



OSLC Architecture Management Specification

2.1. Part 1: Specification

Committee Specification 01

09 October 2018

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Additional artifacts:

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

- OSLC Architecture Management Version 2.1. Part 1: Specification (this document). <http://docs.oasis-open.org/oslc-domains/oslc-am/v2.1/cs01/part1-architecture-management-spec/oslc-am-v2.1-cs01-part1-architecture-management-spec.html>
- OSLC Architecture Management Version 2.1. Part 2: Vocabulary. <http://docs.oasis-open.org/oslc-domains/oslc-am/v2.1/cs01/part2-architecture-management-vocab/oslc-am-v2.1-cs01-part2-architecture-management-vocab.html>

Related work:

This specification is related to:

- OSLC Architecture Management Specification Version 2.0. <http://open-services.net/wiki/architecture-management/OSLC-Architecture-Management-Specification-Version-2.0/>

RDF Namespaces:

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

Abstract:

This specification defines the OSLC Architecture Management domain, a RESTful web services interface for the management of architectural resources and relationships between those and related resources such as product change requests, activities, tasks, requirements or test cases. To support these scenarios, this specification defines a set of HTTP-based RESTful interfaces in terms of HTTP methods: GET, POST, PUT and DELETE, as well as HTTP response codes, content type handling and resource formats.

Status:

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1. Introduction

This section is non-normative.

This specification defines a RESTful web services interface for the Architecture Management (AM) domain. This domain addresses the management of product design artifacts including models, and relationships with other resources such as requirements, testing resources and change requests. To support these scenarios, this specification defines a set of HTTP-based RESTful interfaces in terms of HTTP methods: GET, POST, PUT and DELETE, HTTP response codes, content type handling and resource formats..

The intent of this specification is to define the capabilities needed to support integration scenarios defined by the Architecture Management working group and not to provide a comprehensive interface to Architecture Management. The resource formats and operations may not match exactly the native artifacts supported by architecture management AM Servers 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.

This specification is a [OSLCCore3] compliant specification, and as such most of its content are references to [OSLCCore3].

1.1 IPR Policy

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1.2 Terminology

Resource

An artifact used in the Application Lifecycle Management (ALM) space. A resource is directly addressable with an absolute URL.

Architecture Management Resource (AMR)

Directly addressable resources of some domain/notation (i.e. UML, BPMN, ER) that represent an abstraction of some behavior or construct of a system under development. An AMR maintains its identity after refactoring. In the semantic web, an AMR might correspond to a graph that is an instance of some vocabulary or micro-theory.

Link

A logical relationship from one resource to another resource. An OSLC AM Link is uni-directional. The subject (source) of a link represents the resource that "knows about" and is referencing another resource (target). The type of relationship is given by a predicate URI (link type). In semantic web terminology, a link would correspond to an RDF statement with a subject (source), a predicate (type) and object (target). The predicate could be defined by property in an RDF schema.

Link type (LT)

A URI that represents the type of a link. In semantic web terminology it is the predicate of an RDF triple. It clarifies the type of relationship between two resources. Link Type URIs may be defined locally, within the OSLC, or externally (i.e. Dublin Core terms). Link types could be defined in RDF Schemas.

Link type Resource (LTR)

A resource that contains human consumable information about a Link Type, like its human readable name and description. The resource is managed by the AM provider. The information may be about a Link Type in a different domain (i.e. Dublin Core Terms or OWL). The main use of an LTR is for clients who want to build a UI for users that clearly labels potential link types.

AM Client

An implementation of the OSLC Architecture Management specifications as a client. OSLC AM Clients consume

services provided by AM servers.

AM Server

A server implementing the OSLC Architecture Management domain specifications. OSLC AM clients consume services provided by AM Servers. The use of the terms Client and Server are intended to distinguish typical consumers and providers of OSLC resources in a distributed environment based on REST. A particular application component could be a client for some OSLC domain services and a server for the same or another domain.

1.3 References

1.3.1 Normative references

[OSLCCore2]

Dave Johnson; S. Speicher. *OSLC Core Specification 2.0*. Finalized. URL: <http://open-services.net/bin/view/Main/OslcCoreSpecification>

[OSLCCore3]

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

[OSLCPreview]

OSLC Resource Preview 3.0. Committee Specification. URL: <http://docs.oasis-open.org/oslc-core/oslc-core/v3.0/oslc-core-v3.0-part3-resource-preview.html>

[OSLCShapes]

Arthur Ryman; Jim Amsden. *OSLC Resource Shape 3.0*. URL: <http://docs.oasis-open.org/oslc-core/oslc-core/v3.0/oslc-core-v3.0-part6-resource-shape.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>

1.3.2 Informative references

[LDPPatch]

Linked Data Patch Format. Working Group Note. URL: <http://www.w3.org/TR/ldpatch/>

1.4 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. Base Requirements

The following sub-sections define the mandatory and optional requirements for an OSLC Architecture Management (OSLC AM) server.

2.1 Base Compliance

This specification is based on [OSLCCore3]. OSLC AM servers **must** be compliant with both the core specification, **must** follow all the mandatory requirements in the normative sections of this specification, and **should** follow all the guidelines and recommendations in both these specifications. [am-1]

An OSLC AM server **must** implement the domain vocabulary defined in [OSLC Architecture Management Version 2.1. Part 2: Vocabulary](#) [am-2]

The following table summarizes the requirements from OSLC Core Specification as well as some additional requirements specific to the AM domain. Note that this specification further restricts some of the requirements from the OSLC Core Specification. See the previous sections in this specification or the OSLC Core Specification to get further details on each of these requirements.

Requirement	Meaning
Absolute URIs	AM Servers must use absolute URIs for all references to resources by properties [am-3]
Unknown properties and content	AM Servers may ignore unknown content and AM clients must preserve unknown content. AM Servers may discard such properties and continue the POST or PUT operation without warning to the client. [am-4]
Resource Operations	AM Servers must support resource operations via standard HTTP operations [am-5]
Update and Delete	AM Servers should support resource modifications with standard HTTP PUT and DELETE methods. AM Servers may limit modifications [am-6]
HTTP If-Match use	AM Servers supporting update and delete of resources must support the standard HTTP If-Match header in PUT and DELETE for concurrency protection of resources. [am-7]
Resource Paging	AM Servers may provide paging for resources but only when specifically requested by clients [am-8]
Partial Resource Representations	AM Servers may support requests for a subset of a resource's properties via the osc.properties URL parameter retrieval via HTTP GET [am-9]
Partial Update	AM Servers may support partial update of resources via the osc.properties URL parameter retrieval via HTTP PUT and or using [LDPPatch]. [am-10]
Discovery	AM Servers may provide a Service Provider Catalog, must provide a Service Provider resource, and may provide other forms of discovery described in [OSLCCore3]. [am-11]
Creation Factories	AM Servers may provide creation factories for resource formats that it supports. AM Servers may support creation factories for OSLC AM defined resources formatted as application/rdf+xml. AM Servers may support creation factories for other formats, and indicate such creation factories with a non-default identifier in the osc:usage property of the creation factory definition in the service provider document [am-12]

Requirement	Meaning
Query Capabilities	AM Servers must provide query capabilities on <code>oslc_am:Resource</code> resources to enable clients to query for resources. AM Servers should support a query interface for <code>oslc_am:LinkType</code> resources that support a GET for all LinkType resources. Such a GET does not require any simple query syntax parameters. AM Servers may support the full query syntax for LinkType resources. [am-13]
Query Syntax	OSLC query capabilities must support the OSLC Core Query Syntax [am-14]
Delegated Dialogs	AM Services should offer selection delegated dialogs and may offer creation delegated dialogs specified via service provider resource [am-15]
Resource Preview	AM Services should offer resource previews for resources that may be referenced by other resources [am-16]
Authentication	OSLC Services should follow the recommendations for Authentication specified in [OSLCCore3] [am-17]
Error Responses	AM Servers should provide error responses using OSLC Core defined error formats [am-18]
RDF/XML Representations	AM Servers must support RDF/XML representations for OSLC Defined Resources [am-19]
XML Representations	AM Servers must support XML representations that conform to the OSLC Core Guidelines for XML [am-20]
JSON Representations	AM Servers may support JSON representations; those which do must conform to the OSLC Core Guidelines for JSON [am-21]
HTML Representations	AM Servers may provide HTML representations for GET requests [am-22]

2.2 Specification Versioning

This specification follows the specification version guidelines given in [OSLCCore3].

2.3 Namespaces

In addition to the namespace URIs and namespace prefixes `oslc`, `rdf`, `dcterms` and `foaf` defined in the [OSLCCore3], OSLC AM defines the namespace URI of `http://open-services.net/ns/am#` with a preferred namespace prefix of `oslc_am`.

2.4 Resource Formats

In addition to the requirements for resource representations in [OSLCCore3], this section outlines further refinements and restrictions.

For HTTP GET/PUT/POST requests on all OSLC AM and OSLC Core defined resource types,

- AM Servers **must** support RDF/XML representations with media-type `application/rdf+xml`. AM Clients should be prepared to deal with any valid RDF/XML document. [am-23]
- AM Servers **must** support XML representations with media-type `application/xml`. The XML representations **must** follow the guidelines outlined in the [OSLC Core Representations Guidance](#) to maintain compatibility with [OSLCCore2]. [am-24]
- AM Servers **may** support JSON representations with media-type `application/json`. The JSON representations **must** follow the guidelines outlined in the [OSLC Core Representations Guidance](#) to maintain compatibility with [OSLCCore2]. [am-25]

2.5 Resource Operations

OSLC AM Clients **may** include the OSLC Core Version header (OSLC-Core-Version: 2.0) in all HTTP request to OSLC AM

Servers as specified in [OSLCCore3]. [am-26]

OSLC AM Servers **must** support HTTP GET requests on Architecture Management Resources (AMR), with an Accept header of `application/rdf+xml`, and return the RDF/XML representation of the resource. [am-27]

OSLC AM Servers **should** support HTTP GET requests on Architecture Management Resources (AMR), with an Accept header of an HTML type (`application/html`, `application/xhtml`), and return either an HTML/XHTML representation of the resource or redirect the client to another URL that can (i.e. 302 Redirect). [am-28]

OSLC AM Servers **should** support HTTP GET requests for user interface (UI) preview of Architecture Management Resources (AMR) as defined by [OSLCPreview]. [am-29]

OSLC AM Servers **should** support resource modifications on Architecture Management Resources (AMR) with standard HTTP PUT and DELETE methods. AM Servers **may** limit modifications in any way they want. For example a service provider may limit updates to resources to simple link properties of link types already defined in the provider. Modification methods **must** use the If-Match header for concurrency management. Providers **may** discard such properties and continue a PUT operation without warning to the client. [am-30]

OSLC AM Servers **should** support resource modifications on LinkType Resources (LTR) with standard HTTP PUT and DELETE methods. AM Servers **may** limit modifications in any way they want. For example a service provider may not support additional properties. Modification methods **should** use the If-Match header for concurrency management. [am-31]

2.6 Authentication

See [OSLCCore3], OSLC AM puts no additional constraints on authentication.

2.7 Error Responses

See [OSLCCore3], OSLC AM puts no additional constraints on error responses

2.8 Pagination

OSLC AM Servers **should** support pagination of query results and **may** support pagination of a single resource's properties as defined by [OSLCCore3]. [am-32]

2.9 Requesting and Updating Properties

2.9.1 Requesting a Subset of Properties

An OSLC AM server **may** support the `oslc.properties` URL query parameter on an HTTP GET request on individual resource request or a collection of resources by query. If the `oslc.properties` query parameter is omitted on the request, then all resource properties **must** be provided in the response. [am-33]

2.9.2 Updating a Subset of Properties

An OSLC AM client **may** request that a subset of a resource's properties be updated by identifying those properties to be modified using the `oslc.properties` URL parameter on a HTTP PUT request. [am-34]

2.9.3 Updating Multi-Valued Properties

An OSLC AM Server **may** support updating a subset of a resource's properties by using the [LDPPatch] `PATCH` method. [am-35]

For compatibility with [OSLCCore2], an AM Server **may** also support partial update by identifying those properties to be modified using the `oslc.properties` URL parameter on a HTTP PUT request. [am-36]

If the parameter `oslc.properties` contains a valid resource property on the request that is not provided in the content, the

server **must** set the resource's property to a null or empty value. If the parameter `oslc.properties` contains an invalid resource property, then a `409 Conflict` **must** be returned. [\[am-37\]](#)

3. Vocabulary Terms and Constraints

[OSLC Architecture Management Version 2.1. Part 2: Vocabulary](#) (see "[Additional artifacts](#)" on the front page) defines the vocabulary terms and constraints for OSLC Architecture Management resources. These terms and constraints are specified according to [[OSLCCore3](#)].

4. AM Server Capabilities

4.1 Resource Shapes

OSLC AM servers **should** support Resource Shapes as defined in [OSLCShapes]. [am-38]

4.2 Service Provider Resources

OSLC AM Servers **must** provide a ServiceProvider Resource that can be retrieved at a implementation dependent URI. [am-39]

OSLC AM Servers **must** provide a ServiceProviderCatalog Resource that can be retrieved at a implementation dependent URI. [am-40]

OSLC AM Servers **must** provide an `oslc:serviceProvider` property for their defined resources that will be the URI to a ServiceProvider Resource. This does not prevent AM Servers from providing multiple service provider properties with different values, if the service provider supports multiple OSLC domain specifications, and the resource is applicable to multiple domains. [am-41]

OSLC AM Servers **must** supply a value of `http://open-services.net/ns/am#` for the property `oslc:domain` on either `oslc:ServiceProvider` or `oslc:ServiceProviderCatalog` resources. [am-42]

4.3 Creation Factories

OSLC AM Servers **may** support CreationFactories as defined by [OSLCCore3]. [am-43]

OSLC AM Servers **may** discard properties it does not recognize and continue the POST operation without warning to the client. The returned resource will contain the accepted properties (and server generated properties like the `dcterms:identifier`) so clients will be able to confirm if required what was accepted.

If OSLC AM Servers support the creation of resources from the OSLC defined `oslc_am:Resource` format, there **must** be at least one Creation Factory entry in the Services definition, and its `oslc:usage` property **must** be set to `http://open-services.net/ns/core#default`. The `oslc:resourceType` **must** be set to `http://open-services.net/ns/am#Resource`. [am-44]

If OSLC AM Servers support the creation of resources from a resource other than `oslc_am:Resource`, there **must** be a separate creation services definition whose `oslc:usage` property **must not** be set to `http://open-services.net/ns/core#default`. [am-45]

4.4 Query Capabilities

OSLC AM Servers **should** support the Query Capabilities as defined by [OSLCCore3] for both `oslc_am:Resource` and `oslc_am:LinkType` resources. [am-46]

If the service provider supports query capability for `oslc_am:Resource` resources, it **must** support the following query parameters: [am-47]

- `oslc.where`
- `oslc.searchTerms`

OSLC AM Servers **should** support query capability for `oslc_am:LinkType` resources. If supported then AM Servers **must** support a simple GET without any query parameters that returns all link type resources. AM Servers **should** support the full OSLC query syntax. [am-48]

4.5 Delegated UIs

OSLC AM Servers **should** support the selection of resources by delegated selection dialogs as defined by [OSLCCore3]. [am-49]

49]

OSLC AM Servers **may** support the creation of resources by delegated creation dialogs as defined by [OSLCCore3]. [am-50]

In `oslc:Dialog` elements, the two optional child elements; `oslc:hintWidth` and `oslc:hintHeight` specify the suggested size of the dialog or frame to render the HTML content in. Expected size values are defined by [CSS length units](#). [am-51]

5. Conformance

Implementations of this specification need to satisfy the following conformance clauses.

Clause Number	Requirement
am-1	This specification is based on [OSLCCore3]. OSLC AM servers must be compliant with both the core specification, must follow all the mandatory requirements in the normative sections of this specification, and should follow all the guidelines and recommendations in both these specifications.
am-2	An OSLC AM server must implement the domain vocabulary defined in OSLC Architecture Management Version 2.1, Part 2: Vocabulary
am-3	AM Servers must use absolute URLs for all references to resources by properties
am-4	AM Servers may ignore unknown content and AM clients must preserve unknown content. AM Servers may discard such properties and continue the POST or PUT operation without warning to the client.
am-5	AM Servers must support resource operations via standard HTTP operations
am-6	AM Servers should support resource modifications with standard HTTP PUT and DELETE methods. AM Servers may limit modifications
am-7	AM Servers supporting update and delete of resources must support the standard HTTP If-Match header in PUT and DELETE for concurrency protection of resources.
am-8	AM Servers may provide paging for resources but only when specifically requested by clients
am-9	AM Servers may support requests for a subset of a resource's properties via the osc.properties URL parameter retrieval via HTTP GET
am-10	AM Servers may support partial update of resources via the osc.properties URL parameter retrieval via HTTP PUT and or using [LDPPatch].
am-11	AM Servers may provide a Service Provider Catalog, must provide a Service Provider resource, and may provide other forms of discovery described in [OSLCCore3].
am-12	AM Servers may provide creation factories for resource formats that it supports. AM Servers may support creation factories for OSLC AM defined resources formatted as application/rdf+xml. AM Servers may support creation factories for other formats, and indicate such creation factories with a non-default identifier in the osc:usage property of the creation factory definition in the service provider document
am-13	AM Servers must provide query capabilities on osc_am:Resource resources to enable clients to query for resources. AM Servers should support a query interface for osc_am:LinkType resources that support a GET for all LinkType resources. Such a GET does not require any simple query syntax parameters. AM Servers may support the full query syntax for LinkType resources.
am-14	OSLC query capabilities must support the OSLC Core Query Syntax
am-15	AM Services should offer selection delegated dialogs and may offer creation delegated dialogs specified via service provider resource
am-16	AM Services should offer resource previews for resources that may be referenced by other resources
am-17	OSLC Services should follow the recommendations for Authentication specified in [OSLCCore3]
am-18	AM Servers should provide error responses using OSLC Core defined error formats
am-19	AM Servers must support RDF/XML representations for OSLC Defined Resources
am-20	AM Servers must support XML representations that conform to the OSLC Core Guidelines for XML
am-21	AM Servers may support JSON representations; those which do must conform to the OSLC Core Guidelines for JSON
am-22	AM Servers may provide HTML representations for GET requests
am-23	AM Servers must support RDF/XML representations with media-type <code>application/rdf+xml</code> . AM Clients should be prepared to deal with any valid RDF/XML document.

Standards Track Work Product

Clause Number	Requirement
am-24	AM Servers must support XML representations with media-type <code>application/xml</code> . The XML representations must follow the guidelines outlined in the OSLC Core Representations Guidance to maintain compatibility with [OSLCCore2] .
am-25	AM Servers may support JSON representations with media-type <code>application/json</code> . The JSON representations must follow the guidelines outlined in the OSLC Core Representations Guidance to maintain compatibility with [OSLCCore2] .
am-26	OSLC AM Clients may include the OSLC Core Version header (OSLC-Core-Version: 2.0) in all HTTP request to OSLC AM Servers as specified in [OSLCCore3] .
am-27	OSLC AM Servers must support HTTP GET requests on Architecture Management Resources (AMR), with an Accept header of <code>application/rdf+xml</code> , and return the RDF/XML representation of the resource.
am-28	OSLC AM Servers should support HTTP GET requests on Architecture Management Resources (AMR), with an Accept header of an HTML type (<code>application/html</code> , <code>application/xhtml</code>), and return either an HTML/XHTML representation of the resource or redirect the client to another URL that can (i.e. 302 Redirect).
am-29	OSLC AM Servers should support HTTP GET requests for user interface (UI) preview of Architecture Management Resources (AMR) as defined by [OSLCPreview] .
am-30	OSLC AM Servers should support resource modifications on Architecture Management Resources (AMR) with standard HTTP PUT and DELETE methods. AM Servers may limit modifications in any way they want. For example a service provider may limit updates to resources to simple link properties of link types already defined in the provider. Modification methods must use the If-Match header for concurrency management. Providers may discard such properties and continue a PUT operation without warning to the client.
am-31	OSLC AM Servers should support resource modifications on LinkType Resources (LTR) with standard HTTP PUT and DELETE methods. AM Servers may limit modifications in any way they want. For example a service provider may not support additional properties. Modification methods should use the If-Match header for concurrency management.
am-32	OSLC AM Servers should support pagination of query results and may support pagination of a single resource's properties as defined by [OSLCCore3] .
am-33	An OSLC AM server may support the <code>oslc.properties</code> URL query parameter on an HTTP GET request on individual resource request or a collection of resources by query. If the <code>oslc.properties</code> query parameter is omitted on the request, then all resource properties must be provided in the response.
am-34	An OSLC AM client may request that a subset of a resource's properties be updated by identifying those properties to be modified using the <code>oslc.properties</code> URL parameter on a HTTP PUT request.
am-35	An OSLC AM Server may support updating a subset of a resource's properties by using the [LDPPatch] <code>PATCH</code> method.
am-36	For compatibility with [OSLCCore2] , an AM Server may also support partial update by identifying those properties to be modified using the <code>oslc.properties</code> URL parameter on a HTTP PUT request.
am-37	If the parameter <code>oslc.properties</code> contains a valid resource property on the request that is not provided in the content, the server must set the resource's property to a null or empty value. If the parameter <code>oslc.properties</code> contains an invalid resource property, then a <code>409 Conflict</code> must be returned.
am-38	OSLC AM servers should support Resource Shapes as defined in [OSLCShapes] .
am-39	OSLC AM Servers must provide a ServiceProvider Resource that can be retrieved at a implementation dependent URI.
am-40	OSLC AM Servers must provide a ServiceProviderCatalog Resource that can be retrieved at a implementation dependent URI.
am-41	OSLC AM Servers must provide an <code>oslc:serviceProvider</code> property for their defined resources that will be the URI to a ServiceProvider Resource. This does not prevent AM Servers from providing multiple service provider properties with different values, if the service provider supports multiple OSLC domain specifications, and the resource is applicable to multiple domains.

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Clause Number	Requirement
am-42	OSLC AM Servers must supply a value of <code>http://open-services.net/ns/am#</code> for the property <code>oslc:domain</code> on either <code>oslc:ServiceProvider</code> or <code>oslc:ServiceProviderCatalog</code> resources.
am-43	OSLC AM Servers may support CreationFactories as defined by [OSLCCore3].
am-44	If OSLC AM Servers support the creation of resources from the OSLC defined <code>oslc_am:Resource</code> format, there must be at least one Creation Factory entry in the Services definition, and its <code>oslc:usage</code> property must be set to <code>http://open-services.net/ns/core#default</code> . The <code>oslc:resourceType</code> must be set to <code>http://open-services.net/ns/am#Resource</code> .
am-45	If OSLC AM Servers support the creation of resources from a resource other than <code>oslc_am:Resource</code> , there must be a separate creation services definition whose <code>oslc:usage</code> property must not be set to <code>http://open-services.net/ns/core#default</code> .
am-46	OSLC AM Servers should support the Query Capabilities as defined by [OSLCCore3] for both <code>oslc_am:Resource</code> and <code>oslc_am:LinkType</code> resources.
am-47	If the service provider supports query capability for <code>oslc_am:Resource</code> resources, it must support the following query parameters:
am-48	OSLC AM Servers should support query capability for <code>oslc_am:LinkType</code> resources. If supported then AM Servers must support a simple GET without any query parameters that returns all link type resources. AM Servers should support the full OSLC query syntax.
am-49	OSLC AM Servers should support the selection of resources by delegated selection dialogs as defined by [OSLCCore3].
am-50	OSLC AM Servers may support the creation of resources by delegated creation dialogs as defined by [OSLCCore3].
am-51	In <code>oslc:Dialog</code> elements, the two optional child elements; <code>oslc:hintWidth</code> and <code>oslc:hintHeight</code> specify the suggested size of the dialog or frame to render the HTML content in. Expected size values are defined by CSS length units .

Appendix A. Samples

See [OSLC Architecture Management 2.0 Appendix A: Samples](#)

Appendix B. Acknowledgements

This section is non-normative.

The following individuals have participated in the creation of this specification and are gratefully acknowledged:

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Appendix C. Change History

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01	09/10/2018	Jim Amsden	Committee Specification revision 01 published