

Service Genre: Resolve

Intellectual Property Rights Statement: This Service Genre is a derivative work. This work was created by the Learning Systems Architecture Lab.

The Service Genre is derived from work created as part of the D³UI: Deposit to Discovery to Delivery – A User-Focused Infrastructure for Content Management in an ADL Environment project within the Workforce ADL Co-Lab. The D³UI project was funded in part by the Joint ADL Co-Lab under contract N61339-07-2-0001 SOW 2. Any opinions, findings, conclusions or recommendations expressed herein are those of the author(s) and do not reflect the views of the U.S. Government, the University of Memphis or other project sponsors.

The template structure and format of this document are based on the Service Genre Description document from the Evolving the JADL Integrated Prototype Architecture: Alignment with the e-Framework Technical Report. This work was funded in part by the Joint ADL Co-Lab under contract N61339-06-C-0082.

The template structure and format are derived from the e-Framework documentation templates and guidelines, which are governed by the e-Framework *Intellectual Property Rights Statement* [<http://www.e-framework.org/Default.aspx?tabid=738>].

The template structure and format of this document are also based on Federated Repositories for Education (FRED) project documentation templates and guidelines, which were created as part of the FRED Project within the Australian ADL Partnership Laboratory. The FRED project is sponsored by the Australian Commonwealth Department of Education, Science and Training under the Framework for Open Learning Programme.

e-Framework work © Copyright 2007, e-Framework Partners. e-Framework work licensed under the *Creative Commons Attribution-ShareAlike 2.5 Australia License* [<http://creativecommons.org/licenses/by-sa/2.5/au/>].

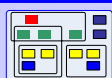
FRED project work © Copyright 2007, University of Southern Queensland and University of Memphis. FRED project work licensed under the *Creative Commons Attribution-ShareAlike 2.5 Australia License* [<http://creativecommons.org/licenses/by-sa/2.5/au/>].

D³UI project work © Copyright 2007, Workforce ADL Co-Lab.

Template structure and format © Copyright 2008, Learning Systems Architecture Lab. The template structure and format may be used under the *Creative Commons Attribution-ShareAlike 2.5 Australia License* [<http://creativecommons.org/licenses/by-sa/2.5/au/>].

Service Genre © Copyright 2008, Learning Systems Architecture Lab. All Rights Reserved.

The appropriate attribution for a derivative of this work is: “This document is derived from work created by the Learning Systems Architecture Lab. © Copyright 2008, Learning Systems Architecture Lab.” and should be followed by all of the attributions for this Service Genre as documented herein.



LSAL

Information Architecture & Design, Learning Technologies, Training

Introduction

The Introduction provides a brief, standalone overview of the Service Genre. It is for a non technical reader. It may duplicate other material in the Service Genre Description.

The resolve service genre provides an abstract service end point for resolving a unique, persistent, resolvable identifier for an object (e.g., a metadata object, a content object). The resolver takes the identifier for an object and returns the “locator” used to access the object.

Service Genre Description

The Service Genre Description is the complete, formal documentation of the Service Genre.

The resolve service genre defines how to resolve a unique, persistent, resolvable identifier for an object (e.g., a metadata object, a content object). The identifier is managed by an identifier system. The service genre encapsulates a multi-step workflow, and is part of a more comprehensive identifier service usage model.

This is a general description of a resolve service genre, independent of application end point, resource, data object, or underlying communications protocols and service models. The service genre is independent of any data model. The service genre does not include a mechanism to authenticate clients. The service genre does not include authorization methods to control the return and filtering of results.

Service Genre Metadata

The Service Genre Metadata contains basic labeling, classification and a version history for the Service Genre.

Name

- Service Genre Name: resolve
- LSAL ID: hdl:1870/7D2A1D106AEC44A7AD7D0020F647F98D
- ADL Name: resolve identifier
- JADL IPA ID: hdl:JADL-IPA-NA/38229420DA5949B8B01CCB277CECB48D (source for derivative)

Classification

Classification Facets:

- Service Genre Status: Unapproved
- Domains: All
- Domain Coverage: Multiple
- Deployment Status: Developmental
- Deployment Scale: Isolated
- Maturity: Immature
- Composition: Individual
- Purpose: Exemplar, Application

Technical Facets:

- State Behavior: Stateless
- Transactional Behavior: Non Transactional
- Batch Behavior: Individual
- Time Constraint Behavior: None
- Service End Point: Provider
- Authentication / Authorization: Not Auth'ed
- Exposure: Public



Version

- LSAL Version 1.0.0 [hdl:1870/7D2A1D106AEC44A7AD7D0020F647F98D]
- JADL IPA Version: 1.0.0 [hdl:JADL-IPA-NA/38229420DA5949B8B01CCB277CECB48D]

Version History			
Version	Date	Author	Description
0.50	2007-09-04	DR	Initial D ³ UI version hdl:JADL-IPA-NA/38229420DA5949B8B01CCB277CECB48D
0.51	2007-09-25	DR	Editorial review, consistency.
0.70	2007-10-07	DR	Draft for review.
0.90	2007-10-14	DR	Final editorial.
1.0.0	2007-10-21	DR	Final D ³ UI V 1.0.0.
1.0.0	2008-06-18	DR	LSAL V 1.0.0. Derivative from D ³ UI version.

Notation

The Notation element includes conventions used to describe the Service Genre.

The words MUST, MUST NOT, REQUIRED, SHALL, SHALL NOT, SHOULD, SHOULD NOT, RECOMMENDED, MAY, and OPTIONAL in this document are to be interpreted as described in [RFC 2119].

Notational conventions follow those given in the LSAL *Service Notation and Document Conventions*.

The identification and versioning scheme follows those given in the LSAL *Service Component Identification Scheme*.

The service classification scheme follows those given in the LSAL *Service Classification Scheme*.

The Service Genre Description follows those given in the LSAL *Service Genre Description Guidelines*.

Description

The Description element is an informal, standalone, non technical narrative description of the Service Genre (problem, process, business-level capabilities and workflow).

Identifiers are used throughout the content creation and management process to uniquely identify an object or a piece of content. The identifier serves as a proxy for the content in many operations; having the identifier is a substitute for the content when only the existence of the content is needed to be manipulated, not the actual content itself.

Identifiers may be assigned to any type of object, e.g., a content object, a content package, a competency, a metadata record.

Identifiers may be resolved, i.e., the identifier includes a “locator” attribute that provides a way to access the actual content.

The resolve service genre is used to obtain the locator from an identifier. It does not provide the means to retrieve the corresponding object referenced in the location. The resolve service genre provides a simple abstract interface to automate all steps needed to resolve an identifier: given the identifier, the service returns the locator.

The resolve service genre is part of a larger identifier service usage model that provides a collection of services for using and managing identifiers. The concepts and model that underlie the service genre are based on the *PILIN Ontology for Identifiers and Identifier Services*.



The resolve service genre defines the minimum expected behavior of a resolver and outlines common design issues involved in implementing such a service. The resolve service genre defines the interfaces to the resolver. It does not describe the processes used internally by the service to obtain the locator or to manage identifiers or an identifier system.

The service genre is specialized in service expressions to resolve identifiers using a particular identifier system (e.g., the Handle System). The service expressions specify formats for locators and identifiers, and specify details of transport and communication when passing data to and from the service end point.

The resolve service genre is not authentication controlled. The service end point does not apply filtering to responses according to authorization-based access control constraints.

Note, as with other service genres, there is no expectation that all service implementations will be interoperable. Different service expressions MAY take different approaches to defining interfaces and data models.

Usage Scenarios

The Usage Scenarios element is an informal, non technical description of how the Service Genre is used. An illustration of process or problem workflows, expressed using services, is included. An illustration of an application using the components of the Service Genre may be included (but not a description of the design of the application). No critical or essential information required to understand the Service Genre should be included.

The basic usage scenario for the resolve service genre is to embed the resolver in another tool, e.g., within the *Reload* editor, as demonstrated in the (D³UI) Content Authoring service usage model. The tool invokes the resolver, specifying the identifier. The resolver returns to the tool the locator for the object for further processing, typically obtaining the object from its storage location. All of the interactions with the resolver are hidden from the end user (the end user may not know which service end point was used) and the resolution workflow is fully automated.

Applicability

The Applicability element details when the Service Genre is used or not used. It represents specific constraints and assumptions on the use of the Service Genre. It is more specific and normative than the informal Usage Scenarios. No critical or essential information required to understand the Service Genre should be included.

As defined, the resolve service genre is applicable for resolving any identifier, returning the object locator.

Any subsequent processing of the locator is out of scope for this service genre.

The service genre is defined for resolving a single identifier for one object.

The service genre is defined to return multiple locators for an object. Management and selection from multiple locators is not defined by the service genre.

The service genre does not define how to interpret the locator.

The service genre does not support authentication to use the service end point. Any identifier may be resolved.

Behavior of the service genre is not defined if communications need to be secure.



Functionality

The Functionality element details and illustrates the behaviors provided by the Service Genre, in terms of services, workflows, messages, resources, and data objects. It is not a technical description of the Service Genre, but it must provide sufficient information to develop the Requests & Behaviors of the Service Genre and to evaluate conformance of the Service Genre to the stated behaviors. It should not include implementation-specific information.

The resolve service genre supports a single function to resolve an identifier.
A request SHALL specify:

- An identifier [REQUIRED].

No other functionality is defined. The functionality that is defined MAY be extended. Major new or additional functionality SHOULD NOT be included; extended capabilities SHOULD be included in other service genres.

Authenticated resolution SHALL be defined as a separate service genre.

Requests & Behaviors

The Requests & Behaviors element details all of the behaviors exposed by the Service Genre. It lists functionality that can be used by applications or Service Implementations. The information must be sufficient to specialize the Service Genre to one or more Service Expressions.

The format and definitions for requests and responses SHALL be defined by the service expressions that specialize the service genre. Requests and behaviors SHALL meet the following conditions:

- One *Resolve Function* SHALL be defined:
 - The function SHALL be capable of resolving an identifier from the identifier system, returning the associated object locator.
 - A normal (non error) response SHALL include one or more locators.
- Responses shall include error indicators or other needed control information.

Use & Interactions

The Use & Interactions element details how the how the Requests & Behaviors are combined to provide the stated functionality of the Service Genre. This is a precise technical description of how the Service Genre provides its capabilities.

The model for a client to interact with a service implementation SHALL be defined by the service expressions that specialize the service genre.

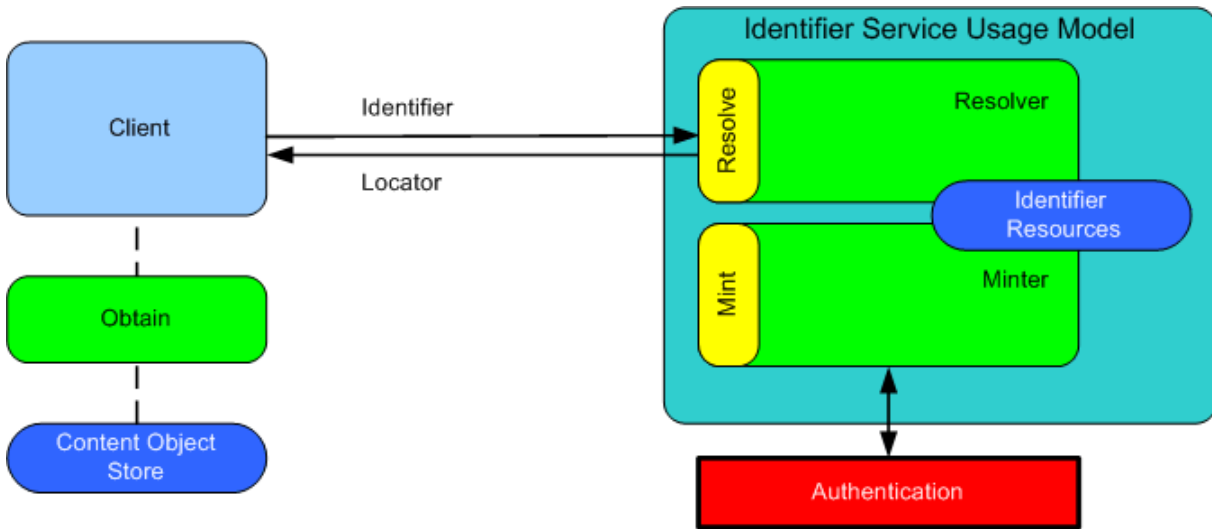
Structure

The Structure element provides a conceptual model of how the Service Genre manipulates data and state to provide results in response to requests. An illustration of the structure should be included. The structure information is used to specialize the Service Genre to one or more Service Expressions, but is not needed to understand how to use or interact with the Service Genre.

The structure of the service genre SHALL be defined by the service expressions that specialize the service genre.

The overall flow of interactions with the service is illustrated in the diagram.





© Copyright 2007, Learning Systems Architecture Lab, All Rights Reserved.

Figure 1: Resolve Service Genre [© Copyright 2007, Learning Systems Architecture Lab, All Rights Reserved.]

Design Decisions & Tradeoffs

The Design Decisions & Tradeoffs element documents overall choices, tradeoffs and their implications on the design of the Service Genre. It does not address the issues related to the internal details of a Service Implementation used to implement the Service Expression based on the Service Genre. No critical or essential information required to understand the Service Genre should be included.

Internal processes of the identifier system are not defined; the service genre only defines interfaces and observable behaviors, not internal models and structure. Processes SHALL be defined in the service expressions that specialize the service genre.

The resolver is designed to not require authentication. Anyone can obtain the locators for a given identifier. The process of obtaining the corresponding object may require authentication or authorization controls. Authenticated or authorized resolution could be described in a separate service genre, but since anyone may generate a locator, this does not provide any particular benefits except knowing that a particular identifier was formally minted, associated with a locator and managed by an identifier system.

Implementation Guide & Dependencies

The Implementation Guide & Dependencies element describes issues of concern in specializing the Service Genre to one or more Service Expressions and their corresponding Service Implementations. Resolution of issues discussed is deferred to the actual Service Implementation design. No critical or essential information required to understand the Service Genre should be included.

The following design decisions apply to the service expressions that specialize the service genre.

Structure and Design:

- A service implementation provides interfaces to an identifier system resource. The provisioning of these resources is not defined but MUST be considered in the implementation design.

Performance:

- A service implementation SHALL be capable of handling simultaneous requests from different clients.



Security and Privacy Considerations:

- Service implementations may be subject to denial-of-service attacks.
- Care should be taken to maintain privacy of any personal data or other records that may disclose usage patterns.

Applicable Standards

The Applicable Standards element lists domain-specific standards applicable to the Service Genre as a whole. Standards are described in terms of name, version and citation link. Conformance requirements and extensions should be noted. Standards used to implement applications are excluded. No critical or essential information required to understand the Service Genre should be included.

None. No standards are directly applicable to the service genre as a whole.

The service expressions that specialize the service genre **SHALL** be defined in terms of standards:

- Service expressions **SHALL** specify applicable standards for locators.
- Service expressions **SHALL** specify applicable standards for identifier systems.
- Service expressions **SHALL** specify applicable communications, encoding and transport protocol standards.

Known Uses

The Known Uses element documents actual uses of the Service Genre in applications and systems, including how used, extensions, limits.

Actual: The service genre is specialized in the D³UI development-to-deposit prototype using *Reload* to resolve Handles for metadata objects and content objects (content packages).

Actual: The service genre is specialized in the D³UI discovery-to-delivery prototype using the *ADL SRTE* to resolve Handles for metadata objects and content objects (content packages).

Potential: The service genre could be used in any content management or content creation process to create resolvable identifiers.

Potential: The service genre could be used in a service usage model for a repository federation. Identifiers are assigned to various object types in different parts of the workflow.

Service Genre Dependencies

The Service Genre Dependencies lists other Service Genres that this Service Genre is dependent upon. Dependent Service Genres are identified by name and version.

None.

Related Service Usage Models

The Related Service Usage Models element documents and illustrates how the Service Genre is used in Service Usage Models. Related Service Usage Models are identified by name and version. No critical or essential information required to understand the Service Genre should be included.

(D³UI) authoring: V1.0.0.

[[D³UI content-authoring-sum-v100](#) / hdl:1870/3FD212C661F1464AA79DBB22D3DE00FF]

Resolve (genre) is part of the (D³UI) content authoring service usage model (genre based) and is used within an authoring and content deposit workflow to resolve identifiers for objects (metadata, content) stored in repositories and registries (via an obtain service genre).



(D³UI) delivery: V1.0.0.

[[D³UI delivery-sum-v100](https://hdl.handle.net/1870/01D0643B992B489ABEB4D89806918450) / hdl:1870/01D0643B992B489ABEB4D89806918450]

Resolve (genre) is part of the (D³UI) delivery service usage model (genre based) and is used within a discovery-to-delivery workflow to resolve identifiers for objects (metadata, content) stored in repositories and registries (via an obtain service genre).

(FRED) repository federation: V1.0.0.

[[link to service usage model](#)]

Resolve (genre) is a part of the repository federation service usage model (genre based) and is used to resolve identifiers for objects (metadata, content) stored in repositories and registries (via an obtain service genre). The repository federation service usage model provides an integrated set of service genres used to populate and use the metadata registry that supports a repository federation. Functionality includes content management (creation and management of metadata objects within a repository federation), content discovery (discovery of content objects from a repository federation) and content delivery (retrieval of and access to content objects discovered through a repository federation).

(ADL-R) repository federation: V1.0.0.

[[ADL-R repository-federation-sum-v100](https://hdl.handle.net/1870/E2FE4AD428A1468FA284E270245F72D7) / hdl:1870/E2FE4AD428A1468FA284E270245F72D7]

The (ADL-R) repository federation service usage model is a derivative subset of the (FRED) repository federation service usage model. For the purposes of this service genre they are interchangeable.

identifier: Vx.xx.

[[link to service usage model](#)]

The identifier service usage model is an integrated set of service genres that provides the operational identifier infrastructure. Functionality includes the creation, registering, publishing, managing and resolving of individual identifiers.

identifier provisioning and management: Vx.xx.

[[link to service usage model](#)]

The identifier provisioning and management service usage model is an integrated set of service genres that manages the identifier infrastructure. Functionality includes provisioning and management of the identifier system.

Related Service Patterns

The Related Service Patterns element documents and illustrates how the Service Genre is used in Service Patterns. Related Service Patterns are identified by name and version.

None.

References

The References element includes references and bibliographic citations to works needed to understand the Service Genre.

PILIN Ontology for Identifiers and Identifier Services

Glossary & Terminology

The Glossary & Terminology element defines domain-specific terms used in documenting the Service Genre.

Terms in the LSAL *Service Glossary* are applicable to this Service Genre.



Working Notes / Things To Do

The Working Notes element documents open issues in the development of the Service Genre and is for internal project use only. It should be deleted before the Service Genre is submitted for publication.

None.

