TERN Ontology Specification

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Status: Draft - while the document is in draft, sections of the document may contain placeholders such as TBA and TBD.

1. Metadata

IRI	https://w3id.org/tern/profiles/tern/specification
Title	TERN Ontology Specification
Definition	This document lists the normative requirements for data aiming to conform to the TERN Ontology. It is to be used as the authoritative, human-readable list of individual requirements from which profile artefacts such as validators are derived from.
Created	2022-04-06
Modified	2024-03-27
Creator	TERN
Publisher	TERN
License	Creative Commons Attribution 4.0 International (CC BY 4.0)
Alternate document formats	PDF

2. Preamble

2.1. Abstract

The TERN Ontology Specification addresses the data exchange and data representation problems with integrating or exchanging heterogeneous ecological field survey data. The specification combines and profiles multiple internationally-recognised Semantic Web standards and establishes links to informative resources and controlled vocabularies necessary to use the specification.

For many years, the scientific ecological community and industry partners collected rich and insightful data about the land and ecosystems by performing field surveys. Unfortunately, the state of the collected data was often unusable for prompt nationwide reporting and data analysis due to incompatible data storage solutions between non-standardised relational databases, spreadsheets and PDF documents. Without spending further time and money to extract, transform and integrate the data, much of the data's richness and usefulness is lost.

The solution to this problem of an ever-growing set of heterogeneous data is to use existing standards defined by the W3C and follow the Linked Data set of principles. By building a specification based on existing web standards, the richness of the ecological field survey data can now be integrated and queried as one large graph of data on the World Wide Web.

The TERN Ontology Specification is a profile of W3C's SOSA, SSN, SSN-ext and PROV ontologies. It uses these ontologies to describe observations and samplings as kinds of activities on a field survey trip and provides associations of these activities to persons and organisations. The TERN Ontology Specification also uses community-based standards such as OGC's GeoSPARQL to associate spatial features or geometries to things within a field survey trip and QUDT's Units vocabulary for associating units of measure to results of observations. The TERN Ontology Specification also provides a vast set of TERN-created ecology-based and ecology-related controlled vocabularies to describe observable properties, feature types, instruments and protocol methods. Lastly, the TERN

Ontology introduces Site and Site Visit classes to represent survey trips performed on ad-hoc or permanent plots and uses the Attribute class to represent auxiliary information.

2.2. Normative Status

This specification is normative for the TERN Ontology.

2.3. Normative references

2.4. Terms and definitions

2.5. Conventions

2.5.1. Symbols and abbreviated terms

2.5.2. Namespaces

2.5.3. Placeholder IRIs

2.5.4. RDF serializations

3. TERN Ontology Specification

This specification defines the classes and properties of the TERN Ontology and the set of requirements that data validators will use to ensure conformance. This specification also details how data providers should use related ontologies and controlled vocabularies to represent their ecological field survey data. Annex A lists these parts in more detail.

3.1. Scope

The TERN Ontology Specification provides a standardised way to exchange and represent ecological field survey data by defining classes, properties and controlled vocabularies that characterise terrestrial environmental and ecology data. Although the upper ontologies such as SOSA and SSN can theoretically apply to any domain, the TERN Ontology Specification focuses on representing data collected during opportunistic and plot-based field surveys.

Lastly, the TERN Ontology Specification is not concerned with validating data according to specific field survey collection protocols and instead is concerned with validating the structure and coding of the data. Individual data custodians can create a profile of the TERN Ontology Specification and extend it according to their field survey protocol’s data collection methodologies by providing more specialised validation and requirements.

3.2. Standard Parts

This specification is one of many resources that make up the TERN Ontology Profile Standard and expresses its structure using the Profiles Vocabulary [PROF]. Each resource in the profile is assigned a role from the Resource Roles vocabulary.

Other resources in the TERN Ontology profile include:

	TERN Ontology - conceptual information model
Description	An overview of the core concepts of the TERN Ontology.
Artifcat	https://linkeddata.tern.org.au/information-models/tern-ontology/conceptual-information-model
Role	role:guidance

	TERN Ontology - cookbook
Description	A cookbook of patterns on representing ecological things with the TERN Ontology.
Artifcat	https://linkeddata.tern.org.au/information-models/tern-ontology/cookbook
Role	role:guidance

	TERN Ontology - classes, properties and shape constraints
Description	A web-based viewer of the TERN Ontology classes, properties and their shape constraints.
Artifcat	https://linkeddata.tern.org.au/viewers/tern-ontology
Role	role:constraints

	TERN Ontology - specification
Description	TERN Ontology specification (*this document*)
Artifcat	https://linkeddata.tern.org.au/information-models/tern-ontology/specification
Role	role:specification

	TERN Ontology - validator
Description	SHACL shapes for the TERN Ontology.
Artifcat	https://w3id.org/tern/shapes/tern.ttl
Role	role:validator

	TERN Ontology vocabulary - feature types
Description	Feature types controlled vocabulary to describe SOSA-based features of interest.
Artifcat	http://linked.data.gov.au/def/tern-cv/68af3d25-c801-4089-afff-cf701e2bd61d
Role	role:vocabulary

	TERN Ontology vocabulary - observable properties
Description	Observable properties controlled vocabulary to describe SOSA-based observations.
Artifcat	http://linked.data.gov.au/def/tern-cv/5699eca7-9ef0-47a6-bcfb-9306e0e2b85e
Role	role:vocabulary

	TERN Ontology vocabulary - attributes
Description	Attributes controlled vocabulary to describe facts about any entity.
Artifcat	http://linked.data.gov.au/def/tern-cv/dd085299-ae86-4371-ae15-61dfa432f924
Role	role:vocabulary

	TERN Ontology vocabulary - units of measure
Description	Unit of measure controlled vocabulary by QUDT
Artifcat	http://qudt.org/vocab/unit/
Role	role:vocabulary

	TERN Ontology vocabulary - instrument types
Description	Instrument types controlled vocabulary to describe the types of instruments used in observations and sampling acts.
Artifcat	http://linked.data.gov.au/def/tern-cv/a3088b5c-622d-4e25-8a75-4c4961b0dfe8
Role	role:vocabulary

	TERN Ontology vocabulary - site types
Description	Site types controlled vocabulary to describe the types of ecological survey sites.
Artifcat	http://linked.data.gov.au/def/tern-cv/74aa68d3-28fd-468d-8ff5-7e791d9f7159
Role	role:vocabulary

	TERN Ontology vocabulary - CI Role Code
Description	CI Role Code controlled vocabulary to describe the roles available to the TERN Ontology concepts.
Artifcat	http://def.isotc211.org/iso19115/-1/2018/CitationAndResponsiblePartyInformation/code/CI_RoleCode
Role	role:vocabulary

3.3. Conformance

Requirements define the rules and constraints that validators will use to validate data for conformance.

Each requirement will be assigned a subset of the status types defined by the Registry ontology.

Status type	Icon	Definition
`experimental`	○	An entry that has been accepted into the register temporarily and may be subject to change or withdrawal.
`stable`	⊘	An entry that is seen as having a reasonable measure of stability, may be used to mark the full adoption of a previously 'experimental' entry.

4. Core

This section establishes the core requirements class and provides definitions and usage examples.

4.1. Classes

4.1.1. Class: tern:Attribute

Property	Value
IRI	`tern:Attribute`
Status	`stable` ⊘
Label	Attribute
Definition	A property-value pair to capture attributes of an individual where observations are not suitable.
Scope note	Follows a similar modelling pattern to `schema:PropertyValue`.

4.1.1.1. Property: dcterms:type

Property	Value
IRI	`dcterms:type`
Shape IRI	https://w3id.org/tern/shapes/tern/dcterms-type
Status	`stable` ⊘
Label	type
Definition	Recommended practice is to use a controlled vocabulary such as the DCMI Type Vocabulary DCMI-TYPE. To describe the file format, physical medium, or dimensions of the resource, use the property Format.
Scope note	Useful to capture the proximate class type in situations when `rdfs:subClassOf` entailment is enabled and `rdf:type` is not suitable.
Implementation	A `dcterms:type` predicate *MUST* have an IRI value.
Cardinality	
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.1.2. Property: tern:attribute

Property	Value
IRI	`tern:attribute`
Shape IRI	https://w3id.org/tern/shapes/tern/tern-attribute
Status	`stable` ✓
Label	attribute
Definition	The identifier of the attribute concept. Attribute concepts are usually described with SKOS controlled vocabularies. TERN manages a list of attributes.
Scope note	
Implementation	A `tern:Attribute` *MUST* have exactly 1 `tern:attribute` predicate where the value node is an IRI.
Cardinality	Exactly 1
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.1.3. Property: tern:hasSimpleValue

Property	Value
IRI	`tern:hasSimpleValue`
Shape IRI	https://w3id.org/tern/shapes/tern/tern-hasSimpleValue
Status	`stable` ✓
Label	has simple value
Definition	The direct link to the IRI or RDF literal value. The simple value *MUST* be the same value captured in `rdf:value` of the `tern:Value` instance.
Scope note	
Implementation	A `tern:Attribute` *MUST* have exactly 1 `tern:hasSimpleValue` predicate where the value node is an IRI or literal.
Cardinality	Exactly 1
Node kind	`sh:IRIOrLiteral`
Class type	
Expected values	

4.1.1.4. Property: tern:hasValue

Property	Value
IRI	`tern:hasValue`

Property	Value
Shape IRI	https://w3id.org/tern/shapes/tern/tern-hasValue
Status	`stable` ✓
Label	has value
Definition	A link to a `tern:Value` instance which encapsulates the value of this Attribute.
Scope note	
Implementation	A `tern:Attribute` *MUST* have exactly 1 `tern:hasValue` predicate where the value node is an IRI.
Cardinality	Exactly 1
Node kind	`sh:BlankNodeOrIRI`
Class type	`tern:Value`
Expected values	

4.1.1.5. Property: tern:isAttributeOf

Property	Value
IRI	`tern:isAttributeOf`
Shape IRI	https://w3id.org/tern/shapes/tern/tern-isAttributeOf
Status	`stable` ✓
Label	is attribute of
Definition	A link to the individual which this attribute and its value is applied to. Inverse property of `tern:hasAttribute`.
Scope note	
Implementation	A `tern:isAttributeOf` *MUST* have an IRI value.
Cardinality	
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.1.6. Property: void:inDataset

Property	Value
IRI	`void:inDataset`
Shape IRI	https://w3id.org/tern/shapes/tern/void-inDataset
Status	`stable` ✓
Label	in dataset
Definition	A link to the RDF payload's metadata which this resource was a part of.

Property	Value
Scope note	
Implementation	There *MUST* exist exactly 1 `void:inDataset` property with an IRI value to a `tern:RDFDataset`.
Cardinality	Exactly 1
Node kind	`sh:IRI`
Class type	`tern:RDFDataset`
Expected values	

4.1.1.7. tern:Attribute example

Annotate the volume of the soil ring using `tern:Attribute`.

```
<urn:example:soil-ring> a tern:Sampler ;
    rdfs:label "soil ring" ;
    ssn:implements <urn:example:method:soil-ring> ;
    tern:systemType <http://linked.data.gov.au/def/tern-cv/24c81cc3-4d68-45a0-91a2-
051af25dfb94> ;
    tern:hasAttribute <urn:example:Attribute:1>
.

<urn:example:Attribute:1> a tern:Attribute ;
    rdfs:label "volume of soil ring" ;
    tern:attribute <http://linked.data.gov.au/def/tern-cv/039f87e5-ffd9-4676-b126-
c74844d2e095> ;
    tern:hasSimpleValue 209.35 ;
    tern:hasValue [
        a tern:Float ;
        rdf:value 209.35 ;
        tern:unit <http://qudt.org/vocab/unit/CentiM3> ;
    ] ;
.
```

4.1.2. Class: tern:Boolean

Property	Value
IRI	`tern:Boolean`
Status	`stable` ✓
Label	Boolean
Definition	Class to encapsulate a true-or-false value.
Scope note	

4.1.2.1. Property: rdf:value

Property	Value
IRI	`rdf:value`
Shape IRI	https://w3id.org/tern/shapes/tern/Boolean-value
Status	`stable` ✓
Label	value
Definition	The boolean value.
Scope note	
Implementation	`tern:Boolean` *MUST* have exactly 1 `rdf:value` predicate where the value node is a literal with a datatype of `xsd:boolean`.
Cardinality	Exactly 1
Node kind	
Class type	`xsd:boolean`
Expected values	- `"true"^^http://www.w3.org/2001/XMLSchema#boolean` - `"false"^^http://www.w3.org/2001/XMLSchema#boolean`

4.1.3. Class: tern:Date

Property	Value
IRI	`tern:Date`
Status	`stable` ✓
Label	Date
Definition	A class to encapsulate an `xsd:date` value.
Scope note	

4.1.3.1. Property: rdf:value

Property	Value
IRI	`rdf:value`
Shape IRI	https://w3id.org/tern/shapes/tern/Date-value
Status	`stable` ✓
Label	value
Definition	The value of the date object.
Scope note	
Implementation	A `tern:Date` *MUST* have exactly 1 `rdf:value` predicate where the value node is a literal with a datatype of `xsd:date`.
Cardinality	Exactly 1

Property	Value
Node kind	
Class type	`xsd:date`
Expected values	

4.1.4. Class: tern:DateTime

Property	Value
IRI	`tern:DateTime`
Status	`stable` ✓
Label	Date time
Definition	A class to encapsulate an `xsd:dateTime` value.
Scope note	

4.1.4.1. Property: rdf:value

Property	Value
IRI	`rdf:value`
Shape IRI	https://w3id.org/tern/shapes/tern/DateTime-value
Status	`stable` ✓
Label	value
Definition	The value of the datetime object.
Scope note	
Implementation	A `tern:DateTime` *MUST* have exactly 1 `rdf:value` predicate where the value node is a literal with a datatype of `xsd:dateTime`.
Cardinality	Exactly 1
Node kind	
Class type	`xsd:dateTime`
Expected values	

4.1.5. Class: tern:Deployment

Property	Value
IRI	`tern:Deployment`
Status	`experimental` ○
Label	Deployment
Definition	Describes the Deployment of one or more Systems for a particular purpose. Deployment may be done on a Platform.

Property	Value
Scope note	

4.1.5.1. Property: ssn:deployedOnPlatform

Property	Value
IRI	`ssn:deployedOnPlatform`
Shape IRI	https://w3id.org/tern/shapes/tern/ssn-deployedOnPlatform
Status	`experimental` ◯
Label	deployed on platform
Definition	Relation between a Deployment and the Platform on which the Systems are deployed.
Scope note	
Implementation	A `tern:Deployment` *MAY* have 1 `ssh:deployedOnPlatform` predicate where the value node is an IRI of type `tern:Platform`.
Cardinality	Maximum 1
Node kind	`sh:IRI`
Class type	`tern:Platform`
Expected values	

4.1.5.2. Property: ssn:deployedSystem

Property	Value
IRI	`ssn:deployedSystem`
Shape IRI	https://w3id.org/tern/shapes/tern/ssn-deployedSystem
Status	`experimental` ◯
Label	deployed system
Definition	Relation between a Deployment and a deployed System.
Scope note	
Implementation	A `tern:Deployment` *MAY* have one or many `ssn:deployedSystem` predicate where the value node is an IRI of type `tern:System`.
Cardinality	
Node kind	`sh:IRI`
Class type	`tern:System`
Expected values	

4.1.6. Class: tern:FeatureOfInterest

Property	Value
IRI	`tern:FeatureOfInterest`
Status	`stable` ✓
Label	Feature of Interest
Definition	The thing whose property is being estimated or calculated in the course of an Observation to arrive at a Result or whose property is being manipulated by an Actuator, or which is being sampled or transformed in an act of Sampling.
Scope note	

4.1.6.1. Property: tern:featureType

Property	Value
IRI	`tern:featureType`
Shape IRI	https://w3id.org/tern/shapes/tern/FeatureOfInterest-featureType
Status	`stable` ✓
Label	feature type
Definition	The feature type of a `tern:FeatureOfInterest` from a controlled vocabulary.
Scope note	
Implementation	A `tern:FeatureOfInterest` *MUST* have exactly 1 `tern:featureType` predicate where the value node is an IRI.
Cardinality	Exactly 1
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.6.2. Property: dcterms:identifier

Property	Value
IRI	`dcterms:identifier`
Shape IRI	https://w3id.org/tern/shapes/tern/dcterms-identifier
Status	`stable` ✓
Label	identifier
Definition	An unambiguous reference to the resource within a given context.
Scope note	
Implementation	N/A
Cardinality	

Property	Value
Node kind	
Class type	
Expected values	

4.1.6.3. Property: dcterms:type

Property	Value
IRI	`dcterms:type`
Shape IRI	https://w3id.org/tern/shapes/tern/dcterms-type
Status	`stable` ✓
Label	type
Definition	Recommended practice is to use a controlled vocabulary such as the DCMI Type Vocabulary DCMI-TYPE. To describe the file format, physical medium, or dimensions of the resource, use the property Format.
Scope note	Useful to capture the proximate class type in situations when `rdfs:subClassOf` entailment is enabled and `rdf:type` is not suitable.
Implementation	A `dcterms:type` predicate *MUST* have an IRI value.
Cardinality	
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.6.4. Property: geo:hasGeometry

Property	Value
IRI	`geo:hasGeometry`
Shape IRI	https://w3id.org/tern/shapes/tern/geo-hasGeometry
Status	`stable` ✓
Label	has geometry
Definition	A spatial representation for a given feature.
Scope note	
Implementation	A `geo:hasGeometry` predicate *MUST* have a blank node or IRI value.
Cardinality	
Node kind	`sh:BlankNodeOrIRI`
Class type	`geo:Geometry`
Expected values	

4.1.6.5. Property: prov:qualifiedAttribution

Property	Value
IRI	`prov:qualifiedAttribution`
Shape IRI	https://w3id.org/tern/shapes/tern/prov-qualifiedAttribution
Status	`stable` ✓
Label	qualified attribution
Definition	Attribution is the ascribing of an entity to an agent. When an entity e is attributed to agent ag, entity e was generated by some unspecified activity that in turn was associated to agent ag. Thus, this relation is useful when the activity is not known, or irrelevant.
Scope note	
Implementation	A `prov:qualifiedAttribution` *MUST* have a blank node or IRI value where the type is `prov:Attribution`.
Cardinality	
Node kind	`sh:BlankNodeOrIRI`
Class type	`prov:Attribution`
Expected values	

4.1.6.6. Property: prov:wasAttributedTo

Property	Value
IRI	`prov:wasAttributedTo`
Shape IRI	https://w3id.org/tern/shapes/tern/prov-wasAttributedTo
Status	`stable` ✓
Label	was attributed to
Definition	Attribution is the ascribing of an entity to an agent.
Scope note	
Implementation	A `prov:wasAttributedTo` predicate *MUST* have an IRI value of type `prov:Agent`.
Cardinality	
Node kind	`sh:IRI`
Class type	`prov:Agent`
Expected values	

4.1.6.7. Property: rdfs:comment

Property	Value
IRI	`rdfs:comment`

Property	Value
Shape IRI	https://w3id.org/tern/shapes/tern/rdfs-comment
Status	`stable` ✓
Label	comment
Definition	A description of the subject resource.
Scope note	
Implementation	An `rdfs:comment` *MUST* have a literal value.
Cardinality	
Node kind	`sh:Literal`
Class type	
Expected values	

4.1.6.8. Property: sosa:hasSample

Property	Value
IRI	`sosa:hasSample`
Shape IRI	https://w3id.org/tern/shapes/tern/sosa-hasSample
Status	`stable` ✓
Label	has sample
Definition	Relation between a FeatureOfInterest and the Sample used to represent it.
Scope note	
Implementation	A `tern:FeatureOfInterest` *MAY* have a `sosa:hasSample` predicate where the value node is an IRI of type `tern:Sample`.
Cardinality	
Node kind	`sh:IRI`
Class type	`tern:Sample`
Expected values	

4.1.6.9. Property: sosa:isFeatureOfInterestOf

Property	Value
IRI	`sosa:isFeatureOfInterestOf`
Shape IRI	https://w3id.org/tern/shapes/tern/sosa-isFeatureOfInterestOf
Status	`stable` ✓
Label	is feature of interest of
Definition	A relation between a FeatureOfInterest and an Observation about it, an Actuation acting on it, or an act of Sampling that sampled it.

Property	Value
Scope note	
Implementation	A `tern:FeatureOfInterest` *MAY* have a `sosa:isFeatureOfInterestOf` predicate where the value node is an IRI of type `tern:Observation` or `tern:Sampling`.
Cardinality	
Node kind	`sh:IRI`
Class type	`tern:Observation` `tern:Sampling`
Expected values	

4.1.6.10. Property: void:inDataset

Property	Value
IRI	`void:inDataset`
Shape IRI	https://w3id.org/tern/shapes/tern/void-inDataset
Status	`stable` ✓
Label	in dataset
Definition	A link to the RDF payload's metadata which this resource was a part of.
Scope note	
Implementation	There *MUST* exist exactly 1 `void:inDataset` property with an IRI value to a `tern:RDFDataset`.
Cardinality	Exactly 1
Node kind	`sh:IRI`
Class type	`tern:RDFDataset`
Expected values	

4.1.7. Class: tern:Float

Property	Value
IRI	`tern:Float`
Status	`stable` ✓
Label	Float
Definition	A class to encapsulate a float.
Scope note	

4.1.7.1. Property: tern:uncertainty

Property	Value
IRI	`tern:uncertainty`
Shape IRI	https://w3id.org/tern/shapes/tern/Float-uncertainty
Status	`stable` ✓
Label	uncertainty
Definition	Measurement error (±).
Scope note	
Implementation	A `tern:Float` *MAY* have 1 `tern:uncertainty` predicate where the value node is a literal with a datatype of `xsd:double`.
Cardinality	Maximum 1
Node kind	`sh:Literal`
Class type	`xsd:double`
Expected values	

4.1.7.2. Property: rdf:value

Property	Value
IRI	`rdf:value`
Shape IRI	https://w3id.org/tern/shapes/tern/Float-value
Status	`stable` ✓
Label	value
Definition	Float value.
Scope note	
Implementation	A `tern:Float` *MUST* have exactly 1 `rdf:value` where the value node is a literal with a datatype of `xsd:double`.
Cardinality	Exactly 1
Node kind	`sh:Literal`
Class type	`xsd:double`
Expected values	

4.1.7.3. Property: tern:unit

Property	Value
IRI	`tern:unit`
Shape IRI	https://w3id.org/tern/shapes/tern/tern-unit
Status	`stable` ✓
Label	unit of measure

Property	Value
Definition	The unit of measure of the value. Recommended best practice is to use the QUDT units of measure vocabulary.
Scope note	
Implementation	A `tern:unit` predicate *MUST* have an IRI value.
Cardinality	Maximum 1
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.8. Class: tern:IRI

Property	Value
IRI	`tern:IRI`
Status	`stable` ✓
Label	IRI
Definition	A class to encapsulate an IRI value.
Scope note	

4.1.8.1. Property: rdf:value

Property	Value
IRI	`rdf:value`
Shape IRI	https://w3id.org/tern/shapes/tern/IRI-value
Status	`stable` ✓
Label	value
Definition	An IRI value.
Scope note	
Implementation	A `tern:IRI` *MUST* have exactly 1 `rdf:value` predicate where the value node is an IRI.
Cardinality	Exactly 1
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.9. Class: tern:Integer

Property	Value
IRI	`tern:Integer`
Status	`stable` ✓
Label	Integer
Definition	A class to encapsulate an integer value.
Scope note	

4.1.9.1. Property: tern:uncertainty

Property	Value
IRI	`tern:uncertainty`
Shape IRI	https://w3id.org/tern/shapes/tern/Integer-uncertainty
Status	`stable` ✓
Label	uncertainty
Definition	Measurement error (±).
Scope note	
Implementation	A `tern:Integer` *MAY* have 1 `tern:uncertainty` predicate where the value node is a literal with a datatype of `xsd:integer` or `xsd:double`.
Cardinality	Maximum 1
Node kind	`sh:Literal`
Class type	`xsd:integer` `xsd:double`
Expected values	

4.1.9.2. Property: rdf:value

Property	Value
IRI	`rdf:value`
Shape IRI	https://w3id.org/tern/shapes/tern/Integer-value
Status	`stable` ✓
Label	value
Definition	Integer value.
Scope note	
Implementation	A `tern:Integer` *MUST* have exactly 1 `rdf:value` predicate where the value node is a literal with a datatype of `xsd:integer`
Cardinality	Exactly 1
Node kind	`sh:Literal`

Property	Value
Class type	xsd:integer
Expected values	

4.1.9.3. Property: tern:unit

Property	Value
IRI	tern:unit
Shape IRI	https://w3id.org/tern/shapes/tern/tern-unit
Status	stable ⊘
Label	unit of measure
Definition	The unit of measure of the value. Recommended best practice is to use the QUDT units of measure vocabulary.
Scope note	
Implementation	A tern:unit predicate *MUST* have an IRI value.
Cardinality	Maximum 1
Node kind	sh:IRI
Class type	
Expected values	

4.1.10. Class: tern:Intervention

Property	Value
IRI	tern:Intervention
Status	experimental ◯
Label	Intervention
Definition	An Intervention is a human-induced activity that carries out a Procedure to observe or change the properties of a Feature Of Interest.
Scope note	An intervention is a management process to maintain, restore or improve an ecosystem within a spatial area.

4.1.10.1. Property: prov:endedAtTime

Property	Value
IRI	prov:endedAtTime
Shape IRI	https://w3id.org/tern/shapes/tern/Intervention-endedAtTime
Status	experimental ◯
Label	ended at time

Property	Value
Definition	The time at which an activity ended.
Scope note	
Implementation	A `tern:Intervention` *MAY* have a maximum of 1 `prov:endedAtTime` predicate where the value node is a literal with the datatype `xsd:dateTime`.
Cardinality	Maximum 1
Node kind	`sh:Literal`
Class type	`xsd:dateTime`
Expected values	

4.1.10.2. Property: prov:startedAtTime

Property	Value
IRI	`prov:startedAtTime`
Shape IRI	https://w3id.org/tern/shapes/tern/Intervention-startedAtTime
Status	`experimental` ◯
Label	started at time
Definition	The time at which an activity started.
Scope note	
Implementation	A `tern:Intervention` *MUST* have exactly 1 `prov:startedAtTime` predicate where the value node is a literal with the datatype `xsd:dateTime`.
Cardinality	Exactly 1
Node kind	`sh:Literal`
Class type	`xsd:dateTime`
Expected values	

4.1.10.3. Property: dcterms:identifier

Property	Value
IRI	`dcterms:identifier`
Shape IRI	https://w3id.org/tern/shapes/tern/dcterms-identifier
Status	`stable` ⊘
Label	identifier
Definition	An unambiguous reference to the resource within a given context.
Scope note	
Implementation	N/A
Cardinality	

Property	Value
Node kind	
Class type	
Expected values	

4.1.10.4. Property: dcterms:type

Property	Value
IRI	`dcterms:type`
Shape IRI	https://w3id.org/tern/shapes/tern/dcterms-type
Status	`stable` ✓
Label	type
Definition	Recommended practice is to use a controlled vocabulary such as the DCMI Type Vocabulary DCMI-TYPE. To describe the file format, physical medium, or dimensions of the resource, use the property Format.
Scope note	Useful to capture the proximate class type in situations when `rdfs:subClassOf` entailment is enabled and `rdf:type` is not suitable.
Implementation	A `dcterms:type` predicate *MUST* have an IRI value.
Cardinality	
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.10.5. Property: geo:hasGeometry

Property	Value
IRI	`geo:hasGeometry`
Shape IRI	https://w3id.org/tern/shapes/tern/geo-hasGeometry
Status	`stable` ✓
Label	has geometry
Definition	A spatial representation for a given feature.
Scope note	
Implementation	A `geo:hasGeometry` predicate *MUST* have a blank node or IRI value.
Cardinality	
Node kind	`sh:BlankNodeOrIRI`
Class type	`geo:Geometry`
Expected values	

4.1.10.6. Property: prov:qualifiedAssociation

Property	Value
IRI	`prov:qualifiedAssociation`
Shape IRI	https://w3id.org/tern/shapes/tern/prov-qualifiedAssociation
Status	`stable` ✓
Label	qualified association
Definition	An activity association is an assignment of responsibility to an agent for an activity, indicating that the agent had a role in the activity. It further allows for a plan to be specified, which is the plan intended by the agent to achieve some goals in the context of this activity.
Scope note	
Implementation	A `prov:qualifiedAssociation` *MUST* have a blank node or IRI value of type `prov:Association`.
Cardinality	
Node kind	`sh:BlankNodeOrIRI`
Class type	`prov:Association`
Expected values	

4.1.10.7. Property: prov:wasAssociatedWith

Property	Value
IRI	`prov:wasAssociatedWith`
Shape IRI	https://w3id.org/tern/shapes/tern/prov-wasAssociatedWith
Status	`stable` ✓
Label	was associated with
Definition	An activity association is an assignment of responsibility to an agent for an activity, indicating that the agent had a role in the activity. It further allows for a plan to be specified, which is the plan intended by the agent to achieve some goals in the context of this activity.
Scope note	
Implementation	A `prov:wasAssociatedWith` predicate *MUST* an IRI value of type `prov:Agent`.
Cardinality	
Node kind	`sh:IRI`
Class type	`prov:Agent`
Expected values	

4.1.10.8. Property: tern:hasAttribute

Property	Value
IRI	`tern:hasAttribute`
Shape IRI	https://w3id.org/tern/shapes/tern/tern-hasAttribute
Status	`stable` ✓
Label	has attribute
Definition	Link to an Attribute.
Scope note	
Implementation	A `tern:hasAttribute` predicate *MUST* have a blank node or an IRI value of type `tern:Attribute`.
Cardinality	
Node kind	`sh:BlankNodeOrIRI`
Class type	`tern:Attribute`
Expected values	

4.1.10.9. Property: tern:interventionType

Property	Value
IRI	`tern:interventionType`
Shape IRI	https://w3id.org/tern/shapes/tern/tern-interventionType
Status	`experimental` ○
Label	intervention type
Definition	The type of intervention.
Scope note	
Implementation	A `tern:Intervention` *MAY* have a maximum of 1 `tern:interventionType` predicate where the value node is an IRI.
Cardinality	Maximum 1
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.10.10. Property: void:inDataset

Property	Value
IRI	`void:inDataset`
Shape IRI	https://w3id.org/tern/shapes/tern/void-inDataset
Status	`stable` ✓

Property	Value
Label	in dataset
Definition	A link to the RDF payload's metadata which this resource was a part of.
Scope note	
Implementation	There *MUST* exist exactly 1 `void:inDataset` property with an IRI value to a `tern:RDFDataset`.
Cardinality	Exactly 1
Node kind	`sh:IRI`
Class type	`tern:RDFDataset`
Expected values	

4.1.10.11. tern:Intervention example

The following example is based on the DCCEEW's RLP protocols for intervention.

Definition of intervention within the field survey protocol context:

> An intervention is a management process to maintain, restore or improve an ecosystem within a spatial area. Interventions can take a range of forms, including fencing to protect remnant vegetation (Spooner et al. 2002), weed and pest animal control (Martin and van Klinken 2006; Reddiex et al. 2006), restoration and revegetation, re-introductions or translocations (Silcock et al. 2019), removal of watering points, controlled burns, nest box installation and community or landholder workshops (Capon et al. 2020).
>
> — Interventions Module, McCallum K, Laws M, Bignall J, O'Neill S, Sparrow B. (unpublished draft) 'Interventions module' in ….. (eds) Ecological Field Monitoring Protocols Manual: Standardising environmental monitoring and data systems for improved decision making. Draft v 0.1 Report to DAWE. TERN, Adelaide.

4.1.10.11.1. Debris removal

The RLP field survey protocols define a number of interventions in a table. Below shows one example taken from the field survey protocols for *debris removal*.

All RLP field survey interventions have *inputs* and *outputs*. Inputs are modelled as `tern:Attribute` class instances and outputs are modelled as `tern:Observation` class instances. The `tern:interventionType` property links to a *global* concept within TERN's controlled vocabularies for *debris removal* and the `sosa:usedProcedure` links to the *local* protocol-specific version of *debris removal*. The spatial extent is recorded digitally as a polygon feature in the data input app and is captured here with the `geo:hasGeometry` property pointing to a description of the polygon as an instance of `geo:Geometry`. The actual coordinates of the polygon are recorded on the geometry object with the property `geo:asWKT`. Each one of the input fields are recorded as a `tern:Attribute` linked to the intervention activity via the property `tern:hasAttribute`. Each individual outcome is also

recorded as a `tern:Attribute`. Observations that are made after the intervention can be linked using the `prov:wasInformedBy` property to express that the observational result was affected by a past intervention activity.

RLP interventions table headers

Project Service	Field Collection	App Group	Output Measure	Mapping Requirements	Mapping Area (ha)	Reporting Fields	Data Field Class	Schema	Comment RLP	Comment TERN

Debris removal table

[debris removal table]

Diagram modelling debris removal with the Intervention class

[intervention example debris removal]

Other interventions are described in the original document at MERIT Ready Reckoner V3 Regional Land Partnerships – Project Services.

4.1.11. Class: tern:MaterialSample

Property	Value
IRI	`tern:MaterialSample`
Status	`stable` ✓
Label	Material sample
Definition	A physical result of a sampling (or subsampling) event. In biological collections, the material sample is typically collected, and either preserved or destructively processed.
Scope note	

4.1.11.1. Property: dwc:materialSampleID

Property	Value
IRI	`dwc:materialSampleID`
Shape IRI	https://w3id.org/tern/shapes/tern/dwc-materialSampleID
Status	`stable` ✓
Label	material sample ID
Definition	An identifier for the MaterialSample (as opposed to a particular digital record of the material sample). In the absence of a persistent global unique identifier, construct one from a combination of identifiers in the record that will most closely make the materialSampleID globally unique.
Scope note	

Property	Value
Implementation	A `dwc:materialSampleID` predicate *MUST* have a literal value with a datatype of `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.12. Class: tern:Observation

Property	Value
IRI	`tern:Observation`
Status	`stable` ✓
Label	Observation
Definition	Act of carrying out an (`Observation`) `Procedure` to estimate or calculate a value of a property of a `FeatureOfInterest`. Links to a `Sensor` to describe what made the `Observation` and how; links to an `ObservableProperty` to describe what the result is an estimate of, and to a `FeatureOfInterest` to detail what that property was associated with.
Scope note	

4.1.12.1. Property: sosa:hasResult

Property	Value
IRI	`sosa:hasResult`
Shape IRI	https://w3id.org/tern/shapes/tern/Observation-hasResult
Status	`stable` ✓
Label	has result
Definition	Relation linking an Observation or Actuation or act of Sampling and a Result or Sample.
Scope note	
Implementation	A `tern:Observation` *MUST* have exactly 1 `sosa:hasResult` where the value node is a blank node or IRI of type `tern:Value`.
Cardinality	Exactly 1
Node kind	`sh:BlankNodeOrIRI`
Class type	`tern:Value`
Expected values	

4.1.12.2. Property: dcterms:identifier

Property	Value
IRI	`dcterms:identifier`
Shape IRI	https://w3id.org/tern/shapes/tern/dcterms-identifier
Status	`stable` ✓
Label	identifier
Definition	An unambiguous reference to the resource within a given context.
Scope note	
Implementation	N/A
Cardinality	
Node kind	
Class type	
Expected values	

4.1.12.3. Property: dcterms:type

Property	Value
IRI	`dcterms:type`
Shape IRI	https://w3id.org/tern/shapes/tern/dcterms-type
Status	`stable` ✓
Label	type
Definition	Recommended practice is to use a controlled vocabulary such as the DCMI Type Vocabulary DCMI-TYPE. To describe the file format, physical medium, or dimensions of the resource, use the property Format.
Scope note	Useful to capture the proximate class type in situations when `rdfs:subClassOf` entailment is enabled and `rdf:type` is not suitable.
Implementation	A `dcterms:type` predicate *MUST* have an IRI value.
Cardinality	
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.12.4. Property: geo:hasGeometry

Property	Value
IRI	`geo:hasGeometry`
Shape IRI	https://w3id.org/tern/shapes/tern/geo-hasGeometry

Property	Value
Status	`stable` ✓
Label	has geometry
Definition	A spatial representation for a given feature.
Scope note	
Implementation	A `geo:hasGeometry` predicate *MUST* have a blank node or IRI value.
Cardinality	
Node kind	`sh:BlankNodeOrIRI`
Class type	`geo:Geometry`
Expected values	

4.1.12.5. Property: prov:qualifiedAssociation

Property	Value
IRI	`prov:qualifiedAssociation`
Shape IRI	https://w3id.org/tern/shapes/tern/prov-qualifiedAssociation
Status	`stable` ✓
Label	qualified association
Definition	An activity association is an assignment of responsibility to an agent for an activity, indicating that the agent had a role in the activity. It further allows for a plan to be specified, which is the plan intended by the agent to achieve some goals in the context of this activity.
Scope note	
Implementation	A `prov:qualifiedAssociation` *MUST* have a blank node or IRI value of type `prov:Association`.
Cardinality	
Node kind	`sh:BlankNodeOrIRI`
Class type	`prov:Association`
Expected values	

4.1.12.6. Property: prov:wasAssociatedWith

Property	Value
IRI	`prov:wasAssociatedWith`
Shape IRI	https://w3id.org/tern/shapes/tern/prov-wasAssociatedWith
Status	`stable` ✓
Label	was associated with

Property	Value
Definition	An activity association is an assignment of responsibility to an agent for an activity, indicating that the agent had a role in the activity. It further allows for a plan to be specified, which is the plan intended by the agent to achieve some goals in the context of this activity.
Scope note	
Implementation	A `prov:wasAssociatedWith` predicate *MUST* an IRI value of type `prov:Agent`.
Cardinality	
Node kind	`sh:IRI`
Class type	`prov:Agent`
Expected values	

4.1.12.7. Property: rdfs:comment

Property	Value
IRI	`rdfs:comment`
Shape IRI	https://w3id.org/tern/shapes/tern/rdfs-comment
Status	`stable` ✓
Label	comment
Definition	A description of the subject resource.
Scope note	
Implementation	An `rdfs:comment` *MUST* have a literal value.
Cardinality	
Node kind	`sh:Literal`
Class type	
Expected values	

4.1.12.8. Property: sosa:hasFeatureOfInterest

Property	Value
IRI	`sosa:hasFeatureOfInterest`
Shape IRI	https://w3id.org/tern/shapes/tern/sosa-hasFeatureOfInterest
Status	`stable` ✓
Label	has feature of interest
Definition	A relation between an Observation and the entity whose quality was observed, or between an Actuation and the entity whose property was modified, or between an act of Sampling and the entity that was sampled.
Scope note	

Property	Value
Implementation	Exactly 1 `sosa:hasFeatureOfInterest` predicate *MUST* exist_ with an IRI value.
Cardinality	Exactly 1
Node kind	`sh:IRI`
Class type	`tern:FeatureOfInterest`
Expected values	

4.1.12.9. Property: sosa:hasSimpleResult

Property	Value
IRI	`sosa:hasSimpleResult`
Shape IRI	https://w3id.org/tern/shapes/tern/sosa-hasSimpleResult
Status	`stable` ✓
Label	has simple result
Definition	The simple value of an Observation or Actuation or act of Sampling.
Scope note	
Implementation	Exactly 1 `sosa:hasSimpleResult` predicate *MUST* exist where the value node is an IRI or literal.
Cardinality	Exactly 1
Node kind	
Class type	
Expected values	

4.1.12.10. Property: sosa:madeBySensor

Property	Value
IRI	`sosa:madeBySensor`
Shape IRI	https://w3id.org/tern/shapes/tern/sosa-madeBySensor
Status	`stable` ✓
Label	made by sensor
Definition	Relation between an Observation and the Sensor which made the Observations.
Scope note	
Implementation	A `sosa:madeBySensor` predicate *MAY* exist where the value node is an IRI.
Cardinality	Maximum 1
Node kind	`sh:IRI`
Class type	`tern:Sensor`

Property	Value
Expected values	

4.1.12.11. Property: sosa:observedProperty

Property	Value
IRI	`sosa:observedProperty`
Shape IRI	https://w3id.org/tern/shapes/tern/sosa-observedProperty
Status	`stable` ✓
Label	observed property
Definition	Relation linking an Observation to the property that was observed. The ObservableProperty should be a property of the FeatureOfInterest (linked by hasFeatureOfInterest) of this Observation.
Scope note	
Implementation	A `tern:Observation` *MUST* have exactly 1 `sosa:observedProperty` where the value node is an IRI.
Cardinality	Exactly 1
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.12.12. Property: sosa:phenomenonTime

Property	Value
IRI	`sosa:phenomenonTime`
Shape IRI	https://w3id.org/tern/shapes/tern/sosa-phenomenonTime
Status	`stable` ✓
Label	phenomenon time
Definition	The time that the Result of an Observation, Actuation or Sampling applies to the FeatureOfInterest. Not necessarily the same as the resultTime. May be an Interval or an Instant, or some other compound TemporalEntity.
Scope note	
Implementation	Exactly 1 `sosa:phenomenonTime` predicate *MUST* exist where the value node is a blank node or IRI of type `time:Instant`.
Cardinality	Exactly 1
Node kind	`sh:BlankNodeOrIRI`
Class type	`time:Instant`
Expected values	

4.1.12.13. Property: tern:resultDateTime

Property	Value
IRI	`tern:resultDateTime`
Shape IRI	https://w3id.org/tern/shapes/tern/sosa-resultTime
Status	`stable` ✓
Label	result date time
Definition	The result time is the instant of time when the Observation, Actuation or Sampling activity was completed.
Scope note	
Implementation	A `tern:resultDateTime` predicate *MUST* have a literal value where the datatype is an `xsd:date`, `xsd:dateTime` or `xsd:dateTimeStamp`.
Cardinality	Exactly 1
Node kind	`sh:Literal`

Class type	`xsd:dateTime`
	`xsd:date`
	`xsd:dateTimeStamp`

Expected values	

4.1.12.14. Property: sosa:usedProcedure

Property	Value
IRI	`sosa:usedProcedure`
Shape IRI	https://w3id.org/tern/shapes/tern/sosa-usedProcedure
Status	`stable` ✓
Label	used procedure
Definition	A relation to link to a re-usable Procedure used in making an Observation, an Actuation, or a Sample, typically through a Sensor, Actuator or Sampler.
Scope note	
Implementation	Exactly 1 `sosa:usedProcedure` *MUST* exist where the value node is an IRI.
Cardinality	Exactly 1
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.12.15. Property: tern:hasSiteVisit

Property	Value
IRI	`tern:hasSiteVisit`

Property	Value
Shape IRI	https://w3id.org/tern/shapes/tern/tern-hasSiteVisit
Status	`stable` ✓
Label	has site visit
Definition	A property that links, e.g., a Site to a Site Visit.
Scope note	
Implementation	A maximum of 1 `tern:hasSiteVisit` *MAY* exist where the value node is an IRI of type `tern:SiteVisit`.
Cardinality	Maximum 1
Node kind	`sh:IRI`
Class type	`tern:SiteVisit`
Expected values	

4.1.12.16. Property: tern:observationType

Property	Value
IRI	`tern:observationType`
Shape IRI	https://w3id.org/tern/shapes/tern/tern-observationType
Status	`stable` ✓
Label	observation type
Definition	The type of observation.
Scope note	
Implementation	A maximum of 1 `tern:observationType` *MAY* exist with an IRI value.
Cardinality	Maximum 1
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.12.17. Property: void:inDataset

Property	Value
IRI	`void:inDataset`
Shape IRI	https://w3id.org/tern/shapes/tern/void-inDataset
Status	`stable` ✓
Label	in dataset
Definition	A link to the RDF payload's metadata which this resource was a part of.
Scope note	

Property	Value
Implementation	There *MUST* exist exactly 1 `void:inDataset` property with an IRI value to a `tern:RDFDataset`.
Cardinality	Exactly 1
Node kind	`sh:IRI`
Class type	`tern:RDFDataset`
Expected values	

4.1.13. Class: tern:ObservationCollection

Property	Value
IRI	`tern:ObservationCollection`
Status	`experimental` ◯
Label	Observation collection
Definition	Collection of one or more observations, whose members share a common value for one or more property
Scope note	

4.1.13.1. Property: sosa:hasFeatureOfInterest

Property	Value
IRI	`sosa:hasFeatureOfInterest`
Shape IRI	https://w3id.org/tern/shapes/tern/ObservationCollection-hasFeatureOfInterest
Status	`experimental` ◯
Label	has feature of interest
Definition	A relation between an Observation and the entity whose quality was observed, or between an Actuation and the entity whose property was modified, or between an act of Sampling and the entity that was sampled.
Scope note	
Implementation	A `tern:ObservationCollection` *MAY* have a maximum of 1 `sosa:hasFeatureOfInterest` predicate where the value node is an IRI of type `tern:FeatureOfInterest`.
Cardinality	Maximum 1
Node kind	`sh:IRI`
Class type	`tern:FeatureOfInterest`
Expected values	

4.1.13.2. Property: sosa:hasMember

Property	Value
IRI	`sosa:hasMember`
Shape IRI	https://w3id.org/tern/shapes/tern/ObservationCollection-hasMember
Status	`experimental` ◯
Label	has member
Definition	Link to a member of a collection of observations that share the same value for one or more of the characteristic properties.
Scope note	
Implementation	A `tern:ObservationCollection` *MUST* have at least 1 `sosa:hasMember` predicate where the value node is an IRI of type `tern:Observation` or `tern:ObservationCollection`.
Cardinality	Minimum 1
Node kind	`sh:IRI`
Class type	`tern:Observation` `tern:ObservationCollection`
Expected values	

4.1.13.3. Property: sosa:hasUltimateFeatureOfInterest

Property	Value
IRI	`sosa:hasUltimateFeatureOfInterest`
Shape IRI	https://w3id.org/tern/shapes/tern/ObservationCollection-hasUltimateFeatureOfInterest
Status	`experimental` ◯
Label	has ultimate feature of interest
Definition	Link to the ultimate feature of interest of an observation or act of sampling. This is useful when the proximate feature of interest is a sample of the ultimate feature of interest, directly or transitively.
Scope note	
Implementation	A `tern:ObservationCollection` *MAY* have a maximum of 1 `sosa:hasUltimateFeatureOfInterest` where the value node is an IRI of type `tern:FeatureOfInterest`.
Cardinality	Maximum 1
Node kind	`sh:IRI`
Class type	`tern:FeatureOfInterest`
Expected values	

4.1.13.4. Property: sosa:madeBySensor

Property	Value
IRI	`sosa:madeBySensor`
Shape IRI	https://w3id.org/tern/shapes/tern/ObservationCollection-madeBySensor
Status	`experimental` ◯
Label	made by sensor
Definition	Relation between an Observation and the Sensor which made the Observations.
Scope note	
Implementation	A `tern:ObservationCollection` *MAY* have a maximum of 1 `sosa:madeBySensor` predicate where the value node is an IRI of type `tern:Sensor`.
Cardinality	Maximum 1
Node kind	`sh:IRI`
Class type	`tern:Sensor`
Expected values	

4.1.13.5. Property: sosa:observedProperty

Property	Value
IRI	`sosa:observedProperty`
Shape IRI	https://w3id.org/tern/shapes/tern/ObservationCollection-observedProperty
Status	`stable` ⓥ
Label	observed property
Definition	Relation linking an Observation to the property that was observed. The ObservableProperty should be a property of the FeatureOfInterest (linked by hasFeatureOfInterest) of this Observation.
Scope note	
Implementation	A `tern:ObservationCollection` *MAY* have a maximum of 1 `sosa:observedProperty` predicate where the value node is an IRI.
Cardinality	Maximum 1
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.13.6. Property: sosa:phenomenonTime

Property	Value
IRI	`sosa:phenomenonTime`

Property	Value
Shape IRI	https://w3id.org/tern/shapes/tern/ObservationCollection-phenomenonTime
Status	`experimental` ◯
Label	phenomenon time
Definition	The time that the Result of an Observation, Actuation, or Sampling applies to the FeatureOfInterest. Not necessarily the same as the resultTime. May be an interval or an instant, or some other compound temporal entity.
Scope note	
Implementation	A `tern:ObservationCollection` *MAY* have a maximum of 1 `sosa:phenomenonTime` predicate where the value node is an IRI of type `time:Instant`.
Cardinality	Maximum 1
Node kind	
Class type	`time:Instant`
Expected values	

4.1.13.7. Property: tern:resultDateTime

Property	Value
IRI	`tern:resultDateTime`
Shape IRI	https://w3id.org/tern/shapes/tern/ObservationCollection-resultTime
Status	`stable` ⊘
Label	result time
Definition	The result time is the instant of time when the Observation, Actuation or Sampling activity was completed.
Scope note	
Implementation	A `tern:ObservationCollection` *MAY* have a maximum of 1 `tern:resultDateTime` predicate where the value node is a literal with the datatype `xsd:date`, `xsd:dateTime` or `xsd:dateTimeStamp`.
Cardinality	Maximum 1
Node kind	

Class type	`xsd:dateTime`
	`xsd:date`
	`xsd:dateTimeStamp`

Expected values	

4.1.13.8. Property: sosa:usedProcedure

Property	Value
IRI	`sosa:usedProcedure`

Property	Value
Shape IRI	https://w3id.org/tern/shapes/tern/ObservationCollection-usedProcedure
Status	`experimental` ◯
Label	used procedure
Definition	A relation to link to a re-usable Procedure used in making an Observation, an Actuation, or a Sample, typically through a Sensor, Actuator or Sampler.
Scope note	
Implementation	A `tern:ObservationCollection` *MAY* have a maximum of 1 `sosa:usedProcedure` predicate where the value node is an IRI.
Cardinality	Maximum 1
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.14. Class: tern:RDFDataset

Property	Value
IRI	`tern:RDFDataset`
Status	`stable` ⊘
Label	RDFDataset
Definition	A set of RDF triples that are published, maintained or aggregated by a single provider.
Scope note	This is a specialised version of the `void:Dataset` class where it may be constrained by additional property shapes in the future.

4.1.14.1. Property: dcterms:contributor

Property	Value
IRI	`dcterms:contributor`
Shape IRI	https://w3id.org/tern/shapes/tern/RDFDataset-contributor
Status	`stable` ⊘
Label	contributor
Definition	An entity, such as a person, organisation, or service, that is responsible for making contributions to the dataset. The contributor should be described as an RDF resource, rather than just providing the name as a literal.
Scope note	
Implementation	A `tern:RDFDataset` *MAY* have a `dcterms:contributor` predicate where the value node is an IRI.

Property	Value
Cardinality	
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.14.2. Property: dcterms:created

Property	Value
IRI	`dcterms:created`
Shape IRI	https://w3id.org/tern/shapes/tern/RDFDataset-created
Status	`stable` ✓
Label	created
Definition	Date of creation of the dataset. The value should be formatted and data-typed as an `xsd:date`.
Scope note	
Implementation	A `tern:RDFDataset` *MAY* have a `dcterms:created` predicate where the value node is a literal with the datatype `xsd:date`.
Cardinality	
Node kind	
Class type	`xsd:date`
Expected values	

4.1.14.3. Property: dcterms:creator

Property	Value
IRI	`dcterms:creator`
Shape IRI	https://w3id.org/tern/shapes/tern/RDFDataset-creator
Status	`stable` ✓
Label	creator
Definition	An entity, such as a person, organisation, or service, that is primarily responsible for creating the dataset. The creator should be described as an RDF resource, rather than just providing the name as a literal.
Scope note	
Implementation	A `tern:RDFDataset` *MAY* have a `dcterms:creator` predicate where the value node is an IRI.
Cardinality	
Node kind	`sh:IRI`

Property	Value
Class type	
Expected values	

4.1.14.4. Property: dcterms:date

Property	Value
IRI	`dcterms:date`
Shape IRI	https://w3id.org/tern/shapes/tern/RDFDataset-date
Status	`stable` ✓
Label	date
Definition	A point or period of time associated with an event in the life-cycle of the resource. The value should be formatted and data-typed as an `xsd:date`.
Scope note	
Implementation	A `tern:RDFDataset` *MAY* have a `dcterms:date` predicate where the value node is a literal with the datatype `xsd:date`.
Cardinality	
Node kind	
Class type	`xsd:date`
Expected values	

4.1.14.5. Property: dcterms:description

Property	Value
IRI	`dcterms:description`
Shape IRI	https://w3id.org/tern/shapes/tern/RDFDataset-description
Status	`stable` ✓
Label	description
Definition	A textual description of the dataset.
Scope note	
Implementation	A `tern:RDFDataset` *MAY* have a `dcterms:description` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	
Class type	`xsd:string`
Expected values	

4.1.14.6. Property: dcterms:issued

Property	Value
IRI	`dcterms:issued`
Shape IRI	https://w3id.org/tern/shapes/tern/RDFDataset-issued
Status	`stable` ✓
Label	issued
Definition	Date of formal issuance (e.g., publication) of the dataset. The value should be formatted and datatyped as an `xsd:date`.
Scope note	
Implementation	A `tern:RDFDataset` *MAY* have a `dcterms:issued` predicate where the value node is a literal with the datatype `xsd:date`.
Cardinality	
Node kind	
Class type	`xsd:date`
Expected values	

4.1.14.7. Property: dcterms:license

Property	Value
IRI	`dcterms:license`
Shape IRI	https://w3id.org/tern/shapes/tern/RDFDataset-license
Status	`stable` ✓
Label	license
Definition	A legal document giving official permission to do something with the resource.
Scope note	
Implementation	A `tern:RDFDataset` *MAY* have a `dcterms:license` predicate where the value node is an IRI.
Cardinality	
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.14.8. Property: dcterms:modified

Property	Value
IRI	`dcterms:modified`
Shape IRI	https://w3id.org/tern/shapes/tern/RDFDataset-modified

Property	Value
Status	`stable` ✓
Label	modified
Definition	Date on which the dataset was changed. The value should be formatted and datatyped as an `xsd:date`.
Scope note	
Implementation	A `tern:RDFDataset` *MAY* have a `dcterms:modified` predicate where the value node is a literal with the datatype `xsd:date`.
Cardinality	
Node kind	
Class type	`xsd:date`
Expected values	

4.1.14.9. Property: dcterms:publisher

Property	Value
IRI	`dcterms:publisher`
Shape IRI	https://w3id.org/tern/shapes/tern/RDFDataset-publisher
Status	`stable` ✓
Label	publisher
Definition	An entity, such as a person, organisation, or service, that is responsible for making the dataset available. The publisher should be described as an RDF resource, rather than just providing the name as a literal.
Scope note	
Implementation	A `tern:RDFDataset` *MAY* have a `dcterms:publisher` predicate where the value node is an IRI.
Cardinality	
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.14.10. Property: dcterms:rightsHolder

Property	Value
IRI	`dcterms:rightsHolder`
Shape IRI	https://w3id.org/tern/shapes/tern/RDFDataset-rightsHolder
Status	`stable` ✓
Label	rights holder

Property	Value
Definition	A person or organization owning or managing rights over the resource.
Scope note	
Implementation	A `tern:RDFDataset` *MAY* have a `dcterms:rightsHolder` predicate where the value node is an IRI or literal.
Cardinality	
Node kind	`sh:IRIOrLiteral`
Class type	
Expected values	

4.1.14.11. Property: dcterms:source

Property	Value
IRI	`dcterms:source`
Shape IRI	https://w3id.org/tern/shapes/tern/RDFDataset-source
Status	`stable` ✓
Label	source
Definition	A related resource from which the dataset is derived. The source should be described as an RDF resource, rather than as a literal.
Scope note	
Implementation	A `tern:RDFDataset` *MAY* have a `dcterms:source` predicate where the value node is an IRI.
Cardinality	
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.14.12. Property: dcterms:subject

Property	Value
IRI	`dcterms:subject`
Shape IRI	https://w3id.org/tern/shapes/tern/RDFDataset-subject
Status	`stable` ✓
Label	subject
Definition	A topic of the resource. Recommended practice is to refer to the subject with a URI. If this is not possible or feasible, a literal value that identifies the subject may be provided. Both should preferably refer to a subject in a controlled vocabulary.

Property	Value
Scope note	
Implementation	A `tern:RDFDataset` *MAY* have a `dcterms:subject` predicate where the value node is an IRI or literal.
Cardinality	
Node kind	`sh:IRIOrLiteral`
Class type	
Expected values	

4.1.14.13. Property: void:subset

Property	Value
IRI	`void:subset`
Shape IRI	https://w3id.org/tern/shapes/tern/RDFDataset-subset
Status	`stable` ✓
Label	subset
Definition	The `void:subset` property can be used to provide descriptions of parts of a dataset. A part of a dataset is itself a `void:Dataset`, and any of the annotations for datasets listed in this guide can be applied to the subset. Reasons for subdividing a dataset might include: - Parts have different provenance (different `dcterms:source`) - Parts have different publication dates (different `dcterms:date`) - Parts are accesible through different SPARQL endpoints (different `void:sparqlEndpoint`) - Parts are about different topics (different `dcterms:subject`) - Parts can be downloaded separately in different RDF dumps (different `void:dataDump`)
Scope note	
Implementation	A `tern:RDFDataset` *MAY* have a `void:subset` predicate where the value node is an IRI of type `void:Dataset`.
Cardinality	
Node kind	`sh:IRI`
Class type	`void:Dataset`
Expected values	

4.1.14.14. Property: dcterms:title

Property	Value
IRI	`dcterms:title`
Shape IRI	https://w3id.org/tern/shapes/tern/RDFDataset-title

Property	Value
Status	stable ✓
Label	title
Definition	The name of the dataset.
Scope note	
Implementation	A tern:RDFDataset *MAY* have a dcterms:title predicate where the value node is a literal with a datatype xsd:string.
Cardinality	
Node kind	
Class type	xsd:string
Expected values	

4.1.14.15. Property: void:vocabulary

Property	Value
IRI	void:vocabulary
Shape IRI	https://w3id.org/tern/shapes/tern/RDFDataset-vocabulary
Status	stable ✓
Label	vocabulary
Definition	A vocabulary or owl:Ontology whose classes or properties are used in a void:Dataset.
Scope note	
Implementation	A tern:RDFDataset *MAY* have a void:vocabulary predicate where the value node is an IRI.
Cardinality	
Node kind	sh:IRI
Class type	
Expected values	

4.1.15. Class: tern:Result

Property	Value
IRI	tern:Result
Status	stable ✓
Label	Result
Definition	The result of an Observation, Actuation, or act of Sampling. To store an observation's simple result value one can use the hasSimpleResult property.

Property	Value
Scope note	

4.1.15.1. Property: sosa:isResultOf

Property	Value
IRI	`sosa:isResultOf`
Shape IRI	https://w3id.org/tern/shapes/tern/Result-isResultOf
Status	`stable` ✓
Label	is result of
Definition	Relation linking a Result to the Observation or Actuation or act of Sampling that created or caused it.
Scope note	
Implementation	A `tern:Result` *MAY* have at most 1 `sosa:isResultOf` predicate where the value node is an IRI of type `tern:Observation` or `tern:Sampling`.
Cardinality	Maximum 1
Node kind	`sh:IRI`
Class type	`tern:Observation` `tern:Sampling`
Expected values	

4.1.16. Class: tern:Sample

Property	Value
IRI	`tern:Sample`
Status	`stable` ✓
Label	Sample
Definition	A feature which is intended to be representative of a `FeatureOfInterest` on which `Observations` may be made.
Scope note	A sample may be a physical sample or a sub-divided section of some larger feature of interest. For example, land surface, plant population, ground cover are all common sub-samples of a site (feature of interest) in ecological surveys.

4.1.16.1. Property: sosa:isResultOf

Property	Value
IRI	`sosa:isResultOf`
Shape IRI	https://w3id.org/tern/shapes/tern/Sample-isResultOf
Status	`stable` ✓

Property	Value
Label	is result of
Definition	Relation linking a Result to the Sampling that created or caused it.
Scope note	
Implementation	A `tern:Sample` *MAY* have a `sosa:isResultOf` predicate where the value node is an IRI of type `tern:Sampling`.
Cardinality	
Node kind	`sh:IRI`
Class type	`tern:Sampling`
Expected values	

4.1.16.2. Property: sosa:isSampleOf

Property	Value
IRI	`sosa:isSampleOf`
Shape IRI	https://w3id.org/tern/shapes/tern/Sample-isSampleOf
Status	`stable` ✓
Label	is sample of
Definition	Relation from a Sample to the FeatureOfInterest that it is intended to be representative of.
Scope note	
Implementation	A `tern:Sample` *MUST* have at least 1 `sosa:isSampleOf` predicate where the value node is an IRI of type `tern:FeatureOfInterest`.
Cardinality	Minimum 1
Node kind	`sh:IRI`
Class type	`tern:FeatureOfInterest`
Expected values	

4.1.17. Class: tern:Sampler

Property	Value
IRI	`tern:Sampler`
Status	`stable` ✓
Label	Sampler
Definition	A device that is used by, or implements, a (`Sampling`) `Procedure` to create or transform one or more samples.

Property	Value
Scope note	A ball mill, diamond drill, hammer, hypodermic syringe and needle, image Sensor or a soil auger can all act as sampling devices (i.e., be Samplers). However, sometimes the distinction between the Sampler and the Sensor is not evident, as they are packaged as a unit. A Sampler need not be a physical device.

4.1.17.1. Property: ssn:implements

Property	Value
IRI	`ssn:implements`
Shape IRI	https://w3id.org/tern/shapes/tern/Sampler-implements
Status	`stable` ✓
Label	implements
Definition	Relation between an entity that implements a Procedure in some executable way and the Procedure (an algorithm, procedure or method).
Scope note	
Implementation	A `tern:Sampler` *MUST* have at least 1 `ssn:implements` predicate where the value node is an IRI.
Cardinality	Minimum 1
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.17.2. Property: sosa:madeSampling

Property	Value
IRI	`sosa:madeSampling`
Shape IRI	https://w3id.org/tern/shapes/tern/sosa-madeSampling
Status	`stable` ✓
Label	made sampling
Definition	Relation between a Sampler (sampling device or entity) and the Sampling act it performed.
Scope note	
Implementation	A `sosa:madeSampling` predicate *MAY* exist where the value node is an IRI.
Cardinality	
Node kind	`sh:IRI`
Class type	`tern:Sampling`

Property	Value
Expected values	

4.1.18. Class: tern:Sampling

Property	Value
IRI	`tern:Sampling`
Status	`stable` ✓
Label	Sampling
Definition	An activity of `Sampling` carries out a (`Sampling`) `Procedure` to create or transform one or more `Samples`.
Scope note	Crushing a rock sample in a ball mill to create sub-samples of the rock. Digging a pit through a soil sequence. Dividing a field site into quadrants. Drawing blood from a patient. Drilling an observation well. Establishing a station for environmental monitoring. Registering an image of the landscape. Sieving a powder to separate the subset finer than 100-mesh. Selecting a subset of a population. Splitting a piece of drill-core to create two new samples. Taking a diamond-drill core from a rock outcrop.

4.1.18.1. Property: sosa:hasResult

Property	Value
IRI	`sosa:hasResult`
Shape IRI	https://w3id.org/tern/shapes/tern/Sampling-hasResult
Status	`stable` ✓
Label	has result
Definition	Relation linking an Observation or Actuation or act of Sampling and a Result or Sample.
Scope note	
Implementation	A `tern:Sampling` *MUST* have at least 1 `sosa:hasResult` predicate where the value node is an IRI of type `tern:Sample`.
Cardinality	Minimum 1
Node kind	`sh:IRI`
Class type	`tern:Sample`
Expected values	

4.1.18.2. Property: sosa:madeBySampler

Property	Value
IRI	`sosa:madeBySampler`

Property	Value
Shape IRI	https://w3id.org/tern/shapes/tern/Sampling-madeBySampler
Status	`stable` ✓
Label	made by sampler
Definition	Relation linking an act of Sampling to the Sampler (sampling device or entity) that made it.
Scope note	
Implementation	A `tern:Sampling` *MAY* have a `sosa:madeBySampler` predicate where the value node is an IRI of type `tern:Sampler`.
Cardinality	
Node kind	`sh:IRI`
Class type	`tern:Sampler`
Expected values	

4.1.18.3. Property: dcterms:identifier

Property	Value
IRI	`dcterms:identifier`
Shape IRI	https://w3id.org/tern/shapes/tern/dcterms-identifier
Status	`stable` ✓
Label	identifier
Definition	An unambiguous reference to the resource within a given context.
Scope note	
Implementation	N/A
Cardinality	
Node kind	
Class type	
Expected values	

4.1.18.4. Property: dcterms:type

Property	Value
IRI	`dcterms:type`
Shape IRI	https://w3id.org/tern/shapes/tern/dcterms-type
Status	`stable` ✓
Label	type

Property	Value
Definition	Recommended practice is to use a controlled vocabulary such as the DCMI Type Vocabulary DCMI-TYPE. To describe the file format, physical medium, or dimensions of the resource, use the property Format.
Scope note	Useful to capture the proximate class type in situations when `rdfs:subClassOf` entailment is enabled and `rdf:type` is not suitable.
Implementation	A `dcterms:type` predicate *MUST* have an IRI value.
Cardinality	
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.18.5. Property: geo:hasGeometry

Property	Value
IRI	`geo:hasGeometry`
Shape IRI	https://w3id.org/tern/shapes/tern/geo-hasGeometry
Status	`stable` ✓
Label	has geometry
Definition	A spatial representation for a given feature.
Scope note	
Implementation	A `geo:hasGeometry` predicate *MUST* have a blank node or IRI value.
Cardinality	
Node kind	`sh:BlankNodeOrIRI`
Class type	`geo:Geometry`
Expected values	

4.1.18.6. Property: prov:qualifiedAssociation

Property	Value
IRI	`prov:qualifiedAssociation`
Shape IRI	https://w3id.org/tern/shapes/tern/prov-qualifiedAssociation
Status	`stable` ✓
Label	qualified association
Definition	An activity association is an assignment of responsibility to an agent for an activity, indicating that the agent had a role in the activity. It further allows for a plan to be specified, which is the plan intended by the agent to achieve some goals in the context of this activity.

Property	Value
Scope note	
Implementation	A `prov:qualifiedAssociation` *MUST* have a blank node or IRI value of type `prov:Association`.
Cardinality	
Node kind	`sh:BlankNodeOrIRI`
Class type	`prov:Association`
Expected values	

4.1.18.7. Property: prov:wasAssociatedWith

Property	Value
IRI	`prov:wasAssociatedWith`
Shape IRI	https://w3id.org/tern/shapes/tern/prov-wasAssociatedWith
Status	`stable` ✓
Label	was associated with
Definition	An activity association is an assignment of responsibility to an agent for an activity, indicating that the agent had a role in the activity. It further allows for a plan to be specified, which is the plan intended by the agent to achieve some goals in the context of this activity.
Scope note	
Implementation	A `prov:wasAssociatedWith` predicate *MUST* an IRI value of type `prov:Agent`.
Cardinality	
Node kind	`sh:IRI`
Class type	`prov:Agent`
Expected values	

4.1.18.8. Property: rdfs:comment

Property	Value
IRI	`rdfs:comment`
Shape IRI	https://w3id.org/tern/shapes/tern/rdfs-comment
Status	`stable` ✓
Label	comment
Definition	A description of the subject resource.
Scope note	
Implementation	An `rdfs:comment` *MUST* have a literal value.
Cardinality	

Property	Value
Node kind	`sh:Literal`
Class type	
Expected values	

4.1.18.9. Property: sosa:hasFeatureOfInterest

Property	Value
IRI	`sosa:hasFeatureOfInterest`
Shape IRI	https://w3id.org/tern/shapes/tern/sosa-hasFeatureOfInterest
Status	`stable` ✓
Label	has feature of interest
Definition	A relation between an Observation and the entity whose quality was observed, or between an Actuation and the entity whose property was modified, or between an act of Sampling and the entity that was sampled.
Scope note	
Implementation	Exactly 1 `sosa:hasFeatureOfInterest` predicate *MUST* exist_ with an IRI value.
Cardinality	Exactly 1
Node kind	`sh:IRI`
Class type	`tern:FeatureOfInterest`
Expected values	

4.1.18.10. Property: tern:resultDateTime

Property	Value
IRI	`tern:resultDateTime`
Shape IRI	https://w3id.org/tern/shapes/tern/sosa-resultTime
Status	`stable` ✓
Label	result date time
Definition	The result time is the instant of time when the Observation, Actuation or Sampling activity was completed.
Scope note	
Implementation	A `tern:resultDateTime` predicate *MUST* have a literal value where the datatype is an `xsd:date`, `xsd:dateTime` or `xsd:dateTimeStamp`.
Cardinality	Exactly 1
Node kind	`sh:Literal`

Property	Value

Class type	`xsd:dateTime`
	`xsd:date`
	`xsd:dateTimeStamp`

Expected values	

4.1.18.11. Property: sosa:usedProcedure

Property	Value
IRI	`sosa:usedProcedure`
Shape IRI	https://w3id.org/tern/shapes/tern/sosa-usedProcedure
Status	`stable` ⊘
Label	used procedure
Definition	A relation to link to a re-usable Procedure used in making an Observation, an Actuation, or a Sample, typically through a Sensor, Actuator or Sampler.
Scope note	
Implementation	Exactly 1 `sosa:usedProcedure` *MUST* exist where the value node is an IRI.
Cardinality	Exactly 1
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.18.12. Property: tern:hasSiteVisit

Property	Value
IRI	`tern:hasSiteVisit`
Shape IRI	https://w3id.org/tern/shapes/tern/tern-hasSiteVisit
Status	`stable` ⊘
Label	has site visit
Definition	A property that links, e.g., a Site to a Site Visit.
Scope note	
Implementation	A maximum of 1 `tern:hasSiteVisit` *MAY* exist where the value node is an IRI of type `tern:SiteVisit`.
Cardinality	Maximum 1
Node kind	`sh:IRI`
Class type	`tern:SiteVisit`
Expected values	

4.1.18.13. Property: tern:samplingType

Property	Value
IRI	`tern:samplingType`
Shape IRI	https://w3id.org/tern/shapes/tern/tern-samplingType
Status	`stable` ✓
Label	sampling type
Definition	The type of sampling act.
Scope note	
Implementation	A `tern:Sampling` *MAY* have a maximum of 1 `tern:samplingType` predicate where the value node is an IRI.
Cardinality	Maximum 1
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.18.14. Property: void:inDataset

Property	Value
IRI	`void:inDataset`
Shape IRI	https://w3id.org/tern/shapes/tern/void-inDataset
Status	`stable` ✓
Label	in dataset
Definition	A link to the RDF payload's metadata which this resource was a part of.
Scope note	
Implementation	There *MUST* exist exactly 1 `void:inDataset` property with an IRI value to a `tern:RDFDataset`.
Cardinality	Exactly 1
Node kind	`sh:IRI`
Class type	`tern:RDFDataset`
Expected values	

4.1.19. Class: tern:Sensor

Property	Value
IRI	`tern:Sensor`
Status	`stable` ✓
Label	Sensor

Property	Value
Definition	Device, agent (including humans), or software (simulation) involved in, or implementing, a Procedure. Sensors respond to a stimulus, e.g., a change in the environment, or input data composed from the results of prior Observations, and generate a Result. Sensors can be hosted by Platforms.
Scope note	

4.1.19.1. Property: ssn:implements

Property	Value
IRI	`ssn:implements`
Shape IRI	https://w3id.org/tern/shapes/tern/Sensor-implements
Status	`stable` ✓
Label	implements
Definition	Relation between an entity that implements a Procedure in some executable way and the Procedure (an algorithm, procedure or method).
Scope note	
Implementation	A `tern:Sensor` *MUST* have at least 1 `ssn:implements` predicate where the value node is an IRI.
Cardinality	Minimum 1
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.19.2. Property: sosa:madeObservation

Property	Value
IRI	`sosa:madeObservation`
Shape IRI	https://w3id.org/tern/shapes/tern/Sensor-madeObservation
Status	`stable` ✓
Label	made observation
Definition	Relation between a `Sensor` and an `Observation` made by the `Sensor`.
Scope note	
Implementation	A `tern:Sensor` *MAY* have an `sosa:madeObservation` predicate where the value node is an IRI of type `tern:Observation`.
Cardinality	
Node kind	`sh:IRI`
Class type	`tern:Observation`

Property	Value
Expected values	

4.1.19.3. Property: sosa:observes

Property	Value
IRI	`sosa:observes`
Shape IRI	https://w3id.org/tern/shapes/tern/Sensor-observes
Status	`stable` ✓
Label	observes
Definition	Relation between a `Sensor` and an `ObservableProperty` that it is capable of sensing.
Scope note	
Implementation	A `tern:Sensor` *MAY* have an `sosa:observes` predicate where the value node is an IRI.
Cardinality	
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.20. Class: tern:Site

Property	Value
IRI	`tern:Site`
Status	`stable` ✓
Label	Site
Definition	An ecological monitoring site where observations and samplings occur. This `Site` class is a subclass of `Sample` since ecological sites are designed to be representative of an environmental system (which may be an ecosystem or bioregion) or zone (which may be a zone such as a parcel or tract).
Scope note	Ausplots Rangelands Site 59858 (Site Name: WAACOO0011)

4.1.20.1. Property: tern:dimension

Property	Value
IRI	`tern:dimension`
Shape IRI	https://w3id.org/tern/shapes/tern/Site-dimension
Status	`experimental` ○
Label	dimension

Property	Value
Definition	Dimenion in metres.
Scope note	
Implementation	A `tern:Site` *MAY* have a maximum of 1 `tern:dimension` predicate where the value node is a literal with the datatype `xsd:string.
Cardinality	Maximum 1
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.20.2. Property: tern:hasSiteVisit

Property	Value
IRI	`tern:hasSiteVisit`
Shape IRI	https://w3id.org/tern/shapes/tern/Site-hasSiteVisit
Status	`stable` ⊘
Label	has site visit
Definition	A property that links, e.g., a Site to a Site Visit.
Scope note	
Implementation	A `tern:Site` *MAY* have a `tern:hasSiteVisit` predicate where the value node is an IRI of type `tern:SiteVisit`.
Cardinality	
Node kind	`sh:IRI`
Class type	`tern:SiteVisit`
Expected values	

4.1.20.3. Property: tern:locationProcedure

Property	Value
IRI	`tern:locationProcedure`
Shape IRI	https://w3id.org/tern/shapes/tern/Site-locationProcedure
Status	`experimental` ◯
Label	location procedure
Definition	Link to a procedure used to obtain the location.
Scope note	
Implementation	A `tern:Site` *MAY* have a maximum of 1 `tern:locationProcedure` predicate where the value node is an IRI.

Property	Value
Cardinality	Maximum 1
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.20.4. Property: geo:sfWithin

Property	Value
IRI	`geo:sfWithin`
Shape IRI	https://w3id.org/tern/shapes/tern/geo-sfWithin
Status	`experimental` ◯
Label	SF within
Definition	Exists if the subject SpatialObject is spatially within the object SpatialObject. DE-9IM: T*F**F***
Scope note	
Implementation	A `geo:sfWithin` *MUST* have an IRI value.
Cardinality	
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.20.5. Property: tern:locationDescription

Property	Value
IRI	`tern:locationDescription`
Shape IRI	https://w3id.org/tern/shapes/tern/tern-locationDescription
Status	`experimental` ◯
Label	location description
Definition	The description of the site's location. Example: 10km west of Fletcherview Tropical Rangeland SuperSite.
Scope note	
Implementation	A `tern:locationDescription` *MUST* have a literal value with the datatype `xsd:string`.
Cardinality	Maximum 1
Node kind	`sh:Literal`
Class type	`xsd:string`

Property	Value
Expected values	

4.1.20.6. Property: tern:siteDescription

Property	Value
IRI	`tern:siteDescription`
Shape IRI	https://w3id.org/tern/shapes/tern/tern-siteDescription
Status	`experimental` ◯
Label	site description
Definition	The description of the site. Example: Outer fringe of larger lake chain, isolated by reddish dunes, yellow sand fan into western edge. Very few, 3, plants regenerating after recent moderate rains. Silt, sand with scattered iron conglomerate stones on surface.
Scope note	
Implementation	A `tern:siteDescription` *MUST* have a literal value with the datatype `xsd:string`.
Cardinality	Maximum 1
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.21. Class: tern:SiteVisit

Property	Value
IRI	`tern:SiteVisit`
Status	`stable` ⊘
Label	Site Visit
Definition	A Site Visit is a discrete time-bounded activity at a `Site`, during which `Sampling` or `Observation` activities occur.
Scope note	

4.1.21.1. Property: prov:endedAtTime

Property	Value
IRI	`prov:endedAtTime`
Shape IRI	https://w3id.org/tern/shapes/tern/SiteVisit-endedAtTime
Status	`stable` ⊘
Label	ended at time

Property	Value
Definition	The time at which an activity ended.
Scope note	
Implementation	A `tern:SiteVisit` *MAY* have a maximum of 1 `prov:endedAtTime` predicate where the value node is a literal with the datatype `xsd:dateTime`.
Cardinality	Maximum 1
Node kind	`sh:Literal`
Class type	`xsd:dateTime`
Expected values	

4.1.21.2. Property: prov:startedAtTime

Property	Value
IRI	`prov:startedAtTime`
Shape IRI	https://w3id.org/tern/shapes/tern/SiteVisit-startedAtTime
Status	`stable` ✓
Label	started at time
Definition	The time at which an activity started.
Scope note	
Implementation	A `tern:SiteVisit` *MUST* have exactly 1 `prov:startedAtTime` predicate where the value node is a literal with the datatype `xsd:dateTime`.
Cardinality	Exactly 1
Node kind	`sh:Literal`
Class type	`xsd:dateTime`
Expected values	

4.1.21.3. Property: dcterms:identifier

Property	Value
IRI	`dcterms:identifier`
Shape IRI	https://w3id.org/tern/shapes/tern/dcterms-identifier
Status	`stable` ✓
Label	identifier
Definition	An unambiguous reference to the resource within a given context.
Scope note	
Implementation	N/A
Cardinality	

Property	Value
Node kind	
Class type	
Expected values	

4.1.21.4. Property: dcterms:type

Property	Value
IRI	`dcterms:type`
Shape IRI	https://w3id.org/tern/shapes/tern/dcterms-type
Status	`stable` ✓
Label	type
Definition	Recommended practice is to use a controlled vocabulary such as the DCMI Type Vocabulary DCMI-TYPE. To describe the file format, physical medium, or dimensions of the resource, use the property Format.
Scope note	Useful to capture the proximate class type in situations when `rdfs:subClassOf` entailment is enabled and `rdf:type` is not suitable.
Implementation	A `dcterms:type` predicate *MUST* have an IRI value.
Cardinality	
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.21.5. Property: prov:qualifiedAssociation

Property	Value
IRI	`prov:qualifiedAssociation`
Shape IRI	https://w3id.org/tern/shapes/tern/prov-qualifiedAssociation
Status	`stable` ✓
Label	qualified association
Definition	An activity association is an assignment of responsibility to an agent for an activity, indicating that the agent had a role in the activity. It further allows for a plan to be specified, which is the plan intended by the agent to achieve some goals in the context of this activity.
Scope note	
Implementation	A `prov:qualifiedAssociation` *MUST* have a blank node or IRI value of type `prov:Association`.
Cardinality	

Property	Value
Node kind	`sh:BlankNodeOrIRI`
Class type	`prov:Association`
Expected values	

4.1.21.6. Property: prov:wasAssociatedWith

Property	Value
IRI	`prov:wasAssociatedWith`
Shape IRI	https://w3id.org/tern/shapes/tern/prov-wasAssociatedWith
Status	`stable` ⊘
Label	was associated with
Definition	An activity association is an assignment of responsibility to an agent for an activity, indicating that the agent had a role in the activity. It further allows for a plan to be specified, which is the plan intended by the agent to achieve some goals in the context of this activity.
Scope note	
Implementation	A `prov:wasAssociatedWith` predicate *MUST* an IRI value of type `prov:Agent`.
Cardinality	
Node kind	`sh:IRI`
Class type	`prov:Agent`
Expected values	

4.1.21.7. Property: tern:locationDescription

Property	Value
IRI	`tern:locationDescription`
Shape IRI	https://w3id.org/tern/shapes/tern/tern-locationDescription
Status	`experimental` ○
Label	location description
Definition	The description of the site's location. Example: 10km west of Fletcherview Tropical Rangeland SuperSite.
Scope note	
Implementation	A `tern:locationDescription` *MUST* have a literal value with the datatype `xsd:string`.
Cardinality	Maximum 1
Node kind	`sh:Literal`

Property	Value
Class type	`xsd:string`
Expected values	

4.1.21.8. Property: tern:siteDescription

Property	Value
IRI	`tern:siteDescription`
Shape IRI	https://w3id.org/tern/shapes/tern/tern-siteDescription
Status	`experimental` ◯
Label	site description
Definition	The description of the site. Example: Outer fringe of larger lake chain, isolated by reddish dunes, yellow sand fan into western edge. Very few, 3, plants regenerating after recent moderate rains. Silt, sand with scattered iron conglomerate stones on surface.
Scope note	
Implementation	A `tern:siteDescription` *MUST* have a literal value with the datatype `xsd:string`.
Cardinality	Maximum 1
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.21.9. Property: void:inDataset

Property	Value
IRI	`void:inDataset`
Shape IRI	https://w3id.org/tern/shapes/tern/void-inDataset
Status	`stable` ⊘
Label	in dataset
Definition	A link to the RDF payload's metadata which this resource was a part of.
Scope note	
Implementation	There *MUST* exist exactly 1 `void:inDataset` property with an IRI value to a `tern:RDFDataset`.
Cardinality	Exactly 1
Node kind	`sh:IRI`
Class type	`tern:RDFDataset`
Expected values	

4.1.22. Class: tern:System

Property	Value
IRI	`tern:System`
Status	`stable` ⊘
Label	System
Definition	System is a unit of abstraction for pieces of infrastructure that implement Procedures. A System may have components, its subsystems, which are other Systems.
Scope note	

4.1.22.1. Property: ssn:hasDeployment

Property	Value
IRI	`ssn:hasDeployment`
Shape IRI	https://w3id.org/tern/shapes/tern/System-hasDeployment
Status	`experimental` ○
Label	has deployment
Definition	Relation between a System and a Deployment, recording that the System is deployed in that Deployment.
Scope note	
Implementation	A `tern:System` *MAY* have an `ssn:hasDeployment` predicate where the value node is an IRI of type `tern:Deployment`.
Cardinality	
Node kind	`sh:IRI`
Class type	`tern:Deployment`
Expected values	

4.1.22.2. Property: sosa:isHostedBy

Property	Value
IRI	`sosa:isHostedBy`
Shape IRI	https://w3id.org/tern/shapes/tern/System-isHostedBy
Status	`experimental` ○
Label	is hosted by
Definition	Relation between a Sensor, Actuator, Sampler, or Platform, and the Platform that it is mounted on or hosted by.
Scope note	

Property	Value
Implementation	A `tern:System` *MAY* have a maximum of 1 `sosa:isHostedBy` predicate where the value node is an IRI of type `tern:Platform`.
Cardinality	Maximum 1
Node kind	`sh:IRI`
Class type	`tern:Platform`
Expected values	

4.1.22.3. Property: tern:systemType

Property	Value
IRI	`tern:systemType`
Shape IRI	https://w3id.org/tern/shapes/tern/System-systemType
Status	`experimental` ◯
Label	system type
Definition	The type of system. Values are from some controlled vocabulary.
Scope note	
Implementation	A `tern:System` *MAY* have a `tern:systemType` predicate where the value node is an IRI.
Cardinality	
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.22.4. Property: dcterms:type

Property	Value
IRI	`dcterms:type`
Shape IRI	https://w3id.org/tern/shapes/tern/dcterms-type
Status	`stable` ⊘
Label	type
Definition	Recommended practice is to use a controlled vocabulary such as the DCMI Type Vocabulary DCMI-TYPE. To describe the file format, physical medium, or dimensions of the resource, use the property Format.
Scope note	Useful to capture the proximate class type in situations when `rdfs:subClassOf` entailment is enabled and `rdf:type` is not suitable.
Implementation	A `dcterms:type` predicate *MUST* have an IRI value.
Cardinality	

Property	Value
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.22.5. Property: ssn:implements

Property	Value
IRI	`ssn:implements`
Shape IRI	https://w3id.org/tern/shapes/tern/sosa-implements
Status	`experimental` ◯
Label	implements
Definition	Relation between an entity that implements a Procedure in some executable way and the Procedure (an algorithm, procedure or method).
Scope note	
Implementation	An `ssn:implements` *MUST* have an IRI value.
Cardinality	
Node kind	`sh:IRI`
Class type	
Expected values	

4.1.23. Class: tern:Taxon

Property	Value
IRI	`tern:Taxon`
Status	`stable` ⊘
Label	Taxon
Definition	A group of organisms (sensu http://purl.obolibrary.org/obo/OBI_0100026) considered by taxonomists to form a homogeneous unit.
Scope note	The genus Truncorotaloides as published by Bronnimann et al. in 1953 in the Journal of Paleontology Vol. 27(6) p. 817-820.

4.1.23.1. Property: dwc:acceptedNameUsage

Property	Value
IRI	`dwc:acceptedNameUsage`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-acceptedNameUsage
Status	`stable` ⊘

Property	Value
Label	accepted name usage
Definition	The full name, with authorship and date information if known, of the currently valid (zoological) or accepted (botanical) taxon.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:acceptedNameUsage` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.2. Property: dwc:acceptedNameUsageID

Property	Value
IRI	`dwc:acceptedNameUsageID`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-acceptedNameUsageID
Status	`stable` ✓
Label	accepted name usage ID
Definition	An identifier for the name usage (documented meaning of the name according to a source) of the currently valid (zoological) or accepted (botanical) taxon.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:acceptedNameUsageID` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.3. Property: dwc:class

Property	Value
IRI	`dwc:class`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-class
Status	`stable` ✓
Label	class
Definition	The full scientific name of the class in which the taxon is classified.
Scope note	

Property	Value
Implementation	A `tern:Taxon` *MAY* have a `dwc:class` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.4. Property: dwc:cultivarEpithet

Property	Value
IRI	`dwc:cultivarEpithet`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-cultivarEpithet
Status	`stable` ✓
Label	cultivarEpithet
Definition	Part of the name of a cultivar, cultivar group or grex that follows the scientific name.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:cultivarEpithet` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.5. Property: dwc:family

Property	Value
IRI	`dwc:family`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-family
Status	`stable` ✓
Label	family
Definition	The full scientific name of the family in which the taxon is classified.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:family` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`

Property	Value
Class type	`xsd:string`
Expected values	

4.1.23.6. Property: dwc:genericName

Property	Value
IRI	`dwc:genericName`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-genericName
Status	`stable` ✓
Label	generic name
Definition	The genus part of the scientificName without authorship.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:genericName` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.7. Property: dwc:genus

Property	Value
IRI	`dwc:genus`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-genus
Status	`stable` ✓
Label	genus
Definition	The full scientific name of the genus in which the taxon is classified.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:genus` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.8. Property: dwc:higherClassification

Property	Value
IRI	`dwc:higherClassification`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-higherClassification
Status	`stable` ✓
Label	higher classification
Definition	A list (concatenated and separated) of taxa names terminating at the rank immediately superior to the taxon referenced in the taxon record.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:higherClassification` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.9. Property: dwc:infragenericEpithet

Property	Value
IRI	`dwc:infragenericEpithet`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-infragenericEpithet
Status	`stable` ✓
Label	infrageneric epithet
Definition	The infrageneric part of a binomial name at ranks above species but below genus.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:infragenericEpithet` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.10. Property: dwc:infraspecificEpithet

Property	Value
IRI	`dwc:infraspecificEpithet`

Property	Value
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-infraspecificEpithet
Status	`stable` ✓
Label	infraspecific epithet
Definition	The name of the lowest or terminal infraspecific epithet of the scientificName, excluding any rank designation.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:infraspecificEpithet` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.11. Property: dwc:kingdom

Property	Value
IRI	`dwc:kingdom`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-kingdom
Status	`stable` ✓
Label	kingdom
Definition	The full scientific name of the kingdom in which the taxon is classified.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:kingdom` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.12. Property: dwc:nameAccordingTo

Property	Value
IRI	`dwc:nameAccordingTo`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-nameAccordingTo
Status	`stable` ✓
Label	name according to

Property	Value
Definition	The reference to the source in which the specific taxon concept circumscription is defined or implied. For taxa that result from identifications, a reference to the keys, monographs, experts and other sources should be given.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:nameAccordingTo` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.13. Property: dwc:nameAccordingToID

Property	Value
IRI	`dwc:nameAccordingToID`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-nameAccordingToID
Status	`stable` ✓
Label	name according to ID
Definition	An identifier for the source in which the specific taxon concept circumscription is defined or implied. See nameAccordingTo.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:nameAccordingToID` predicate where the value node is a literal with a datatype of `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.14. Property: dwc:namePublishedIn

Property	Value
IRI	`dwc:namePublishedIn`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-namePublishedIn
Status	`stable` ✓
Label	name published in

Property	Value
Definition	A reference for the publication in which the scientificName was originally established under the rules of the associated nomenclaturalCode.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:namePublishedIn` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.15. Property: dwc:namePublishedInID

Property	Value
IRI	`dwc:namePublishedInID`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-namePublishedInID
Status	`stable` ✓
Label	name published in ID
Definition	An identifier for the publication in which the scientificName was originally established under the rules of the associated nomenclaturalCode.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:namePublishedInID` where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.16. Property: dwc:namePublishedInYear

Property	Value
IRI	`dwc:namePublishedInYear`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-namePublishedInYear
Status	`stable` ✓
Label	name published in year
Definition	The four-digit year in which the scientificName was published.
Scope note	

Property	Value
Implementation	A `tern:Taxon` *MAY* have a `dwc:namePublishedInYear` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.17. Property: dwc:nomenclaturalCode

Property	Value
IRI	`dwc:nomenclaturalCode`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-nomenclaturalCode
Status	`stable` ✓
Label	nomenclatural code
Definition	The nomenclatural code (or codes in the case of an ambiregnal name) under which the scientificName is constructed.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:nomenclaturalCode` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.18. Property: dwc:nomenclaturalStatus

Property	Value
IRI	`dwc:nomenclaturalStatus`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-nomenclaturalStatus
Status	`stable` ✓
Label	nomenclatural status
Definition	The status related to the original publication of the name and its conformance to the relevant rules of nomenclature. It is based essentially on an algorithm according to the business rules of the code. It requires no taxonomic opinion.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:nomenclaturalStatus` predicate where the value node is a literal with the datatype `xsd:string`.

Property	Value
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.19. Property: dwc:order

Property	Value
IRI	`dwc:order`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-order
Status	`stable` ✓
Label	order
Definition	The full scientific name of the order in which the taxon is classified.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:order` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.20. Property: dwc:originalNameUsage

Property	Value
IRI	`dwc:originalNameUsage`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-originalNameUsage
Status	`stable` ✓
Label	original name usage
Definition	The taxon name, with authorship and date information if known, as it originally appeared when first established under the rules of the associated nomenclaturalCode. The basionym (botany) or basonym (bacteriology) of the scientificName or the senior/earlier homonym for replaced names.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:originalNameUsage` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`

Property	Value
Class type	xsd:string
Expected values	

4.1.23.21. Property: dwc:originalNameUsageID

Property	Value
IRI	dwc:originalNameUsageID
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-originalNameUsageID
Status	stable ✓
Label	original name usage ID
Definition	An identifier for the name usage (documented meaning of the name according to a source) in which the terminal element of the scientificName was originally established under the rules of the associated nomenclaturalCode.
Scope note	
Implementation	A tern:Taxon *MAY* have a dwc:originalNameUsageID predicate where the value node is a literal with the datatype xsd:string.
Cardinality	
Node kind	sh:Literal
Class type	xsd:string
Expected values	

4.1.23.22. Property: dwc:parentNameUsage

Property	Value
IRI	dwc:parentNameUsage
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-parentNameUsage
Status	stable ✓
Label	parent name usage
Definition	The full name, with authorship and date information if known, of the direct, most proximate higher-rank parent taxon (in a classification) of the most specific element of the scientificName.
Scope note	
Implementation	A tern:Taxon *MAY* have a dwc:parentNameUsage predicate where the value node is a literal with the datatype xsd:string.
Cardinality	
Node kind	sh:Literal
Class type	xsd:string

Property	Value
Expected values	

4.1.23.23. Property: dwc:parentNameUsageID

Property	Value
IRI	`dwc:parentNameUsageID`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-parentNameUsageID
Status	`stable` ✓
Label	parent name usage ID
Definition	An identifier for the name usage (documented meaning of the name according to a source) of the direct, most proximate higher-rank parent taxon (in a classification) of the most specific element of the scientificName.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:parentNameUsageID` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.24. Property: dwc:phylum

Property	Value
IRI	`dwc:phylum`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-phylum
Status	`stable` ✓
Label	phylum
Definition	The full scientific name of the phylum or division in which the taxon is classified.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:phylum` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.25. Property: dwc:scientificName

Property	Value
IRI	`dwc:scientificName`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-scientificName
Status	`stable` ✓
Label	scientific name
Definition	The full scientific name, with authorship and date information if known. When forming part of an Identification, this should be the name in lowest level taxonomic rank that can be determined. This term should not contain identification qualifications, which should instead be supplied in the IdentificationQualifier term.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:scientificName` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.26. Property: dwc:scientificNameAuthorship

Property	Value
IRI	`dwc:scientificNameAuthorship`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-scientificNameAuthorship
Status	`stable` ✓
Label	scientific name authorship
Definition	The authorship information for the scientificName formatted according to the conventions of the applicable nomenclaturalCode.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:scientificNameAuthorship` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.27. Property: dwc:scientificNameID

Property	Value
IRI	`dwc:scientificNameID`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-scientificNameID
Status	`stable` ✓
Label	scientific name ID
Definition	An identifier for the nomenclatural (not taxonomic) details of a scientific name.
Scope note	
Implementation	A `tern:Taxon MAY have a `dwc:scientificNameID` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.28. Property: dwc:specificEpithet

Property	Value
IRI	`dwc:specificEpithet`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-specificEpithet
Status	`stable` ✓
Label	specific epithet
Definition	The name of the first or species epithet of the scientificName.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:specificEpithet` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.29. Property: dwc:subfamily

Property	Value
IRI	`dwc:subfamily`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-subfamily

Property	Value
Status	`stable` ✓
Label	subfamily
Definition	The full scientific name of the subfamily in which the taxon is classified.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:subfamily` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.30. Property: dwc:subgenus

Property	Value
IRI	`dwc:subgenus`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-subgenus
Status	`stable` ✓
Label	subgenus
Definition	The full scientific name of the subgenus in which the taxon is classified. Values should include the genus to avoid homonym confusion.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:subgenus` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.31. Property: dwc:taxonConceptID

Property	Value
IRI	`dwc:taxonConceptID`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-taxonConceptID
Status	`stable` ✓
Label	taxon concept ID
Definition	An identifier for the taxonomic concept to which the record refers - not for the nomenclatural details of a taxon.

Property	Value
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:taxonConceptID` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.32. Property: dwc:taxonID

Property	Value
IRI	`dwc:taxonID`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-taxonID
Status	`stable` ✓
Label	taxon ID
Definition	A global unique identifier for the taxon (name in a classification).
Scope note	
Implementation	A `ternTaxon` *MAY* have a `dwc:taxonID` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.33. Property: dwc:taxonRank

Property	Value
IRI	`dwc:taxonRank`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-taxonRank
Status	`stable` ✓
Label	taxon rank
Definition	The taxonomic rank of the most specific name in the scientificName.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:taxonRank` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	

Property	Value
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.34. Property: dwc:taxonRemarks

Property	Value
IRI	`dwc:taxonRemarks`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-taxonRemarks
Status	`stable` ✓
Label	taxon remarks
Definition	Comments or notes about the taxon or name.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:taxonRemarks` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.35. Property: dwc:taxonomicStatus

Property	Value
IRI	`dwc:taxonomicStatus`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-taxonomicStatus
Status	`stable` ✓
Label	taxonomic status
Definition	The status of the use of the scientificName as a label for a taxon. Requires taxonomic opinion to define the scope of a taxon. Rules of priority then are used to define the taxonomic status of the nomenclature contained in that scope, combined with the experts opinion. It must be linked to a specific taxonomic reference that defines the concept.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:taxonomicStatus` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`

Property	Value
Class type	`xsd:string`
Expected values	

4.1.23.36. Property: dwc:verbatimTaxonRank

Property	Value
IRI	`dwc:verbatimTaxonRank`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-verbatimTaxonRank
Status	`stable` ✓
Label	verbatim taxon rank
Definition	The taxonomic rank of the most specific name in the scientificName as it appears in the original record.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:verbatimTaxonRank` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.23.37. Property: dwc:vernacularName

Property	Value
IRI	`dwc:vernacularName`
Shape IRI	https://w3id.org/tern/shapes/tern/Taxon-vernacularName
Status	`stable` ✓
Label	vernacular name
Definition	A common or vernacular name.
Scope note	
Implementation	A `tern:Taxon` *MAY* have a `dwc:vernacularName` predicate where the value node is a literal with the datatype `xsd:string`.
Cardinality	
Node kind	`sh:Literal`
Class type	`xsd:string`
Expected values	

4.1.24. Class: tern:Text

Property	Value
IRI	`tern:Text`
Status	`stable` ✓
Label	Text
Definition	Class to encapsulate a textual value.
Scope note	

4.1.24.1. Property: rdf:value

Property	Value
IRI	`rdf:value`
Shape IRI	https://w3id.org/tern/shapes/tern/Text-value
Status	`stable` ✓
Label	value
Definition	The text value.
Scope note	
Implementation	A `tern:Text` *MUST* have exactly 1 `rdf:value` predicate where the value node is a literal with the datatype `xsd:string` or `rdf:langString`.
Cardinality	Exactly 1
Node kind	
Class type	`xsd:string` `rdf:langString`
Expected values	

4.1.25. Class: tern:Transect

Property	Value
IRI	`tern:Transect`
Status	`stable` ✓
Label	Transect
Definition	A transect is a path where observations and samplings may occur.
Scope note	There are several types of transects in ecology such as strip transects, line transects, belt transects, point transects and curved line transects.

4.1.25.1. Property: tern:featureType

Property	Value
IRI	tern:featureType
Shape IRI	https://w3id.org/tern/shapes/tern/Transect-featureType
Status	stable ✓
Label	feature type
Definition	The feature type of a [Feature of Interest](#FeatureofInterest).
Scope note	
Implementation	A tern:Transect *MUST* have exactly 1 tern:featureType predicate where the value node is an IRI with the value http://linked.data.gov.au/def/tern-cv/de46fa49-d1c9-4bef-8462-d7ee5174e1e1.
Cardinality	Exactly 1
Node kind	sh:IRI
Class type	
Expected values	

4.1.25.2. Property: geo:hasGeometry

Property	Value
IRI	geo:hasGeometry
Shape IRI	https://w3id.org/tern/shapes/tern/Transect-hasGeometry
Status	stable ✓
Label	has geometry
Definition	A spatial representation for a given feature.
Scope note	
Implementation	A tern:Transect *MAY* have a maximum of 1 geo:hasGeometry predicate where the value node is a blank node or IRI of type sf:LineString or geo:Geometry.
Cardinality	Maximum 1
Node kind	sh:BlankNodeOrIRI
Class type	sf:LineString geo:Geometry
Expected values	

4.1.25.3. Property: tern:transectDirection

Property	Value
IRI	tern:transectDirection
Shape IRI	https://w3id.org/tern/shapes/tern/Transect-transectDirection
Status	stable ✓

Property	Value
Label	transect direction
Definition	Describes the direction of the transect.
Scope note	
Implementation	A `tern:Transect` *MAY* have a maximum of 1 `tern:transectDirection` where the value node is an IRI or literal.
Cardinality	Maximum 1
Node kind	`sh:IRIOrLiteral`
Class type	
Expected values	

4.1.25.4. Property: tern:transectEndPoint

Property	Value
IRI	`tern:transectEndPoint`
Shape IRI	https://w3id.org/tern/shapes/tern/Transect-transectEndPoint
Status	`stable` ✓
Label	transect end point
Definition	Relationship to the sf:Point representing the end of a transect.
Scope note	
Implementation	A `tern:Transect` *MAY* have a maximum of 1 `tern:transectEndPoint` predicate where the value node is an IRI of type `sf:Point`.
Cardinality	Maximum 1
Node kind	`sh:IRI`
Class type	`sf:Point`
Expected values	

4.1.25.5. Property: tern:transectStartPoint

Property	Value
IRI	`tern:transectStartPoint`
Shape IRI	https://w3id.org/tern/shapes/tern/Transect-transectStartPoint
Status	`stable` ✓
Label	transect start point
Definition	Relationship to the sf:Point representing the start of a transect.
Scope note	

Property	Value
Implementation	A `tern:Transect` *MAY* have a `tern:transectStartPoint` predicate where the value node is an IRI of type `sf:Point`.
Cardinality	Maximum 1
Node kind	`sh:IRI`
Class type	`sf:Point`
Expected values	

4.1.26. Class: tern:Value

Property	Value
IRI	`tern:Value`
Status	`stable` ✓
Label	Value
Definition	A value of an `Attribute` or an `Observation`.
Scope note	This is an 'abstract' class and is not intended to be used directly to create individuals.

4.2. External Classes

4.2.1. Class: prov:Association

Property	Value
IRI	`prov:Association`
Status	`stable` ✓
Label	Association
Definition	An activity association is an assignment of responsibility to an agent for an activity, indicating that the agent had a role in the activity. It further allows for a plan to be specified, which is the plan intended by the agent to achieve some goals in the context of this activity.
Scope note	Associate an agent to an activity (`tern:Sampling`, `tern:Observation`) with a role from ISO 19115-1's CI Role Code.

4.2.1.1. Property: prov:agent

Property	Value
IRI	`prov:agent`
Shape IRI	https://w3id.org/tern/shapes/tern/Association-agent
Status	`stable` ✓

Property	Value
Label	agent
Definition	An agent is something that bears some form of responsibility for an activity taking place, for the existence of an entity, or for another agent's activity.
Scope note	
Implementation	A `prov:Association` *MUST* have exactly 1 `prov:agent` predicate where the value node is an IRI of an individual with the type `prov:Agent`.
Cardinality	Exactly 1
Node kind	`sh:IRI`
Class type	`prov:Agent`
Expected values	

4.2.1.2. Property: prov:hadPlan

Property	Value
IRI	`prov:hadPlan`
Shape IRI	https://w3id.org/tern/shapes/tern/Association-hadPlan
Status	`stable` ✓
Label	had plan
Definition	A plan is an entity that represents a set of actions or steps intended by one or more agents to achieve some goals.
Scope note	Associate a plan to the agent which they use for their role in some activity. This may or may not be the same as the procedure of a `tern:Sampling` or a `tern:Observation` depending on the role of the agent.
Implementation	A `prov:Association` *MAY* have some `prov:hadPlan` predicate where the value node is an IRI.
Cardinality	
Node kind	`sh:IRI`
Class type	
Expected values	

4.2.1.3. Property: prov:hadRole

Property	Value
IRI	`prov:hadRole`
Shape IRI	https://w3id.org/tern/shapes/tern/Association-hadRole
Status	`stable` ✓
Label	had role

Property	Value
Definition	`prov:hadRole` references the Role (i.e. the function of an entity with respect to an activity), in the context of an instantaneous usage, generation, association, start, and end.
Scope note	
Implementation	A `prov:Association` *MUST* have exactly 1 `prov:hadRole` predicate where the value node is an IRI of a controlled concept from ISO 19115-1's CI Role Code.
Cardinality	Exactly 1
Node kind	`sh:IRI`
Class type	
Expected values	- author - co author - collaborator - contributor - custodian - distributor - editor - funder - mediator - originator - owner - point of contact - principal investigator - processor - publisher - resource provider - rights holder - sponsor - stakeholder - user

4.2.1.4. prov:Association example

The RDF example below illustrates how to:

- associate a `schema:Person` to an instance of `tern:Sampling` activity with the role *principal investigator*
- associate an `schema:Organization` to a `tern:MaterialSample` with the role *custodian*.

```
<org-1>
    a schema:Organization ;
    schema:name "Org 1" ;
.

<person-1>
```

```
    a schema:Person ;
    schema:name "Person 1" ;
    schema:affiliation <org-1> ;
.

<site-visit>
    a tern:SiteVisit ;
    prov:startedAtTime "2015-03-22T13:00:00+00:00"^^xsd:dateTime ;
    tern:hasSite <...> ;
    prov:wasAssociatedWith <person-1> ;
    prov:qualifiedAssociation [
        a prov:Association ;
        prov:agent <person-1> ;
        prov:hadRole <http://def.isotc211.org/iso19115/-
1/2014/CitationAndResponsiblePartyInformation/code/CI_RoleCode/principalInvestigator>
;
    ] ;
.

<sampling-1>
    a tern:Sampling ;
    ... ;
    tern:hasSiteVisit <site-visit> ;
    prov:wasAssociatedWith <person-1> ;
    prov:qualifiedAssociation [
        a prov:Association ;
        prov:agent <person-1> ;
        prov:hadRole <http://def.isotc211.org/iso19115/-
1/2014/CitationAndResponsiblePartyInformation/code/CI_RoleCode/resourceProvider> ;
    ] ;
    sosa:hasResult <soil-sample-1> ;
.

<soil-sample-1>
    a tern:MaterialSample ;
    ... ;
    sosa:isResultOf <sampling-1> ;
    prov:wasAttributedTo <org-1> ;
    prov:qualifiedAttribution [
        a prov:Attribution ;
        prov:agent <org-1> ;
        prov:hadRole <http://def.isotc211.org/iso19115/-
1/2014/CitationAndResponsiblePartyInformation/code/CI_RoleCode/custodian> ;
    ]
.
```

4.2.2. Class: prov:Attribution

Property	Value
IRI	prov:Attribution
Status	stable ✓
Label	Attribution
Definition	Attribution is the ascribing of an entity to an agent. When an entity e is attributed to agent ag, entity e was generated by some unspecified activity that in turn was associated to agent ag. Thus, this relation is useful when the activity is not known, or irrelevant.
Scope note	Associate an agent to an entity (tern:Sample, tern:FeatureOfInterest, tern:Site) with a role from ISO 19115-1's CI Role Code.

4.2.2.1. Property: prov:agent

Property	Value
IRI	prov:agent
Shape IRI	https://w3id.org/tern/shapes/tern/Attribution-agent
Status	stable ✓
Label	agent
Definition	An agent is something that bears some form of responsibility for an activity taking place, for the existence of an entity, or for another agent's activity.
Scope note	
Implementation	A prov:Attribution *MUST* have exactly 1 prov:agent predicate where the value node is an IRI of an individual with the type prov:Agent.
Cardinality	Exactly 1
Node kind	sh:IRI
Class type	prov:Agent
Expected values	

4.2.2.2. Property: prov:hadRole

Property	Value
IRI	prov:hadRole
Shape IRI	https://w3id.org/tern/shapes/tern/Attribution-hadRole
Status	stable ✓
Label	had role
Definition	prov:hadRole references the Role (i.e. the function of an entity with respect to an activity), in the context of an instantaneous usage, generation, association, start, and end.
Scope note	

Property	Value
Implementation	A `prov:Attribution` *MUST* have exactly 1 `prov:hadRole` predicate where the value node is an IRI of a controlled concept from ISO 19115-1's CI Role Code.
Cardinality	Exactly 1
Node kind	`sh:IRI`
Class type	
Expected values	- author - co author - collaborator - contributor - custodian - distributor - editor - funder - mediator - originator - owner - point of contact - principal investigator - processor - publisher - resource provider - rights holder - sponsor - stakeholder - user

4.2.3. Class: time:Duration

Property	Value
IRI	`time:Duration`
Status	`stable` ✓
Label	Duration
Definition	Duration of a temporal extent expressed as a number scaled by a temporal unit
Scope note	

4.2.3.1. Property: time:numericDuration

Property	Value
IRI	`time:numericDuration`
Shape IRI	https://w3id.org/tern/shapes/tern/time-numericDuration

Property	Value
Status	`stable` ✓
Label	numeric duration
Definition	Value of a temporal extent expressed as a decimal number scaled by a temporal unit
Scope note	
Implementation	A `time:Duration` *MUST* have exactly 1 `time:numericDuration` predicate where the value node is a literal with a datatype of `xsd:decimal`.
Cardinality	Exactly 1
Node kind	
Class type	`xsd:decimal`
Expected values	

4.2.3.2. Property: time:unitType

Property	Value
IRI	`time:unitType`
Shape IRI	https://w3id.org/tern/shapes/tern/time-unitType
Status	`stable` ✓
Label	unit type
Definition	The temporal unit which provides the precision of a date-time value or scale of a temporal extent.
Scope note	
Implementation	A `time:Duration` *MUST* have exactly 1 `time:unitType` predicate where the value node is an IRI from a controlled list.
Cardinality	Exactly 1
Node kind	`sh:IRI`
Class type	
Expected values	- day - hour - minute - month - second - week - year

4.2.4. Class: time:Instant

Property	Value
IRI	`time:Instant`
Status	`stable` ✓
Label	Instant
Definition	A temporal entity with zero extent or duration.
Implementation	One or more of [`time:inXSDDate`, `time:inXSDDateTimeStamp`, `time:inXSDgYear`, `time:inXSDgYearMonth`, `time:inTimePosition`, and `time:inDateTime`] *MUST* be present.
Scope note	

4.2.4.1. Property: time:inDateTime

Property	Value
IRI	`time:inDateTime`
Shape IRI	https://w3id.org/tern/shapes/tern/time-Instant-inDateTime
Status	`stable` ✓
Label	in date-time
Definition	Position of an instant, expressed using a structured description.
Scope note	
Implementation	Value *MUST* be a literal with a datatype of `xsd:dateTime`. Maximum of one value is allowed for this property.
Cardinality	Maximum 1
Node kind	`sh:Literal`
Class type	`xsd:dateTime`
Expected values	

4.2.4.2. Property: time:inTimePosition

Property	Value
IRI	`time:inTimePosition`
Shape IRI	https://w3id.org/tern/shapes/tern/time-inTimePosition
Status	`stable` ✓
Label	in time position
Definition	Position of a time instant expressed as a `TimePosition`.
Scope note	
Implementation	Value *MUST* be an instance of `time:TimePosition`. Maximum of one value is allowed for this property. The value node *MUST* be a blank node or IRI.
Cardinality	Maximum 1

Property	Value
Node kind	`sh:BlankNodeOrIRI`
Class type	`time:TimePosition`
Expected values	

4.2.4.3. Property: time:inXSDDate

Property	Value
IRI	`time:inXSDDate`
Shape IRI	https://w3id.org/tern/shapes/tern/time-inXSDDate
Status	`stable` ✓
Label	in XSD date
Definition	Position of an instant, expressed using `xsd:date`.
Scope note	
Implementation	Value *MUST* be a literal with a datatype of `xsd:date`. Maximum of one value is allowed for this property.
Cardinality	Maximum 1
Node kind	`sh:Literal`
Class type	`xsd:date`
Expected values	

4.2.4.4. Property: time:inXSDDateTimeStamp

Property	Value
IRI	`time:inXSDDateTimeStamp`
Shape IRI	https://w3id.org/tern/shapes/tern/time-inXSDDateTimeStamp
Status	`stable` ✓
Label	in XSD date-time-stamp
Definition	Position of an instant, expressed using `xsd:dateTimeStamp`.
Scope note	
Implementation	Value *MUST* be a literal with a datatype of `xsd:dateTimeStamp`. Maximum of one value is allowed for this property.
Cardinality	Maximum 1
Node kind	`sh:Literal`
Class type	`xsd:dateTimeStamp`
Expected values	

4.2.4.5. Property: time:inXSDgYear

Property	Value
IRI	`time:inXSDgYear`
Shape IRI	https://w3id.org/tern/shapes/tern/time-inXSDgYear
Status	`stable` ✓
Label	in XSD g-year
Definition	Position of an instant, expressed using `xsd:gYear`.
Scope note	
Implementation	Value *MUST* be a literal with a datatype of `xsd:gYear`. Maximum of one value is allowed for this property.
Cardinality	Maximum 1
Node kind	`sh:Literal`
Class type	`xsd:gYear`
Expected values	

4.2.4.6. Property: time:inXSDgYearMonth

Property	Value
IRI	`time:inXSDgYearMonth`
Shape IRI	https://w3id.org/tern/shapes/tern/time-inXSDgYearMonth
Status	`stable` ✓
Label	in XSD g-year-month
Definition	Position of an instant, expressed using `xsd:gYearMonth`.
Scope note	
Implementation	Value *MUST* be a literal with a datatype of `xsd:gYearMonth`. Maximum of one value is allowed for this property.
Cardinality	Maximum 1
Node kind	`sh:Literal`
Class type	`xsd:gYearMonth`
Expected values	

4.2.5. Class: time:Interval

Property	Value
IRI	`time:Interval`
Status	`stable` ✓
Label	Interval

Property	Value
Definition	A temporal entity with an extent or duration.
Scope note	

4.2.5.1. Property: time:hasBeginning

Property	Value
IRI	`time:hasBeginning`
Shape IRI	https://w3id.org/tern/shapes/tern/time-hasBeginning
Status	`stable` ✓
Label	has beginning
Definition	Beginning of a temporal entity.
Scope note	
Implementation	A `time:hasBeginning` predicate *MUST* exist where the value node is a blank node or IRI of type `time:Instant`.
Cardinality	Exactly 1
Node kind	`sh:BlankNodeOrIRI`
Class type	`time:Instant`
Expected values	

4.2.5.2. Property: time:hasDuration

Property	Value
IRI	`time:hasDuration`
Shape IRI	https://w3id.org/tern/shapes/tern/time-hasDuration
Status	`stable` ✓
Label	has duration
Definition	Duration of a temporal entity, event or activity, or thing, expressed as a scaled value.
Scope note	
Implementation	A `time:hasDuration` *MAY* exist where the value node is a blank node or IRI of type `time:Duration`.
Cardinality	Maximum 1
Node kind	`sh:BlankNodeOrIRI`
Class type	`time:Duration`
Expected values	

4.2.5.3. Property: time:hasEnd

Property	Value
IRI	`time:hasEnd`
Shape IRI	https://w3id.org/tern/shapes/tern/time-hasEnd
Status	`stable` ✓
Label	has end
Definition	End of a temporal entity.
Scope note	
Implementation	A `time:hasEnd` predicate *MUST* exist where the value node is a blank node or IRI of type `time:Instant`.
Cardinality	Exactly 1
Node kind	`sh:BlankNodeOrIRI`
Class type	`time:Instant`
Expected values	

5. References

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Annex A: Specification Parts

This Annex is normative.

`TBD`.