



OSLC Requirements Management Version 2.1. Part 3: Constraints

Project Specification 01 03 September 2020

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Project Chairs:

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

Editors:

Mark Schulte (mark.d.schulte@boeing.com), [The Boeing Company](#)
Jad El-khoury (jad@kth.se), [KTH The Royal Institute of Technology](#)

Additional components:

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

- OSLC Requirements Management Version 2.1. Part 1: Specification. [requirements-management-spec.html](#)
- OSLC Requirements Management Version 2.1. Part 2: Vocabulary. [requirements-management-vocab.html](#)
- OSLC Requirements Management Version 2.1. Part 3: Constraints (this document). [requirements-management-shapes.html](#)
- OSLC Requirements Management Version 2.1. Part 4: Machine-readable Vocabulary Terms. [requirements-management-vocab.ttl](#)
- OSLC Requirements Management Version 2.1. Part 5: Machine-readable Constraints. [requirements-management-shapes.ttl](#)

Related work:

This specification is related to:

- *Open Services for Lifecycle Collaboration Requirements Management Specification Version 2.0.* [http://open-](http://open-requirements-management-shapes)

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[services.net/bin/view/Main/RmSpecificationV2](https://open-services.net/bin/view/Main/RmSpecificationV2)

RDF Namespaces:

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

Abstract:

This specification defines resource shapes for the OSLC Requirements Management domain.

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://open-services.net/about/>.

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1. Introduction

This section is non-normative.

This specification defines resource shapes for the OSLC Requirements Management resources. The intent is to define resources needed to support common integration scenarios and not to provide a comprehensive definition of a Requirement. The resource formats may not match exactly the native models supported by requirement management service providers, but are intended to be compatible with them. The approach to supporting these scenarios is to delegate operations, as driven by service provider contributed user interfaces, as much as possible and not require a service provider to expose its complete data model and application logic.

1.1 Terminology

This section is non-normative.

Terminology is based on OSLC Core Overview [OSLCCore3], W3C Linked Data Platform [LDP], W3C's Architecture of the World Wide Web [WEBARCH], Hyper-text Transfer Protocol [HTTP11]. Terminology for this specification is defined in part 1 of the multi-part specification.

1.2 References

1.2.1 Normative references

[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>

[OSLCCore3]

Jim Amsden; S. Speicher. *OSLC Core 3.0*. Project Specification. URL: <https://docs.oasis-open.org/oslc-core/oslc-core/v3.0/oslc-core-v3.0-part1-overview.html>

[OSLCCore3LinkGuidance]

Jim Amsden. *OSLC Core 3.0: Link Guidance*. Project Note Draft. URL: <https://oslc-op.github.io/oslc-specs/notes/link-guidance.html>

[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>

1.2.2 Informative references

[WEBARCH]

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

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].

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In addition to the namespace URIs and namespace prefixes `oslc`, `rdf`, `dcterms` and `foaf` defined in the [OSLC Core specification](#), OSLC RM defines the namespace URI of `http://open-services.net/ns/rm#` with a namespace prefix of `oslc_rm`

2. Conformance

Requirements Management servers **MUST** use the vocabulary terms defined here where required, and with the meanings defined here.

Requirements Management servers **MAY** augment this vocabulary with additional classes, properties, and individuals.

3. Requirements Management Resource Constraints

3.1 Resource: RequirementShape

The constraints on the Requirement resource properties are defined in the tables below. Requirement resource properties are not limited to the ones defined in this specification. Service providers may provide additional properties. It is strongly recommended that any additional properties be defined in XML namespaces distinct from those defined by OSLC in these specifications. Requirement creation through a Creation Factory resource in the Service Description is **REQUIRED** by this specification.

Any **resource** asserted to be of `rdf:type http://open-services.net/ns/rm#Requirement` **MUST** conform to the constraints and meaning of properties defined below. Notice that partial representations of a requirement resource are admitted by this specification (for example, in query results, or where `oslc.properties` has been used), and such partial representations will in general not conform to these constraints.

- **Describes:** `http://open-services.net/ns/rm#Requirement`
- **Summary:** Statement of need.
- **Description:** A condition or capability needed by a stakeholder, or imposed by a solution component, to address a need, solve a problem, achieve an objective, or to satisfy a contract, standard, specification, or other formally imposed documents.

Requirement Properties

| Prefixed Name | Occurs | Read-only | Value-type | Representation | Range | Description |
|----------------------------------|--------------|-------------|-------------|----------------|-------------------------------|---|
| <code>dcterms:contributor</code> | Zero-or-many | unspecified | AnyResource | Either | <code>oslc:AnyResource</code> | Contributor(s) to resource (reference: Dublin Core). It is likely that the target resource will be a <code><code>foaf:Person</code></code> but that is not necessarily the case. |
| <code>dcterms:created</code> | Zero-or-one | true | dateTime | N/A | Unspecified | Timestamp of resource creation (reference: Dublin Core). |
| <code>dcterms:creator</code> | Zero-or-many | unspecified | AnyResource | Either | <code>oslc:AnyResource</code> | Creator(s) of resource (reference: Dublin Core). It is likely that the target resource will be an <code><code>foaf:Person</code></code> but that is not necessarily the case. |
| <code>dcterms:description</code> | Zero-or-one | unspecified | XMLLiteral | N/A | Unspecified | Descriptive text (reference: Dublin Core) about resource represented as rich text in XHTML content. SHOULD include only content that is valid and suitable inside an XHTML <code><div></code> element. |
| <code>dcterms:identifier</code> | Zero-or-one | true | string | N/A | Unspecified | An identifier for a resource. This identifier may be unique with a scope that is defined by the RM provider. Assigned by the service provider when a resource is created. Not intended for end-user display. |
| <code>dcterms:modified</code> | Zero-or-one | true | dateTime | N/A | Unspecified | Timestamp of last resource modification (reference: Dublin Core). |

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| Prefixed Name | Occurs | Read-only | Value-type | Representation | Range | Description |
|------------------------------------|--------------|-------------|------------|----------------|-------------------------------|---|
| <code>dcterms:subject</code> | Zero-or-many | false | 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> | Exactly-one | unspecified | XMLLiteral | N/A | Unspecified | Title (reference: Dublin Core) of the resource represented as rich text in XHTML content. SHOULD include only content that is valid inside an XHTML <code></code> element. |
| <code>oslc_rm:affectedBy</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | The subject is affected by the object, such as a defect or issue. |
| <code>oslc_rm:constrainedBy</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | The subject is constrained by the object. For example, a functional requirement is constrained by a safety requirement. |
| <code>oslc_rm:constrains</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | The object is constrained by the subject. |
| <code>oslc_rm:decomposedBy</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | The subject is decomposed by the object. For example, a system requirement is decomposed into a collection of system requirements. |
| <code>oslc_rm:decomposes</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | The object is decomposed by the subject. |
| <code>oslc_rm:elaboratedBy</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | The subject is elaborated by the object. For example, a user requirement is elaborated by use case. |
| <code>oslc_rm:elaborates</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | The object is elaborated by the subject. |
| <code>oslc_rm:implementedBy</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | Resource, such as a change request, which implements this requirement. |
| <code>oslc_rm:satisfiedBy</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | The subject is satisfied by the object. For example, a user requirement is satisfied by a system requirement. |
| <code>oslc_rm:satisfies</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | The object is satisfied by the subject. |
| <code>oslc_rm:specifiedBy</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | The subject is specified by the object. For example, a requirement is elaborated by a model element. |

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| Prefixed Name | Occurs | Read-only | Value-type | Representation | Range | Description |
|-----------------------------------|--------------|-------------|------------|----------------|-----------------------------------|---|
| <code>oslc_rm:specifies</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | The object is specified by the subject. |
| <code>oslc_rm:trackedBy</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | Resource, such as a change request, which tracks this requirement. |
| <code>oslc_rm:validatedBy</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | Resource, such as a test case, which validates this requirement. |
| <code>oslc:instanceShape</code> | Zero-or-one | unspecified | Resource | Reference | <code>oslc:ResourceShape</code> | Resource Shape that provides hints as to resource property value-types and allowed values. |
| <code>oslc:serviceProvider</code> | Zero-or-many | unspecified | Resource | Reference | <code>oslc:ServiceProvider</code> | The scope of a resource is a URI for the resource's OSLC Service Provider. |
| <code>oslc:shortTitle</code> | Zero-or-one | unspecified | XMLLiteral | N/A | Unspecified | Short name identifying a resource, often used as an abbreviated identifier for presentation to end-users. SHOULD include only content that is valid inside an XHTML <code></code> element. |
| <code>rdf:type</code> | Zero-or-many | unspecified | Resource | Reference | Unspecified | The resource type URIs. |

3.2 Resource: RequirementCollectionShape

The constraints on the RequirementCollection vocabulary resource properties are defined in the tables below. RequirementCollection resource properties are not limited to the ones defined in this specification, service providers may provide additional properties. It is strongly recommended that any additional properties be defined in XML namespaces distinct from those defined by OSLC in these specifications. RequirementCollection creation through a Creation Factory resource in the Service Description is **OPTIONAL** in this specification.

Any **resource** asserted to be of `rdf:type http://open-services.net/ns/zm#RequirementCollection` **MUST** conform to the constraints and meaning of properties defined below. Notice that partial representations of a requirement collection resource are admitted by this specification (for example, in query results, or where `oslc.properties` has been used), and such partial representations will in general not conform to these constraints.

- **Describes:** `http://open-services.net/ns/zm#RequirementCollection`
- **Summary:** A collection of Requirements.
- **Description:** A grouping or collection of related requirements for any purpose.

RequirementCollection Properties

| Prefixed Name | Occurs | Read-only | Value-type | Representation | Range | Description |
|----------------------------------|--------------|-------------|-------------|----------------|-------------------------------|--|
| <code>dcterms:contributor</code> | Zero-or-many | unspecified | AnyResource | Either | <code>oslc:AnyResource</code> | Contributor(s) to resource (reference: Dublin Core). It is likely that the target resource will be a <code><code>foaf:Person</code></code> but that is not necessarily the case. |
| <code>dcterms:created</code> | Zero-or-one | true | dateTime | N/A | Unspecified | Timestamp of resource creation (reference: Dublin Core). |

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| Prefixed Name | Occurs | Read-only | Value-type | Representation | Range | Description |
|------------------------------------|--------------|-------------|-------------|----------------|-------------------------------|---|
| <code>dcterms:creator</code> | Zero-or-many | unspecified | AnyResource | Either | <code>oslc:AnyResource</code> | Creator(s) of resource (reference: Dublin Core). It is likely that the target resource will be an <code><code>foaf:Person</code></code> but that is not necessarily the case. |
| <code>dcterms:description</code> | Zero-or-one | unspecified | XMLLiteral | N/A | Unspecified | Descriptive text (reference: Dublin Core) about resource represented as rich text in XHTML content. SHOULD include only content that is valid and suitable inside an XHTML <code><div></code> element. |
| <code>dcterms:identifier</code> | Zero-or-one | true | string | N/A | Unspecified | An identifier for a resource. This identifier may be unique with a scope that is defined by the RM provider. Assigned by the service provider when a resource is created. Not intended for end-user display. |
| <code>dcterms:modified</code> | Zero-or-one | true | dateTime | N/A | Unspecified | Timestamp of last resource modification (reference: Dublin Core). |
| <code>dcterms:subject</code> | Zero-or-many | false | 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> | Exactly-one | unspecified | XMLLiteral | N/A | Unspecified | Title (reference: Dublin Core) of the resource represented as rich text in XHTML content. SHOULD include only content that is valid inside an XHTML <code></code> element. |
| <code>oslc_rm:affectedBy</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | The subject is affected by the object, such as a defect or issue. |
| <code>oslc_rm:constrainedBy</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | The subject is constrained by the object. For example, a requirement collection is constrained by a requirement collection. |
| <code>oslc_rm:constrains</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | The object is constrained by the subject. |
| <code>oslc_rm:decomposedBy</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | The subject is decomposed by the object. For example, a collection of business requirements is decomposed by a collection of user requirements. |

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| Prefix Name | Occurs | Read-only | Value-type | Representation | Range | Description |
|------------------------------------|--------------|-------------|------------|----------------|-----------------------------------|--|
| <code>oslc_rm:decomposes</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | The object is decomposed by the subject. |
| <code>oslc_rm:elaboratedBy</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | The subject is elaborated by the object. For example, a collection of user requirements elaborates a business need, or a model elaborates a collection of system requirements. |
| <code>oslc_rm:elaborates</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | The object is elaborated by the subject. |
| <code>oslc_rm:implementedBy</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | Resource, such as a change request, which implements this requirement collection. |
| <code>oslc_rm:satisfiedBy</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | The subject is satisfied by the object. For example, a collection of user requirements is satisfied by a requirement collection of system requirements. |
| <code>oslc_rm:satisfies</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | The object is satisfied by the subject. |
| <code>oslc_rm:specifiedBy</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | The subject is specified by the object. For example, a model element might make a requirement collection more precise. |
| <code>oslc_rm:specifies</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | The object is specified by the subject. |
| <code>oslc_rm:trackedBy</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | Resource, such as a change request, which manages this requirement collection. |
| <code>oslc_rm:uses</code> | Zero-or-many | unspecified | Resource | Reference | <code>oslc:AnyResource</code> | A collection uses a resource - the resource is in the requirement collection. |
| <code>oslc_rm:validatedBy</code> | Zero-or-many | false | Resource | Reference | <code>oslc:AnyResource</code> | Resource, such as a test plan, which validates this requirement collection. |
| <code>oslc:instanceShape</code> | Zero-or-one | unspecified | Resource | Reference | <code>oslc:ResourceShape</code> | Resource Shape that provides hints as to resource property value-types and allowed values. |
| <code>oslc:serviceProvider</code> | Zero-or-many | unspecified | Resource | Reference | <code>oslc:ServiceProvider</code> | The scope of a resource is a URI for the resource's OSLC Service Provider. |
| <code>oslc:shortTitle</code> | Zero-or-one | unspecified | XMLLiteral | N/A | Unspecified | Short name identifying a resource, often used as an abbreviated identifier for presentation to end-users. SHOULD include only content that is valid inside an XHTML element. |

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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>rdf:type</code> | Zero-or-many | unspecified | Resource | Reference | Unspecified | The resource type URIs. |

4. Relationship Properties

This section is non-normative.

For compatibility with OSLC Core 2.0 [OSLCCore2], RM servers **MAY** accept relationship properties. This is however no longer recommended practice, since the necessary reification of relationship can have entailment and inferencing issues. OSLC Core 3.0 Link Guidance [OSLCCore3LinkGuidance] details an alternative approach, where a separate resource is created to represent the relationship and its properties.

The following relationship properties are defined by this specification:

| Prefixed Name | Occurs | Read-only | Value-type | Representation | Range | Description |
|----------------------------------|--------------|-------------|----------------------------|----------------------------|------------|---|
| <code>dcterms:title</code> | zero-or-one | unspecified | XMLLiteral | n/a | n/a | Title (reference: Dublin Core) of the link represented as rich text in XHTML content. SHOULD include only content that is valid inside an XHTML <code></code> element. |
| <code>dcterms:creator</code> | zero-or-many | unspecified | Resource or Local Resource | Either Reference or Inline | any | Creator(s) of resource (reference: Dublin Core). It is likely that the target resource will be a <code>foaf:Person</code> but that is not necessarily the case. |
| <code>dcterms:contributor</code> | zero-or-many | unspecified | Resource or Local Resource | Either Reference or Inline | any | Creator(s) of resource (reference: Dublin Core). It is likely that the target resource will be a <code>foaf:Person</code> but that is not necessarily the case. |
| <code>dcterms:created</code> | zero-or-one | True | DateTime | n/a | n/a | Timestamp of link creation (reference: Dublin Core). |
| <code>dcterms:modified</code> | zero-or-one | True | DateTime | n/a | n/a | Timestamp last latest link modification (reference: Dublin Core). |

4.1 Relationship labels

This section is non-normative.

When an RM relationship property is to be presented in a user interface, it may be helpful to provide an informative and useful textual label for that relationship instance. (This in addition to the relationship property URI and the object resource URI, which are also candidates for presentation to a user.) To this end, OSLC Servers **MAY** support a `dcterms:title` link property in RM resource representations where a relationship property is permitted, using the anchor approach outlined in the OSLC Core Links Guidance.

Servers and Clients should be aware that the `dcterms:title` of a link is unrelated to the `dcterms:title` of the object resource. Indeed, links may carry other properties with names in common to the object of the link, but there is no specified relationship between these property values.