)

Krzysztof Janowicz, [University of California, Santa Barbara](#)

Simon Cox, [CSIRO](#)

Danh Le Phuoc, [Technical University of Berlin](#)

Kerry Taylor, [Australian National University](#)

Maxime Lefrançois, [École Nationale Supérieure des Mines de St](#)

Contributors (ordered alphabetically):

Rob Atkinson, [Metalinkage](#)

Raúl García-Castro, [Universidad Politécnica de Madrid](#)

Joshua Lieberman, [Tumbling Walls](#)

Claus Stadler, [Universität Leipzig](#)

Repository:

[GitHub](#)

[Issues](#)

OGC Document Number:

OGC 16-079



## Publishing and Using Earth Observation Data with the RDF Data Cube and the Discrete Global Grid System

W3C Working Group Note 28 September 2017

This version:

<https://www.w3.org/TR/2017/NOTE-eo-qb-20170928/>

Latest published version:

<https://www.w3.org/TR/2017/NOTE-eo-qb-20170928/>

Latest editor's draft:

<https://w3c.github.io/sdw/eo-qb/>

Previous version:

<https://www.w3.org/TR/2017/NOTE-eo-qb-20170105/>

Editors:

Dmitry Brzhinev, [Australian National University](#)

Sam Toyer, [Australian National University](#)

Kerry Taylor, [Australian National University](#)

Contributors:

Zhiduo Zhang, [Australian National University](#)

OGC Document Number:

OGC 16-125



Copyright © 2017 OGC & W3C® (MIT, ERCIM, Keio, Beihang). W3C liability, trademark and document use rules apply.



# SPATIAL DATA ON THE WEB BEST PRACTICES

- For data publishers and tool developers, aiming at consumption by ordinary Web developers.
- Evidence to support best practices for real users, plus identified gaps in practice with advice.

W3C Working Group Note

## Spatial Data on the Web Best Practices

W3C Working Group Note 28 September 2017

**This version:**  
<https://www.w3.org/TR/2017/NOTE-sdw-bp-20170928/>



**Latest published version:**  
<https://www.w3.org/TR/sdw-bp/>

**Latest editor's draft:**  
<https://w3c.github.io/sdw/bp/>

**Previous version:**  
<https://www.w3.org/TR/2017/NOTE-sdw-bp-20170511/>

**Editors:**  
Jeremy Tandy, [Met Office](#)  
Linda van den Brink, [Geonovum](#)  
Payam Barnaghi, [University of Surrey](#)

**Contributors:**  
Phil Archer  
Jon Blower  
Newton Calegari  
Byron Cochrane  
Simon Cox  
François Daoust  
Andreas Harth  
Bart van Leeuwen  
Josh Lieberman  
Chris Little  
Andy Mabbett  
Peter Parslow  
Ed Parsons  
Andrea Perego  
Clemens Portele  
Bill Roberts  
Lars G. Svensson



# SPATIAL DATA ON THE WEB BEST PRACTICES - LINKABILITY

Sources such as the Best Practices for Publishing Linked Data [LD-BP] assert a strong association between Linked Data and the Resource Description Framework (RDF) [ RDF11-PRIMER]. Yet we believe that Linked Data requires only that the formats used to publish data **support Web linking** (see [WEBARCH] section 4.4 Hypertext)...

..However, we must make clear to readers that there is **no requirement for all publishers of spatial data on the Web to embrace the wider suite of technologies associated with the Semantic Web**; we recognize that in many cases, a Web developer has little or no interest in the toolchains associated with Semantic Web due to its addition of complexity to any Webcentric solution.

# SPATIAL DATA ON THE WEB BEST PRACTICES - SPATIAL RELATIONS

- We identify topological, directional and distance relations.
- We propose an update to GeoSPARQL to standardise geometry, geometry versions, coordinate reference systems
- GeoSPARQL uses DE-9IM, RCC8 and simple features topological vocabularies

We advise using simple features from GeoSPARQL

- Equals — `geosparql:sfEquals`
- Disjoint — `geosparql:sfDisjoint`
- Touches — `geosparql:sfTouches`
- Crosses — `geosparql:sfCrosses`
- Within — `geosparql:sfWithin`
- Contains — `geosparql:sfContains`
- Intersects — `geosparql:sfIntersects`
- Overlaps — `geosparql:sfOverlaps`

We advise asserting such predicates where useful.

# SPATIAL DATA ON THE WEB BEST PRACTICES – GEOMETRY

- Use owl:sameAs (carefully), geonames:nearby or foaf:based\_near
- Or schema:sameAs or bbc:sameAs
- But place is a social construct that may be imprecise and opinionated: The Sahara, Renaissance Italy...

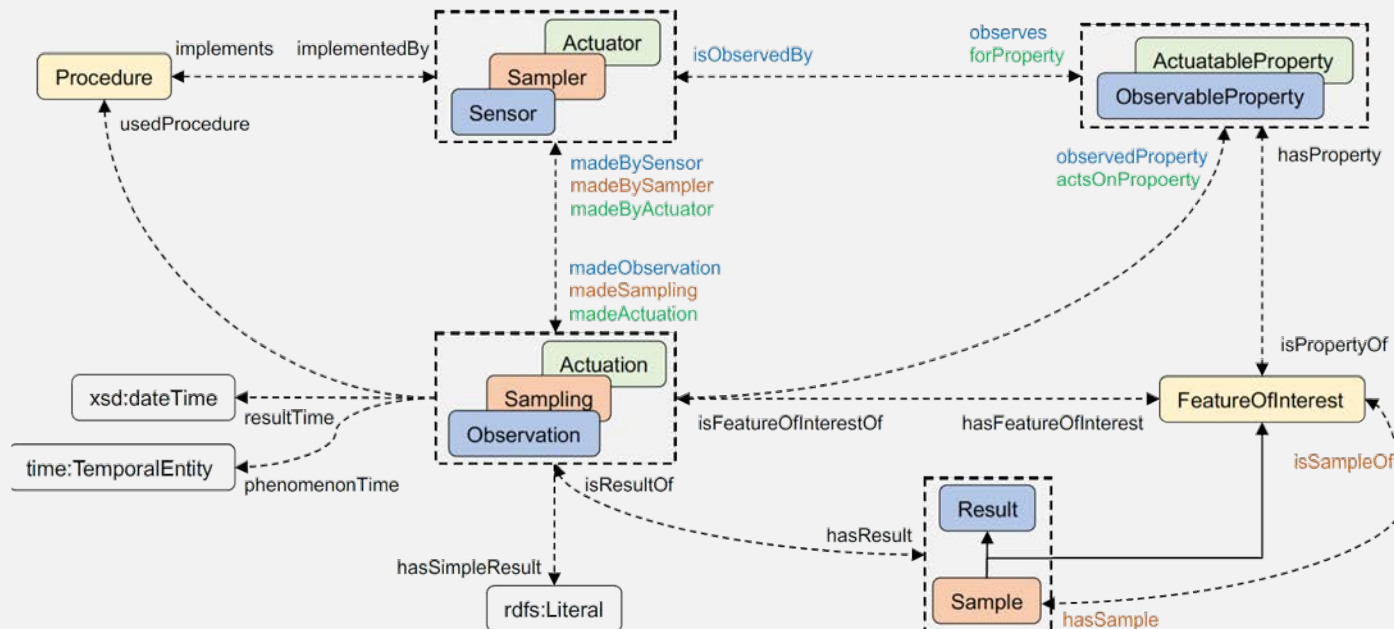
- We propose samePlaceAs

*Is ancient Byzantium the same place as modern Istanbul?  
What about the nightclub that moved across the street to avoid demolition?*

- Propose schema:samePlaceAs but ongoing...


# SEMANTIC SENSOR NETWORKS (SSN) ONTOLOGY

- Modelling sensors, actuators, samplers, data, systems, and physical objects being observed/sampled/actuated on.



# PHYSICAL SAMPLE LOD REPOSITORY

- Geoscience Australia's web API delivering metadata for physical samples stored in it's repositories.
- Multiple 'views' and 'formats' of samples' metadata is available, including Dublin Core and W3C's SOSA ontology


 Applying geoscience to Australia's most important challenges

Australian Government  
Geoscience Australia

[GA Home](#) [API Home](#) [Sample Register](#) [OAI-PMH Endpoint](#) [About](#)

## Sample

IGSN Ontology view



Property	Value
IGSN	AU1
GA Sample ID	2000362001A
Date Acquired	missing
Sampling Location (WKT) horizontal datum: 4283	<http://www.opengis.net/det/crs/EPSG/0/4283> POINTZ(137.545818 -34.213763 26)
State	SA
Current Location	GA Services building
Access Rights	Public
Publisher	<a href="#">Geoscience Australia</a>
Sample Type	core
Method Type	Corer:Rock
Material Type	rock
Lithology	None
Sampling Feature Type	borehole
Custodian:	<a href="#">Geoscience Australia</a>
Collector	Raymond, O.

Functional endpoints	
Provenance	<a href="#">?_view=prov</a>
Pingback endpoint	<a href="#">/pingback</a>

<http://pid.geoscience.gov.au/sample/>

# AUSTRALIAN GOVERNMENT LINKED DATA WORKING GROUP

Community of Commonwealth Government experts and champions, with invited non-voting participation of individuals, corporations and other entities.

- Established in August 2012, with strong growth in membership since the Government released the outcomes of an inquiry on [Data Availability and Use in the Australian Government](#).
- [No official Government mandate or related legislation](#), but a community of practice that promotes and represents a series of federal Government entities who seek to implement and use Linked Data technologies for the betterment of Australian Government data sharing.
- Several members have signed an MoU to support the use and persistence of [linked.data.gov.au](http://linked.data.gov.au) URIs.



Australian Government  
Geoscience Australia



Australian Government  
Australian Taxation Office



Australian Government  
Bureau of Meteorology



Australian Government  
Department of Human Services



Australian Government  
Digital Transformation Agency




Australian Government  
Department of Finance



Australian Government  
Department of Communications



# WEB PRESENCE



[Home](#) | [Assistance](#) | [Showcase](#) | [Events](#) | [Groups](#) | [How To](#) | [Contact](#) | [Join](#)

## Australian Government Linked Data Working Group


The Australian Government Linked Data Working Group was established in August 2012 to meet the Linked Data challenges facing the Australian government.

As Linked Data technologies advance and become commonplace, it will be necessary for Government to become responsive to the demands of its citizens, as well as its own entities. Developing Government standards for guidance and establishing technical mechanisms for Linked Data implementations will ensure individuals, businesses and organisations can benefit from the opportunities these technologies offer.

The group is a community of Commonwealth Government experts and champions, with invited non-voting participation of individuals, corporations and other entities. In addition to drafting policy and technical guidance on the implementation of Linked Data for the Australian Government, members of the group also supply some core technical Linked Data services.

### About Linked Data

"**Linked Data**" refers to a set of standards, practices, and tools for publishing and linking structured data on the Web. Data that is Linked Data is linked to other data and can in turn be linked from other data. It is data that is published in a machine-readable way because all data is explicitly described in meaning and in format. For data publishers, it aims to efficiently maximise the capacity for interoperability and correct interpretation of published data. For data consumers it aims to maximise the efficient and correct re-use of data.



Be inspired by this video of Sir Tim Berners-Lee, the inventor of the World Wide Web.

### More Linked Data info

See our [Showcase page](#) for information about Australian Government Linked Data including links to Linked Data systems and data and also presentations about Linked Data.

See our [How To page](#) for how to do things like register persistent \*.data.gov.au URIs and publish ontologies.

See our [Assistance page](#) for all the ways we try to help Australian government groups with Linked Data.

### Contact

### Want to join us?


Do you want to help us raise the profile of Linked Data? Stay in touch, subscribe?

If you want to be part of something that is changing our lives, why not join the Working Group and make a contribution to something big?

[Join Here!](#)

### Members

- Australian Bureau of Statistics
- Australian National University (Chair)
- Bureau of Meteorology
- CSIRO (Chair)
- Department of Communications
- Department of Finance
- Department of Human Services (Chair)
- Department of the Prime Minister and Cabinet
- Digital Transformation Agency
- Geoscience Australia
- National Archives of Australia



## Australian Government Linked Data Working Group

The Australian government community of practice around social and technical issues related to Linked Data.

<http://linked.data.gov.au>

[Repositories](#) 15 | [People](#) 6 | [Teams](#) 2 | [Projects](#) 0 | [Settings](#)

Type: All Language: All Customize pinned repositories New

### TR

★ 9 ♿ 4 Updated 2 hours ago

### gnaf-ont

● HTML 🗝 CC-BY-4.0 Updated 6 days ago

### agrif-ont

● HTML ★ 1 🗝 CC-BY-4.0 Updated on 19 Feb

### AGLDWG.github.io

The AGLDWG website

● HTML ★ 5 ♿ 1 🗝 CC-BY-4.0 Updated on 11 Feb

### agiso-web

Australian Government Integrated Set of Ontologies Website

🗝 CC-BY-4.0 Updated on 8 Jan

### dataset-ont

● HTML ★ 1 Updated on 14 Dec 2017

### iso19160-1-address-ont

● HTML ★ 1 🗝 CC-BY-4.0 Updated on 10 Dec 2017

### iso19160-1-address-ont-nz-profile


● HTML ★ 1 ♿ 1 🗝 CC-BY-4.0 Updated on 5 Dec 2017

### Top languages

● HTML ● Shell

### People

6 >



[Invite someone](#)

<http://linked.data.gov.au/>

<https://github.com/AGLDWG>

# TERMS OF REFERENCE

- Establish **technical guidance publishing public sector information using Linked Data** as a delivery technology
- Determine **governance rules and processes** for the effective management of Australian Government Linked Data
- **Promote Linked Data** across the Australian Government
- Engender the development of **Linked Data infrastructure**

# URI GUIDELINES

- Top level reserved domain  
<http://{subdomain}.linked.data.gov.au/>
- {subdomain} includes a set of 25 reserved keywords defined by AGIFT
  - environment
  - governance
  - transport
  - reference
  - ...

# URI GUIDELINES

Set of general guidelines aimed at helping government stakeholders to define and manage URIs for 'Linked Datasets' and the resources described within.

## Overarching principles:

- Use HTTP URIs so that the Linked Dataset URI can be resolved; and
- provide at least one machine-readable representation in RDF.

## General guidelines on:

- Minimum features of a Linked Dataset;
- Domain structure of a Linked Dataset;
- Recommended URI patterns;
- Recommended Publication infrastructure for Linked Datasets;
- and URI naming conventions.

<https://github.com/AGLDWG/TR/blob/master/guidelines/latest.md>

# AUSTRALIAN GOVERNMENT INTEGRATED SET OF ONTOLOGIES (AGISO)

Working Group is in the process of developing a proposal for an integrated set of ontologies

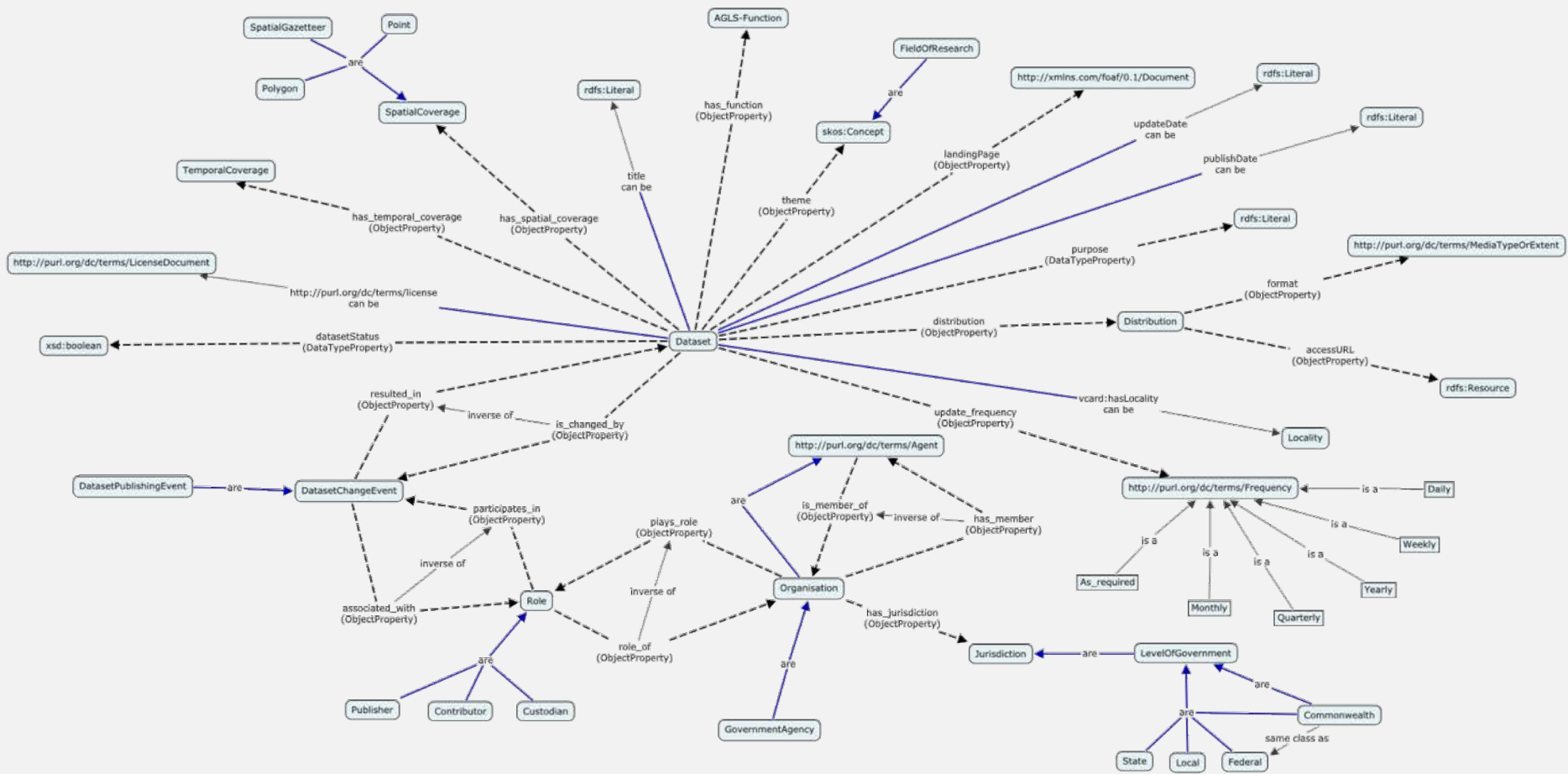
- Currently, there are several ontologies (e.g. Dataset ontology, AGRIF) being developed with a 'whole of government' focus
- AGISO aims to integrate these ontologies allowing them to be used individually or collectively in a seamless way: as if they were one data model
- In making this proposal, the AGLDWG steps beyond international precedent regarding government Linked Data initiatives, in that we intend to provide semantic modelling resources and governance, not just guidelines and recommendations for Linked Data publication

# DATASET ONTOLOGY

Designed to describe the characteristics of datasets published on <http://data.gov.au/>

- Contains elements to describe datasets such as:
  - Publication
  - Update
  - Origin
  - Governance
  - Spatial and temporal coverage
  - Aspects of Organisational Custodianship
  - Governance arrangements

# DATASET ONTOLOGY



<http://reference.data.gov.au/def/ont/dataset>

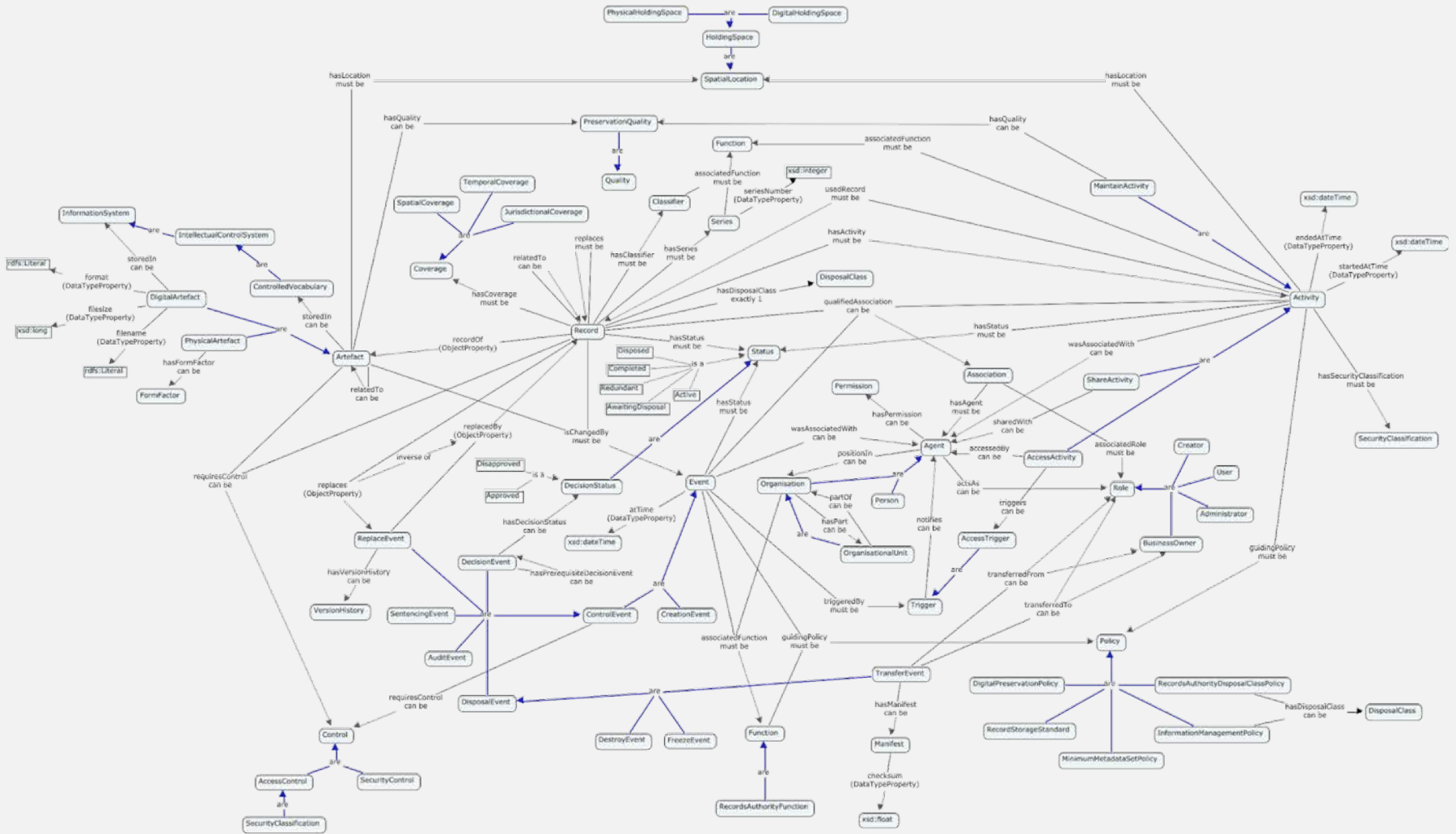


# AUSTRALIAN GOVERNMENT RECORDS INTEROPERABILITY FRAMEWORK (AGRIF)

Ontology to describe the structure, functions, and activities of the Australian Government, providing sufficient context for the effective use of Government information assets.

- Contains elements to describe records such as:
  - Record
  - Artefact
  - Event
  - Policy
  - Coverage
  - Role
  - Agent

# AUSTRALIAN GOVERNMENT RECORDS INTEROPERABILITY FRAMEWORK (AGRIF)



<http://pid.data.gov.au/websrv/reference/def/ont/agrif/>

<http://w3c.org.au>

<http://linked.data.gov.au>

<https://github.com/AGLDWG>

# QUESTIONS?