

# OSLC Core Version 3.0. Part 8: Constraints

## Project Specification 01

17 September 2020

### This stage:

<https://docs.oasis-open-projects.org/oslc-op/core/v3.0/ps01/core-shapes.html> (Authoritative)  
<https://docs.oasis-open-projects.org/oslc-op/core/v3.0/ps01/core-shapes.pdf>

### Previous stage:

N/A

### Latest stage:

<https://docs.oasis-open-projects.org/oslc-op/core/v3.0/core-shapes.html> (Authoritative)  
<https://docs.oasis-open-projects.org/oslc-op/core/v3.0/core-shapes.pdf>

### Latest version:

<https://open-services.net/spec/core/latest>

### Latest editor's draft:

<https://open-services.net/spec/core/latest-draft>

### Open Project:

[OASIS Open Services for Lifecycle Collaboration \(OSLC\) OP](#)

### Project Chairs:

Jim Amsden ([jamsden@us.ibm.com](mailto:jamsden@us.ibm.com)), [IBM](#)  
Andrii Berezovskyi ([andriib@kth.se](mailto:andriib@kth.se)), [KTH](#)

### Editor:

Jim Amsden ([jamsden@us.ibm.com](mailto:jamsden@us.ibm.com)), [IBM](#)

### Additional components:

This specification is one component of a Work Product that also includes:

- *OSLC Core Version 3.0. Part 1: Overview.* [oslc-core.html](#)
- *OSLC Core Version 3.0. Part 2: Discovery.* [discovery.html](#)
- *OSLC Core Version 3.0. Part 3: Resource Preview.* [resource-preview.html](#)
- *OSLC Core Version 3.0. Part 4: Delegated Dialogs.* [dialogs.html](#)
- *OSLC Core Version 3.0. Part 5: Attachments.* [attachments.html](#)
- *OSLC Core Version 3.0. Part 6: Resource Shape.* [resource-shape.html](#)
- *OSLC Core Version 3.0. Part 7: Vocabulary.* [core-vocab.html](#)

## Standards Track Work Product

- *OSLC Core Version 3.0. Part 8: Constraints (this document)*. [core-shapes.html](#)
- *OSLC Core Version 3.0. Part 9: Machine Readable Vocabulary Terms*. [core-vocab.ttl](#)
- *OSLC Core Version 3.0. Part 10: Machine Readable Constraints*. [core-shapes.ttl](#)

### Related work:

This specification is related to:

- *OSLC Core Version 3.0: Link Guidance*. <https://oslc-op.github.io/oslc-specs/notes/link-guidance.html>

### RDF Namespaces:

<http://open-services.net/ns/core#>

### Abstract:

Core Vocabulary defines the OSLC Core RDF vocabulary terms and resources, that have broad applicability across various domains. This document specifies the standard constraints on those vocabulary terms using OSLC ResourceShapes.

### Status:

This document was last revised or approved by the [OASIS Open Services for Lifecycle Collaboration \(OSLC\) OP](#) on the above date. The level of approval is also listed above. Check the “Latest stage” location noted above for possible later revisions of this document. Any other numbered Versions and other technical work produced by the Open Project are listed at <https://github.com/oslc-op/oslc-specs>.

Comments on this work can be provided by opening issues in the project repository or by sending email to the project’s public comment list [oslc-op](#).

Note that any machine-readable content ([Computer Language Definitions](#)) declared Normative for this Work Product is provided in separate plain text files. In the event of a discrepancy between any such plain text file and display content in the Work Product’s prose narrative document(s), the content in the separate plain text file prevails.

### Citation format:

When referencing this specification the following citation format should be used:

#### **[OSLC-CoreShapes-3.0]**

*OSLC Core Version 3.0. Part 8: Constraints*. Edited by Jim Amsden. 17 September 2020. OASIS Project Specification 01. <https://docs.oasis-open-projects.org/oslc-op/core/v3.0/ps01/core-shapes.html>. Latest stage: <https://docs.oasis-open-projects.org/oslc-op/core/v3.0/core-shapes.html>.

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## 1. Introduction

*This section is non-normative.*

RDF vocabularies define the terms and resources for a domain of interest, life-cycle management in the case of OSLC Core. These vocabularies are often specified in an open manner, without providing information such as property domain and range assertions, cardinalities, etc. This helps keep the vocabulary applicable for a wide range of uses and furthering integration with other vocabularies.

However, it is often desirable to closed down a vocabulary with specific constraints to facilitate using the vocabulary for a specific purpose. This document specifies the constraints for using the OSLC Core vocabulary in OSLC. Different sets of constraints may be applied to a vocabulary in order to tailor its use, without overly constraining the vocabulary for other usages.

These constraints apply to the core vocabulary defined in [OSLC Core Version 3.0. Part 7: Vocabulary](#).

### 1.1 Terminology

Terminology uses and extends the terminology and capabilities of [OSLC Core Overview](#), W3C Linked Data Platform [LDP], W3C's Architecture of the World Wide Web [WEBARCH], Hyper-text Transfer Protocol [HTTP11].

#### Archived Resource

A resource in which an explicit action has been performed to mark the resource as no longer active and may be removed from typical user interactions. As a consequence, an archived resource should be considered immutable.

### 1.2 References

#### 1.2.1 Normative references

[DC-TERMS]

DCMI Usage Board. [Dublin Core Metadata Terms, version 1.1](#). 11 October 2010. DCMI Recommendation. URL: <http://dublincore.org/documents/2010/10/11/dcmi-terms/>

[FOAF]

Dan Brickley; Libby Miller. [FOAF Vocabulary Specification 0.99 \(Paddington Edition\)](#). 14 January 2014. URL: <http://xmlns.com/foaf/spec>

[HTTP11]

R. Fielding, Ed.; J. Reschke, Ed.. [Hypertext Transfer Protocol \(HTTP/1.1\): Message Syntax and Routing](#). June 2014. Proposed Standard. URL: <https://httpwg.org/specs/rfc7230.html>

[LDP]

Steve Speicher; John Arwe; Ashok Malhotra. [Linked Data Platform 1.0](#). 26 February 2015. W3C Recommendation. URL: <https://www.w3.org/TR/ldp/>

[OSLCCore2]

S. Speicher; D. Johnson. [OSLC Core 2.0](#). Finalized. URL: <http://open-services.net/bin/view/Main/OslcCoreSpecification>

[RFC2119]

S. Bradner. [Key words for use in RFCs to Indicate Requirement Levels](#). March 1997. Best Current Practice. URL: <https://tools.ietf.org/html/rfc2119>

[rdf-schema]

Dan Brickley; Ramanathan Guha. [RDF Schema 1.1](https://www.w3.org/TR/rdf-schema/). 25 February 2014. W3C Recommendation. URL: <https://www.w3.org/TR/rdf-schema/>

[rdf11-concepts]

Richard Cyganiak; David Wood; Markus Lanthaler. [RDF 1.1 Concepts and Abstract Syntax](https://www.w3.org/TR/rdf11-concepts/). 25 February 2014. W3C Recommendation. URL: <https://www.w3.org/TR/rdf11-concepts/>

## 1.2.2 Informative references

[SHACL]

Holger Knublauch; Arthur Ryman. [Shapes Constraint Language \(SHACL\)](https://w3c.github.io/data-shapes/shacl/). Draft. URL: <https://w3c.github.io/data-shapes/shacl/>

[WEBARCH]

Ian Jacobs; Norman Walsh. [Architecture of the World Wide Web, Volume One](https://www.w3.org/TR/webarch/). 15 December 2004. W3C Recommendation. URL: <https://www.w3.org/TR/webarch/>

[skos-reference]

Alistair Miles; Sean Bechhofer. [SKOS Simple Knowledge Organization System Reference](https://www.w3.org/TR/skos-reference/). 18 August 2009. W3C Recommendation. URL: <https://www.w3.org/TR/skos-reference/>

## 1.3 Typographical Conventions and Use of RFC Terms

As well as sections marked as non-normative, all authoring guidelines, diagrams, examples, and notes in this specification are non-normative. Everything else in this specification is normative.

The key words **MUST**, **MUST NOT**, **REQUIRED**, **SHOULD**, **SHOULD NOT**, **RECOMMENDED**, **MAY**, and **OPTIONAL** in this specification are to be interpreted as described in [RFC2119].

## 2. Resource Shape

The shape of an RDF resource is a description of the set of triples it is expected to contain and the integrity constraints those triples are required to satisfy. Applications of shapes include validating RDF data, documenting RDF APIs, and providing meta-data to tools, such as form and query builders, that handle RDF data. OSLC Core uses shapes to:

- Define specific vocabulary constraints including allowed values, max size, cardinality, representation in RDF specifications and if the property is read only.
- Specify the properties required for resource creation.
- Specify what servers all allow for prefilling delegated dialogs.
- Describe the results of query operations.

Constraints on OSLC Core and Domain resources **SHOULD** be described using [ResourceShapes](#) which is included as part of the OSLC Core multi-part specifications. Servers **MAY** use other constraint languages such as [\[SHACL\]](#) to define resource constraints.

### 3. Common Properties

Unlike the rest of the Core specification, these properties change and grow as new common properties are added. The properties that we list here are available for use in OSLC domain specifications when defining OSLC resources, but this does not mean that they are required to be in OSLC resources. OSLC domain specifications decide which properties are allowed and required for resources needed to realize their use cases. The OSLC common properties include properties defined in other standard vocabularies including:

- [Friend of a Friend \(FOAF\)](#)
- [Dublin Core \(dcterms\)](#)
- [RDF Schema \(rdfs\)](#)

#### 3.1 Properties on Any Resource

- **Describes:** [Common Properties](#)
- **Summary:** Defines common properties that may be applicable to any OSLC resource. OSLC domains **SHOULD** use these properties where applicable rather than defining their own properties. The cardinality, representations, ranges, and other columns of the following table indicate typical usage, but a domain is free to apply its own constraints for particular resource shapes.

##### Common Properties Properties

Prefix Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>dcterms:contributor</code>	Zero-or-many	unspecified	AnyResource	Either	<code>oslc:Any, foaf:Person</code>	Contributor or contributors to the resource. It is likely that the target resource will be a foaf:Person but that is not necessarily the case.
<code>dcterms:created</code>	Zero-or-one	unspecified	dateTime	N/A	Unspecified	Timestamp of resource creation.
<code>dcterms:creator</code>	Zero-or-many	unspecified	AnyResource	Either	<code>oslc:Any, foaf:Person</code>	Creator or creators of the resource. It is likely that the target resource will be a foaf:Person but that is not necessarily the case.
<code>dcterms:description</code>	Zero-or-many	unspecified	XMLLiteral	N/A	Unspecified	Descriptive text about resource represented as rich text in XHTML content.



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Prefix Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>dcterms:identifier</code>	Zero-or-many	unspecified	string	N/A	Unspecified	A unique identifier for a resource. Typically read-only and assigned by the service provider when a resource is created. Not typically intended for end-user display.
<code>dcterms:modified</code>	Zero-or-many	unspecified	dateTime	N/A	Unspecified	Timestamp of latest resource modification.
<code>dcterms:references</code>	Zero-or-many	unspecified	AnyResource	Either	Unspecified	A related resource that is referenced, cited, or otherwise pointed to by the described resource.
<code>dcterms:relation</code>	Zero-or-many	unspecified	AnyResource	Either	Unspecified	Relation which identifies a related resource.
<code>dcterms:subject</code>	Zero-or-many	unspecified	string	N/A	Unspecified	Tag or keyword for a resource. Each occurrence of a <code>dcterms:subject</code> property denotes an additional tag for the resource.
<code>dcterms:title</code>	Zero-or-many	unspecified	XMLLiteral	N/A	Unspecified	Title of the resource represented as rich text in XHTML content.
<code>oslc:archived</code>	Zero-or-one	unspecified	boolean	N/A	Unspecified	Indicates whether the subject has been marked as archived, no longer an actively updating resource.

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<i>Prefixed Name</i>	<i>Occurs</i>	<i>Read-only</i>	<i>Value-type</i>	<i>Representation</i>	<i>Range</i>	<i>Description</i>
<code>oslc:discussedBy</code>	Zero-or-one	unspecified	Resource	Either	<code>oslc:Discussion</code>	A series of notes and comments about this resource.
<code>oslc:error</code>	Zero-or-many	unspecified	AnyResource	Either	Unspecified	A series of errors associated with this resource.
<code>oslc:instanceShape</code>	Zero-or-many	unspecified	Resource	Reference	<code>oslc:ResourceShape</code>	The URI of a Resource Shape that describes the possible properties, occurrence, value types, allowed values and labels. This shape information is useful in displaying the subject resource as well as guiding clients in performing modifications. Instance shapes may be specific to the authenticated user associated with the request that retrieved the resource, the current state of the resource and other factors and thus should not be cached.

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Prefix Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>oslc:modifiedBy</code>	Zero-or-many	unspecified	Resource	Either	<code>oslc:Any, foaf:Person</code>	The URI of a resource describing the entity that most recently modified the subject resource. The link target is usually a foaf:Person or foaf:Agent, but could be any type. This is modeled after dcterms:creator, but Dublin Core currently has no equivalent property.
<code>oslc:queryable</code>	Zero-or-one	unspecified	boolean	N/A	Unspecified	Indicates whether a property is queryable (can appear in oslc.where and oslc.select clause) or not. Defaults to true if unspecified.
<code>oslc:serviceProvider</code>	Zero-or-many	unspecified	Resource	Reference	<code>oslc:ServiceProvider</code>	A link to the resource's OSLC Service Provider. There may be cases when the subject resource is available from a service provider that implements multiple domain specifications, which could result in multiple values for this property.
<code>oslc:shortId</code>	Zero-or-many	unspecified	string	N/A	Unspecified	A short, human-readable, plain text value. This value should be unique in some context that is apparent to human users of a service.

Prefix Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>oslc:shortTitle</code>	Zero-or-many	unspecified	XMLLiteral	N/A	Unspecified	Shorter form of <code>dcterms:title</code> for the resource represented as rich text in XHTML content.
<code>rdf:type</code>	Zero-or-many	unspecified	Resource	Reference	<code>rdfs:Class</code>	The resource type URIs.
<code>rdfs:member</code>	Zero-or-many	unspecified	Resource	Either	Unspecified	OSLC domains might define a number of member or contains relationships between resources. The <code>rdfs:member</code> property is suitable for use when only one such relationship needs to be defined, or when no additional semantics need to be implied by the property name.

### 3.2 Person Properties

- **Describes:** <http://xmlns.com/foaf/0.1/Person>
- **Summary:** Person is a resource defined by FOAF that is used as the value for a `dcterms:creator` or `dcterms:contributor` property. This shape specifies the recommended minimal FOAF Person properties that should be provided for OSLC.

#### Person Properties

Prefix Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>foaf:familyName</code>	Zero-or-many	unspecified	string	N/A	Unspecified	Family name of person expressed as simple text string.
<code>foaf:givenName</code>	Zero-or-many	unspecified	string	N/A	Unspecified	Given name of person expressed as simple text string.
<code>foaf:mbox</code>	Zero-or-many	unspecified	string	N/A	Unspecified	A personal mailbox for this person, typically identified using the <code>mailto:</code> URI scheme (see RFC 2368).
<code>foaf:name</code>	Zero-or-many	unspecified	string	N/A	Unspecified	The full name of a person expressed as simple text string.

<i>Prefixed Name</i>	<i>Occurs</i>	<i>Read-only</i>	<i>Value-type</i>	<i>Representation</i>	<i>Range</i>	<i>Description</i>
<code>foaf:nick</code>	Zero-or-many	unspecified	string	N/A	Unspecified	A short informal nickname or login identifier expressed as simple text string.

### 3.3 Implementation Conformance

3.3.1 Changes to the OSLC Core Vocabulary **MUST** be approved by the OASIS OSLC Open Project. The OSLC Core Vocabulary is assigned the namespace URI of the <http://open-services.net/ns/core#>.

3.3.2 Domain TCs and other extensions **MUST** contribute their vocabulary terms in a namespace which is assigned to them as an authority.

3.3.3 OSLC Core, domain and other extensions **SHOULD** reuse existing vocabulary terms from stable vocabularies such as [DC-TERMS], RDF [rdf11-concepts], RDF Schema [rdf-schema], [FOAF], [skos-reference] and OSLC. New vocabulary terms should only be created when there is no clear existing choice available. See the [LDP] [similar clause on reuse](#).

See for details on common property terms.

## 4. Discussion

### 4.1 Shape: Discussion

It is common to collect a series of comments on a lifecycle resource, often referred to as a discussion. For example: tasks, bug reports, requirements, assets and so on, are often collected across various types of resources such as project. A project might reflect the planning of work to deliver a product that realizes the requirements as validated through test cases and bug reports. Discussions allow users to collaborate with each other for more efficient and effective delivery. This Discussion resource definition provides a minimal shape describing the needed properties.

- **Describes:** <http://open-services.net/ns/core#Discussion>
- **Summary:** OSLC Core Discussion Shape

#### Discussion Properties

Prefix Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>oslc:comment</code>	Zero-or-many	false	AnyResource	Either	<code>oslc:Comment</code>	Comment about resource.
<code>oslc:discussionAbout</code>	Exactly-one	false	Resource	Reference	Unspecified	Reference to associated resource.

### 4.2 Shape: Comment

Used in conjunction with [Shape: Discussion](#) to provide a minimal resource definition for a collection of comments.

- **Describes:** <http://open-services.net/ns/core#Comment>
- **Summary:** OSLC Core Comment Shape

#### Comment Properties

Prefix Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>dcterms:created</code>	Exactly-one	unspecified	dateTime	N/A	Unspecified	When the comment resource was created.
<code>dcterms:creator</code>	Exactly-one	unspecified	AnyResource	Either	<code>foaf:Person</code>	The person who created the comment.
<code>dcterms:description</code>	Exactly-one	unspecified	XMLLiteral	N/A	Unspecified	Details or body of the comment. <b>SHOULD</b> include only content that is valid and suitable inside an XHTML <code>&lt;div&gt;</code> element.
<code>dcterms:identifier</code>	Exactly-one	unspecified	string	N/A	Unspecified	A service defined identifier.
<code>dcterms:title</code>	Zero-or-one	unspecified	XMLLiteral	N/A	Unspecified	A brief title for the comment. <b>SHOULD</b> include only content that is valid and suitable inside an XHTML <code>&lt;span&gt;</code> element.
<code>oslc:inReplyTo</code>	Zero-or-one	unspecified	Resource	Reference	<code>oslc:Comment</code>	Reference to the comment to which this comment replies.

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See for details on discussion property terms.

## 5. Errors

### 5.1 Implementation Conformance

5.1.1 When an OSLC Server incurs an error, it is **RECOMMENDED** that useful information be provided to clients in the body of the HTTP response.

5.1.2 OSLC Servers **SHOULD** use the [Error resource](#) defined below as the basis for forming error responses.

5.1.3 OSLC Servers **SHOULD** return an [Error resource](#) using the same representation format requested by the client via the HTTP **Accept** request header. [[HTTP11](#)]

5.1.4 OSLC Clients **SHOULD** treat the `oslc:statusCode` as a String that starts with digits, but may contain non-digit text.

### 5.2 Shape: Error

Used when servers may need a consistent shape to communicate error messages.

- **Describes:** <http://open-services.net/ns/core#Error>
- **Summary:** OSLC Core Error Shape

#### Error Properties

Prefixed Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>dcterms:created</code>	Zero-or-one	unspecified	dateTime	N/A	Unspecified	Optional indication of when the error was detected.
<code>dcterms:identifier</code>	Zero-or-many	unspecified	string	N/A	Unspecified	A unique human-readable string identifier for this resource, such as an error number or code.
<code>dcterms:references</code>	Zero-or-many	unspecified	AnyResource	Either	Unspecified	A reference to any resources that are the subject of this error.
<code>oslc:extendedError</code>	Zero-or-one	true	AnyResource	Either	<code>oslc:ExtendedError</code>	Extended error information.
<code>oslc:message</code>	Exactly-one	true	string	N/A	Unspecified	An informative message describing the error that occurred.
<code>oslc:statusCode</code>	Exactly-one	true	string	N/A	Unspecified	The HTTP status code reported with the error.

### 5.3 Shape: ExtendedError

Additional details about an error the server had when processing the request.



- **Describes:** <http://open-services.net/ns/core#ExtendedError>
- **Summary:** OSLC Core ExtendedError Shape

**ExtendedError Properties**

Prefix Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>oslc:hintHeight</code>	Zero-or-one	true	string	N/A	Unspecified	Values <b>MUST</b> be expressed in relative length units as defined in the W3C Cascading Style Sheets Specification (CSS 2.1) Em and ex units are interpreted relative to the default system font (at 100% size).
<code>oslc:hintWidth</code>	Zero-or-one	true	string	N/A	Unspecified	Values <b>MUST</b> be expressed in relative length units as defined in the W3C Cascading Style Sheets Specification (CSS 2.1) Em and ex units are interpreted relative to the default system font (at 100% size).
<code>oslc:moreInfo</code>	Zero-or-one	true	Resource	Reference	Unspecified	A resource giving more information on the error <b>SHOULD</b> be of an HTML content-type.
<code>oslc:rel</code>	Zero-or-one	true	string	N/A	Unspecified	If present and set to 'alternate' then indicates that work-around is provided, behavior for other values is undefined.

See for details on error property terms.

**5.4 Shape: ResponseInfo**

Resource representations returned via [OSLCCore2] Resource Paging **MUST** include a resource of type `oslc:ResponseInfo`, as defined in this section. A response info resource representation describes information about a paged HTTP response body in which it appears.

- **Describes:** <http://open-services.net/ns/core#ResponseInfo>
- **Summary:** The shape of a resource providing information about a paged HTTP response body.

**ResponseInfo Properties**

Prefix Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>dcterms:description</code>	Zero-or-one	unspecified	XMLLiteral	N/A	Unspecified	Descriptive text about resource represented as rich text in XHTML content.
<code>dcterms:title</code>	Zero-or-one	unspecified	XMLLiteral	N/A	Unspecified	Title of the resource represented as rich text in XHTML content.
<code>oslc:nextPage</code>	Zero-or-one	true	Resource	Reference	Unspecified	Link to the next page of a response.

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Prefix Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>oslc:postBody</code>	Zero-or-one	true	string	N/A	Unspecified	The body of a POST request to return the next page if the response was to a POST request. Where a paged resource supports POST with an application/x-www-form-urlencoded body as an alternative to GET to avoid the request URI exceeding server limitations, the <code>oslc:ResponseInfo</code> in the response to the POST <b>SHOULD</b> contain this property so that a client knows what to POST to get the next page.
<code>oslc:totalCount</code>	Zero-or-one	true	integer	N/A	Unspecified	This optional property indicates the total number of results across all pages, its value should be non-negative. In the context of a query resource, this value <b>SHOULD</b> be the total number of results, i.e. the number of resources that match the query. In the context of other resources, the value <b>SHOULD</b> be the total number of property values (i.e. RDF triples) of the resource. Unless Stable Paging is in effect, the total count <b>MAY</b> vary as a client retrieves subsequent pages.

## 6. Conformance

OSLC servers **MUST** follow the constraints defined here where required, and with the meanings defined here.

OSLC servers **MAY** provide additional constraints for specific purposes.