CDIF content item|Obl.|DCAT v3 implementation|Scope note

Metadata identifier|1|"ex:record-001<br> a dcat:CatalogRecord ;<br> foaf:primaryTopic ex:dataset-001 ;"|ex:record-001 in the implementation has type 'dcat:CatalogRecord', and is a graph node that contains information about the metadata record for the a resource indicated by the foaf:primaryTopic. The use of dcat:CatalogRecord is considered optional. It is used to capture provenance information about entries in a catalog explicitly.

Resource identifier|1|"a dcat:Resource; <br> dcterms:identifier ""string literal"""|The dcat:Resource (or subclass of dcat:Resource) dcterms:identifier is the identifer for the thing in world that is the subject of the DCAT record. The DCAT record is a representation of that thing as a digital object, and the subject of the '<uri> a dcat:Resource' triple typically identifies the same thing, but that URI might dereference to GET a different representation for the thing in the world. OPEN DATA Wallonia-Brussels uses the dcterms:identifier with a string value for the URI that accesses a web page displaying data. The subject of the '<uri> a dcat:Resource' triple is like the JSON-LD @id value, which identifies a graph node that can be interpreted either as the thing in the world the graph node is about, or the JSON-LD (or other RDF serialization) object that is the web representation of that thing.

Title|1|"a dcat:Resource;<br> dcterms:title ""string literal""@lan;"|A set of words that should uniquely identify the described resource for human use, in the scope of the metadata catalog containing this metadata record. Titles should be language localized with @lan tags; only one distinct title per @lan tag is allowed.

Distribution|1|"a dcat:Resource; <br> dcat:landingPage ""literal string URL""."|URL for a web location that provides information about the resource, generally expected to include information about how to get the resource. In general, a resource should have only one landing page.

||"a dcat:Dataset; <br> dcat:distribution [<br> a dcat:Distribution;<br> dcat:downloadURL ""literal URL string"" ]"|URL for web location that will get a representation of the described resource. Other properties in the dcat:Distribution object are expected to provide information about the format, rights, etc. for the particular representation of the resource.

||"a dcat:Dataset;<br> dcat:distribution [<br> a dcat:Distribution;<br> dcat:accessURL ""literal URL string"" ]"|URL for a web location that provides information about how to get the resource. The accessURL might be the same as the landing page, but different distributions might offer different web applications (with different accessURLs) for different access methods or communities.

Rights|1..\*|"a dcat:Resource; <br> dcterms:accessRights ""literal rights statement"" ;<br>OR<br>a dcat:Resource; <br> dcterms:accessRights <Rights statement URI>;"|A statement or link to a statement associated with a resource denoting access rights, applicable to any distribution of the resource. Access rights can also be expressed as code lists / taxonomies. Examples include the access rights code list [EUV-AR](https://publications.europa.eu/en/web/eu-vocabularies/at-dataset/-/resource/dataset/access-right) used in [DCAT-AP]( https://joinup.ec.europa.eu/solution/dcat-application-profile-data-portals-europe) and the [Eprints Access Rights Vocabulary Encoding Scheme](http://purl.org/eprint/accessRights/).

||"a dcat:Dataset;<br> dcat:distribution [<br> a dcat:Distribution; <br> dcterms:accessRights ""literal rights statement""<br> OR <URI for rights statement> ]"|A statement or link to a statement associated with a resource denoting access rights, applicable to a particular distribution. See above for details.

||"a dcat:Resource OR dcat:Dataset; <br> dcat:distribution [<br> a dcat:Distribution;<br> dcterms:license ""literal license statement""<br> OR <URI to statement resource> ]"|link to a statement associated with a resource that is explicitly declared as a 'license'. Can be applied at the dcat:Resource or dcat:Distribution level. For interoperability, it is recommended to use canonical IRIs of well-known licenses such as those defined by Creative Commons.

||"a dcat:Resource OR a dcat:Dataset;<br> dcat:distribution [<br> a dcat:Distribution;<br> dcterms:rights ""string literal statement"" ]"|link to a statement associated with a resource for other types of rights statements, i.e. those that are not covered by dcterms:license and dcterms:accessRights, such as copyright statements. NOTE-- odrl:hasPolicy is available at the dcat:Resource or dcat:Distribution level if a formal ORDL rules statement is available.

Metadata profile identifier|1|"a dcat:CatalogRecord ;<br> foaf:primaryTopic ex:dataset-001 ;<br> dcterms:conformsTo <specification uri>"|The conformsTo property on the CatalogRecord specifies the metadata profile followed by the actual metadata record identified by foaf:primaryTopic.

Metadata date|0..1|"a dcat:CatalogRecord ;<br> foaf:primaryTopic ex:dataset-001 ;<br> dcterms:modified xsd:dateTime."|Use ISO8601 format. The most recent update date for the metadata content is specified in the modififed property on the CatalogRecord linked to the metadata record identified by foaf:primaryTopic.. Harvesters use this to determine if they have already harvested and processed this record.

Metadata contact|0..1|"a dcat:CatalogRecord ;<br> foaf:primaryTopic ex:dataset-001 ;<br> dcterms:created [ <br> a vcard:Kind;<br> …other vcard properties ]"|Not in DCAT. Add a dcterms:created propertie on CatalogRecord, base on open-world RDF.

Resource type|1..\*|"a dcat:Resource;<br> dcterms:type <uri for resource type>;"|The nature or genre of the resource. The value SHOULD be taken from a well governed and broadly recognised controlled vocabulary. Use of Schema.org types will promote interoperability. Multiple types can be specified.

Description|0..1|"a dcat:Resource;<br> dcterms:description ""free text description of resource"";"|Free text, with as much detail as is feasible

Originators|0..\*|"a dcat:Resource;<br> dcterms:creator [ <br> a vcard:Kind;<br> …other vcard properties ]"|The value is a vcard individual or or organization. Use ORCID or other PID to describe person or organization where possible. [use sdo:Person or sdo:Organization?]

Publication Date|0..1|"a dcat:Resource; <br> dcterms:issued ""xsd:dateTime"""|Date on which the resource was made publicly accessible. Use ISO 8601 format.

Modification Date|1|"a dcat:Resource; <br> dcterms:modified ""xsd:dateTime"""|Date of most recent update to resource content. If Publication date is not provided, defaults to the Modification Date. Use ISO 8601 format.

GeographicExtent (named place)|0..\*|"a dcat:Dataset; <br> dcterms:spatial ""string literal place name"" OR<br>a dcat:Dataset; <br> dcterms:spatial <location URI> "|To specify location with place name as a string or a URI (or IRI) from a gazetteer.

GeographicExtent (bounding box)|0..1|"a dcat:Dataset; <br> dcterms:spatial [<br> a dcterms:Location ;<br> dcat:bbox """"""POLYGON((<br> 103.05 47.9 , 107.2 47.9 ,<br> 107.2 53.5 , 103.0 53.5 ,<br> 103.0 47.9<br> ))""""""^^geosparql:wktLiteral ;<br> ] ."|The range of dcat:bbox is rdfs:Literal. CDIF requires that the box geometry is encoded as a WKT literal ([geosparql:wktLiteral](https://docs.ogc.org/is/22-047r1/22-047r1.html), using WGS84. Coordinate pairs are {longitude latitude} decimal number pairs, with a space between coordinates. Commas separate coordinate pairs. The first and last coordinate must be the same to close the box. Coordinates are listed in a counterclockwise order around the box perimeter. CDIF recommends including only one bounding box; behavior of harvesting clients when multiple geometries are specified is unpredictable.

GeographicExtent (point location)|0..1|"a dcat:Dataset; <br> dcterms:spatial [<br> a dcterms:Location ;<br> locn:geometry """"""POINT (103.05 47.9)""""""^^geosparql:wktLiteral ;<br> ] ."|For a point location specification of the spatial extent of resource content. Note use of locn:geometry from the [Location Vocabulary](https://semiceu.github.io/Core-Location-Vocabulary/releases/2.1.0/#Resource.geometry). Recommend including only one point; behavior of harvesting clients when multiple geometries are specified is unpredictable. Note DCAT reports point locations only as centroids; CDIF is more general-- point locations might be centroids or any point within or near (in the case of intentionally spoofed locations) the resoruce location.

GeographicExtent (other serialization)|0..\*|"a dcat:Dataset;<br> dcterms:spatial [<br> a dcterms:Location ;<br> locn:geometry {see [Location Vocabulary](https://semiceu.github.io/Core-Location-Vocabulary/releases/2.1.0/#Resource.geometry)} ] "|Optional geographic extent using other serialization for location. Other geometry schemes might be specified in a specific domain profile, e.g. for atmospheric, subsurface data, or local coordinate systems. These will likely not be interoperable across domains.

Distribution Agent|0..\*|"a dcat:Resource, prov:Entity; <br> prov:qualifiedAttribution [<br> a prov:Attribution ;<br> prov:agent <agent URI> ;<br> dcat:hadRole <distributor role URI><br> ]"|To assign an agent to a distributor role. Note [PROV-O](https://www.w3.org/TR/prov-o/) roles relate to activities, not entities. Therefore, DCAT defines a new property dcat:hadRole to attach a role to the association-class prov:Attribution between and entity and an agent. Note that distributor agents can not be associated with individual distributions in DCAT, only to dcat:Resource or subclass of dcat:resource.

||dcat:Dataset/dcat:distribution [a dcatDistribution/sdo:provider [a sdo:Person OR sdo:Organization]|If there are multiple distributions with different providers, each distribution can have a separate provider. Dcat:Distribution does not have pointOfContact or prov:qualifiedAttribution. <br>Variable measured|0..\*|"“variableMeasured”:<br>[ { ""@type"":""PropertyValue"", ""@id"": ""astm:var0011"", ""propertyID"": [ ""pato:PATO\_0000025"", ""astm:prop/0405"" ], ""name"": ""hostMineral"", ""description"": ""…."" }….]"|Follow ESIPfed Science on Schema.org recommendation, see also discussion for representing more complex data structures in ESIPfed Experimental. Variable must have a name and description, should have a propertyID with URI for the represented concept. The URI in the propertyID provides the semantic linkage for meaning of the variable. dcat does not have properties to specify variables/properties quantified in a cataloged resource.

Keyword|0..\*|"a dcat:Resource; <br> dcat:keyword ""string literal"";"|Implement with text for tags, free text words useful for indexing the resource.

||"a dcat:Resource; <br> dcat:theme <uri> <br>OR <br>a dcat:Resource; <br> dcat:theme [ <br> <concept URI> a skos:Concept;<br> skos:prefLabel ""term""@languageCode]"|A main category of the resource. A resource can have multiple themes. Expectation is that the set of themes used to categorize resources are organized in a structured vocabulary describing all the categories and their relations in the catalog, e.g. skos:ConceptScheme, skos:Collection, owl:Ontology. Note dcat:theme in dcat OWL is an object property, the type of the object is not specified. In the example to the left the theme object is typed 'skos:Concept', but could be other type.

Temporal coverage|0..1|"a dcat:Dataset; <br> dcterms:temporal<br> [ a dcterms:PeriodOfTime ;<br> dcat:startDate ""2016-03-04""^^xsd:date ;<br> dcat:endDate ""2018-08-05""^^xsd:date ;<br> ] ."|Calendar data or clock time interval. rdfs:Literal encoded using the relevant ISO 8601 Date and Time compliant string [DATETIME](https://www.w3.org/TR/NOTE-datetime) and typed using the appropriate XML Schema datatype [XMLSCHEMA11-2](https://www.w3.org/TR/xmlschema11-2/), i.e. xsd:gYear, xsd:gYearMonth, xsd:date, or xsd:dateTime. The range of dcterms:temporal is expected to be PeriodOfTime; to specify a time instant the start and end should be the same. [tbd: add note on other temporal options offered by DCAT]

||"a dcat:Dataset; <br> dcterms:temporal [ <br> a dcterms:PeriodOfTime , time:ProperInterval ;<br> time:intervalStartedBy <isc:LowerDevonian>;<br> time:intervalFinishedBy <isc:LowerPermian>]"|Time ordinal era interval, use owl:time namespace, time: http://www.w3.org/2006/time#. This example uses International chronostratigraphic chart, isc. See https://perio.do/en/ for identifiers for many other named time intervals.

||"a dcat:Dataset; <br> dcterms:temporal [<br> a dcterms:PeriodOfTime , time:ProperInterval ;<br> time:hasBeginning [ <br> a time:Instant ;<br> time:inTimePosition [ <br> a time:TimePosition ;<br> time:hasTRS <gsmla:ma> ;<br> time:numericPosition ""541.0""^^xsd:decimal <br> ] ] ;<br> time:hasEnd [ <br> a time:Instant ;<br> time:inTimePosition [ <br> a time:TimePosition ;<br> time:hasTRS <gsmla:ma> ;<br> time:numericPosition ""251.9""^^xsd:decimal <br>] ] ] "|Temporal coverage for a geologic dataset, with interval bounds specified with numericPositions in millions of years before present. Namespace abbreviation: gsmla: http://resource.geosciml.org/classifier/cgi/geologicage/

Other related agents- simple contributor|0..\*| |DCAT does not have a contributor property, use related agent with role.

related agent with role||"a dcat:Resource, prov:Entity; prov:qualifiedAttribution [<br> a prov:Attribution ;<br> prov:agent <agent URI> ;<br> dcat:hadRole <role URI><br> ]"|To assign roles to contributors like editor, maintainer, publisher. Note [PROV-O](https://www.w3.org/TR/prov-o/) roles relate to activities, not entities. Therefore, DCAT defines a new property dcat:hadRole to attach a role to the association-class prov:Attribution between and entity and an agent.

Related resources|0..\*|"a dcat:Resource;<br> dcterms:relation (or one of its subProperties) <target resource URI>"|dcterms:relation is used if the nature of the relationship between a cataloged resource and related resources is not known. More specific sub-properties of relation (dcterms:hasPart, dcterms:isPartOf, dcterms:conformsTo, dcterms:isFormatOf, dcterms:hasFormat, dcterms:isVersionOf, dcterms:hasVersion (and its sub-property dcat:hasVersion ), dcterms:replaces, dcterms:isReplacedBy, dcterms:references, dcterms:isReferencedBy, dcterms:requires, dcterms:isRequiredBy) SHOULD be used if the nature of the relationship of the link is known. These dcterms relation types will have to be mapped to linkRelationship values in schema.org to map between the schema.

|0..\*|"a dcat:Resource;<br> dcat:qualifiedRelation [<br> a dcat:Relationship ;<br> dcterms:relation <target resource URI> ;<br> dcat:hadRole <relationship type URI><br> ] "|Representation of relationship that are not hard typed by dcterms or dcat, e.g. alternate, canonical, original, preview, stereo-mate, working-copy-of. Some of these roles are enumerated in the DS\_AssociationTypeCodes values from [ISO-19115-1](https://standards.iso.org/iso/19115/resources/Codelists/gml/DS\_AssociationTypeCode.xml), the IANA Registry of Link Relations [IANA-RELATIONS](https://www.iana.org/assignments/link-relations/), in the [DataCite](https://schema.datacite.org/meta/kernel-4.5/include/datacite-relationType-v4.xsd) metadata schema, and included within the [MARC relators](https://id.loc.gov/vocabulary/relators.html). Ideally a resolvable URI is available for the relationship role.

Funding|0..\*|"a dcat:Resource, prov:Entity; prov:qualifiedAttribution [<br> a prov:Attribution ;<br> prov:agent <agent URI> ;<br> dcat:hadRole <role URI><br> ]"|To assign roles to a funding instrument. Note [PROV-O](https://www.w3.org/TR/prov-o/) roles relate to activities, not entities. Therefore, DCAT defines a new property dcat:hadRole to attach a role to the association-class prov:Attribution between and entity and an agent. In this case the prov:agent should be a funding instrument (e.g. identified grant) under the auspices of a funding agency, and role should indicate that the agent is the provider of funding to create the resource

Policies|0..\*|"a dcat:Resource OR dcat:Distribution<br> odrl:hasPolicy [a odrl:Policy; ….]"|"DCAT provides a property odrl:hasPolich that has an ordl:Policy object as its targert, for both Resources, and individual distributions. More work is necessay to determ how policies like FDOF digitalObjectMutability, RDA digitalObjectPolicy, FDOF PersistencyPolicy can (or should) be expressed as ODRL policies and if there's a better implemention of these. <br>An ODRL Policy MUST have one uid property value to identify the Policy, AND at least one permission, prohibition, or obligation property values of type Rule. (See the [ODRL model](https://www.w3.org/TR/odrl-model) Permission, Prohibition, and Obligation sections for more details.)"

Checksum|0..1|"a dcat:Distribution;<br> spdx:checksum [<br> a spdx:Checksum;<br> spdx:algorithm <algorithm URI>;<br> spdx:checksumValue xsd:hexBinary ]"|A string value calculated from the content of the resource representation, used to test if content has been modified. Use Software Package Data Exchange (SPDX) property; The [spdx Checksum](https://spdx.org/rdf/spdx-terms-v2.3/#d4e2091) object has two properties: algorithm and checksumValue. The checksum is a property of each distribution/Distribution