

Linked Data for Professional Education (LD4PE) A project of the DCMI Education & Outreach Committee

http://explore.dublincore.net/

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- Linked Data for Professional Education (LD4PE) is a project under the jurisdiction of the DCMI Education & Outreach Committee, funded by the Institute of Museum and Library Services (IMLS).
 - The intent is that the LD4PE website will continue to be supported by DCMI and its members as part of DCMI's larger education and outreach activities, and be used in other activities as appropriate once the project is completed.
- The project is developing a Web-based Linked Data platform to support the structured discovery of the learning resources available online by open educational resource (OER) and commercial providers.
 - At the heart of the Linked Data website is a competency framework for Linked Data that supports indexing learning resources according to the specific competencies, skills, and knowledge they address.
 - To do this, the LD4PE website itself leverages Linked Data technology by assigning global identifiers (URIs) to statements of competency, then citing those URIs in metadata descriptions of learning resources.

Who Is Involved?



















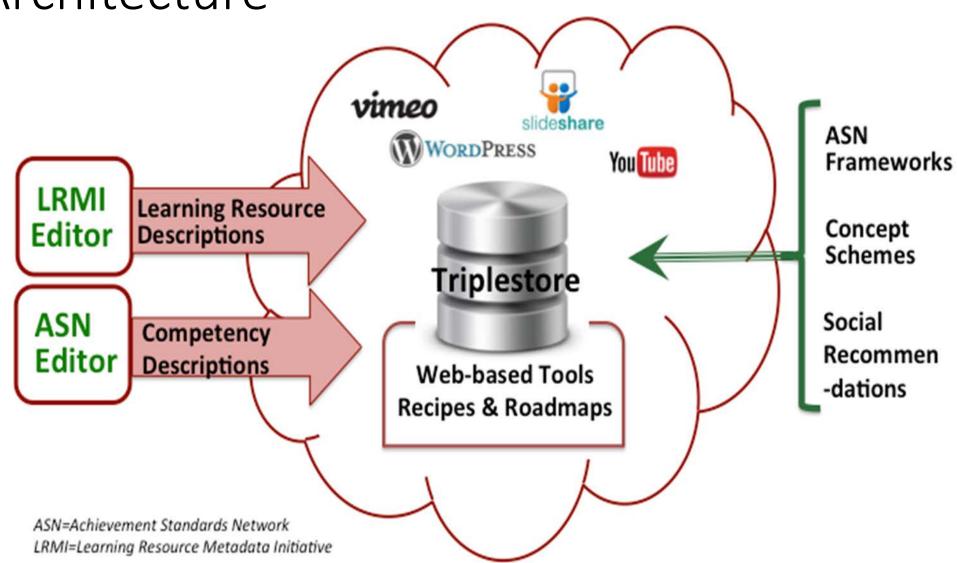


Key Project Personnel

- University of Washington
 - Michael Crandall
 - Stuart Sutton
 - David Talley
 - Abi Evans
- Kent State University
 - Marcia Zeng
 - Sean Dolan
- DCMI
 - Stuart Sutton
 - Tom Baker
 - Joseph Chapman

- Content Partners
 - Elsevier
 - Michael Lauruhn
 - Access Innovations
 - Marjorie Hlava
 - Synaptica
 - David Clarke
 - Sungkyunkwan University
 - Sam Oh
 - OCLC
 - Eric Childress

Architecture



Project Deliverables

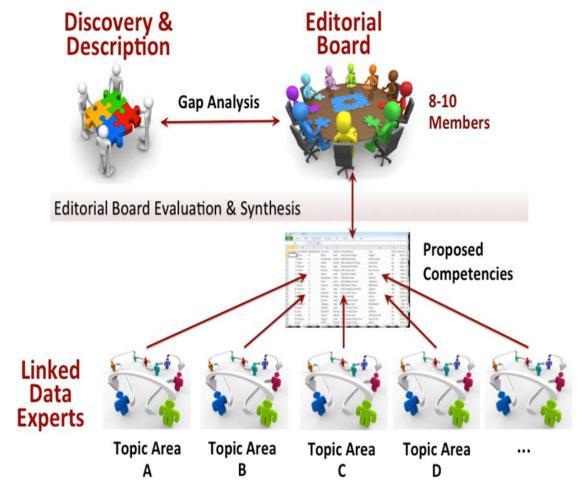
- Competency Framework. A "Competency Index for Linked Data" based on the Achievement Standards Network Description Language (ASN-DL) for describing formally promulgated competencies and benchmarks.
- **Toolkit.** An openly available, web-based tool set to support the generation of RDF metadata describing: (a) learning resources; and (b) ASN-based competency frameworks and SKOS-based concept schemes.
- **Learning Resource Descriptions.** A set of cataloged learning resources that have been mapped to the competencies and benchmarks of the Competency Index to support competency-based resource discovery by teachers, trainers and learners.
- **LD4PE Website.** A website to be managed by DCMI as part of its educational agenda for open discovery of competency-based learning resources, access to the toolkit, learner trajectory maps, and supporting resources.
- **Best Practices.** Readily accessible best practice documentation for all processes, from community-based competency framework development and LR description through learner trajectory creation.



The Competency Index

The Competency Index

- The Competency Index (CI) for Linked Data is comprised of a set of topically arranged assertions of the knowledge, skills and habits of mind required for professional practice in the area of Linked Data
- Developed by an Editorial Board through extensive consultation
- Arranged hierarchically by Topical Cluster » Topic » Competency » Benchmark





Explore Learning Resources by Competency

Browse by Competency

 ➤ How does this work?

New Comp Index (164)

Fundamentals of Resource Description Framework QC

- ▶ Identity in RDF (22)
- ▼ RDF data model (71)

Understands the difference between literals

and non-literal resources. (12)

Knows the subject-predicate-object

component structure of a triple. (28)

Understands that URIs and literals denote things in the world ("resources") real,

imagined, or conceptual. (18)

Understands that resources are declared to be members (instances) of classes using the

property rdf:type. (19)

Understands the use of datatypes and

language tags with literals. (10)

Understands a named graph as one of the collection of graphs comprising at RDF dataset, with a graph name unique in the costext of that dataset. (8)

Competency: Understands The Difference Between Literals And Non-literal Resources.

Module 1: Introduction And Application Scenarios

This module introduces the main principles of Linked Data, the underlying technologies and background standards. It provides basic knowledge for how data can be published [...]

(1 user rating)

By Abi Evans | August 13th, 2015 | O Comments

Read More >

RDF 1.1 Primer

This primer is designed to provide the reader with the basic knowledge required to effectively use RDF. It introduces the basic concepts of RDF and [...]

*** (Please share your rating)

SPARQL Tutorial: A First SPARQL Query

A brief, text-based tutorial demonstrating a simple first query and showing how to execute it with Apache Jena. Shows how to formulate a simple command [...]

(Please share your rating)

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Read More >

RDF-101

In this lesson you will learn: 1) What RDF is and how it fundamentally differs from XML and relational databases; 2) What is meant by [...]

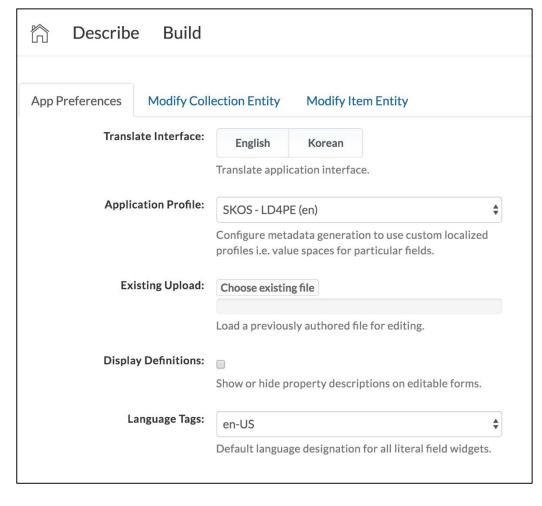
*** (Please share your rating)



The Toolkit (Part 1)

The Editors

- Two lightweight, client-side editors have been developed as part of the LD4PE toolkit
 - Taxonomy editor for competency frameworks (ASN) & concept schemes (SKOS)
 - Learning resource editor (using LRMI concept schemes and vocabularies)
 - Single record editor
- No required backend server
- Work offline and online
- Handle all CRUD operations (create, read, update, delete)
- By intention and design, these are NOT enterprise-level editors

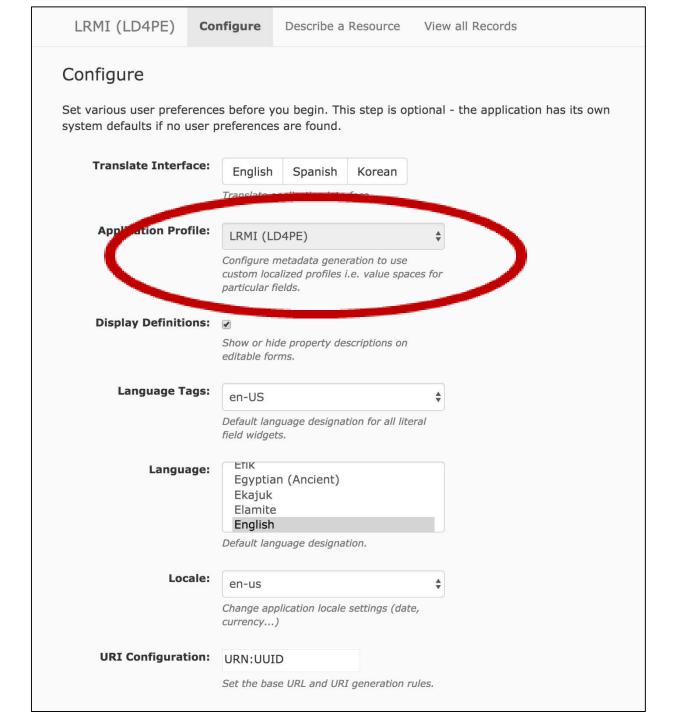


Two functions are available- **Describe** and **Build**. **Describe** supports description of a concept scheme or a competency framework as a whole

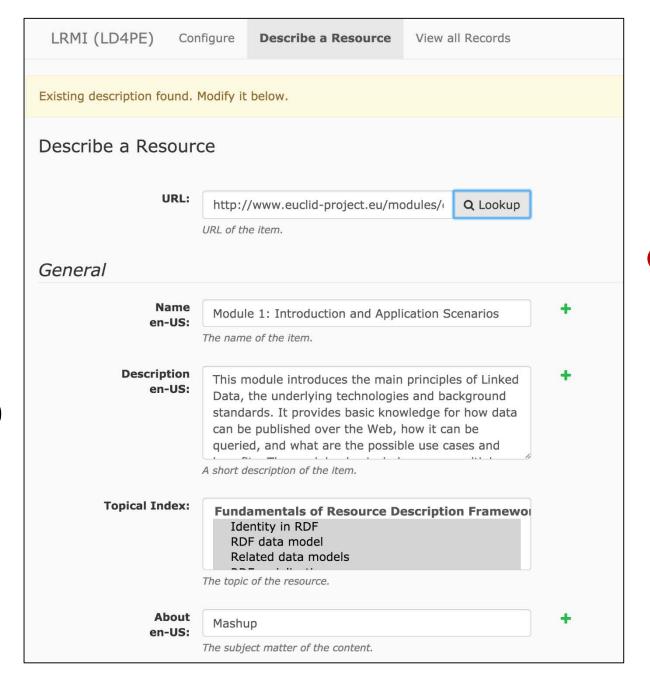
The Competency Index editor is designed to create both competency indexes and concept schemes through predefined application profiles

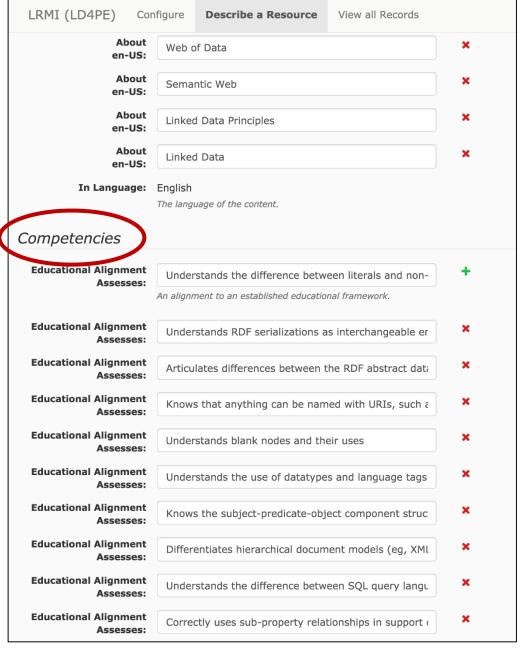
	Describe	Build	
Genera	I		
	Title en-US	Ocean Animals	+
	Description en-US	My first concept scheme	
			+
	Creator en-US		+
		Submit Cancel	

n De	escribe Build			Ö	F
General Pref. Labe en-Us Concep Status Thumbnai	t Proposed Under Review Published	Fundamentals of Resource Description Framework Identity in RDF RDF data model Related data models RDF serialization Fundamentals of Linked Data Web technology Linked Data principles Linked Data policies and best practices Non-RDF linked data RDF vocabularies and application profiles			
flesh out the competency in (and displayin concepts or co	ction allows a user to concept scheme or ndex by describing g) the individual empetencies making of scheme or the ramework		Finding RDF-based vocabularies Maintaining RDF vocabularies Versioning RDF vocabularies Publishing RDF vocabularies Mapping RDF vocabularies RDF application profiles Designing RDF-based vocabularies Creating and Transforming Linked Data Managing identifiers (URI) Creating RDF data Versioning RDF data RDF data provenance Cleaning and reconciling RDF data Mapping and enriching RDF data Interacting with Linked Data Processing RDF data Querying RDF data Visualizing RDF data		



The Learning Resource Editor can be configured for different application profiles, but currently defaults to the LD4PE profile for editing. This flexibility will allow the creation of other resource sets for different domains in the future.





LRMI (LD4PE) Con	nfigure	Describe a Resource	View all Records		
Rights					
Author en-US:	that HTM	oor of this content. Please note ti AL5 provides a special mechanisr pip via the rel tag. That is equiva	m for indicating	+	
Publisher en-US:	used interchangeably. EUCLID Project The publisher of the creative work.			+	
License:	License: http://creativecommons.org/licenses/by/4.0/ A license document that applies to this content, typically indicated by URL. Date Created: (click to add) The date on which the creative work was created.				
Date Created:					
Based on URL:	A resour term car	+			
Pedagogy Educational Use:	☐ Pro	essment Instruction fessional Development foose of a work in the context of e	education.		
Learning Resource Type:	Coulons Education Form Interest Less Rub Syll	ernate Assessment Assessurse Dataset Demonstrator Curriculum Guide Mative Assessment Imagerim/Summative Assessment Primagerim/Summative Assessment Primagerim/Summative Assessment Primagerim/Scoring Guide Self Assessment Primageric Scoring Guide Primag	ges/Visuals It Learning Activity ary Source ssessment tion Text		

LRMI (LD4PE) Co	nfigure Describe a Resource	View all Records
Accessibility		
Accessibility API:	 Android Accessibility Blackberry Accessibility iOS Accessibility Java Access Mac OSX Accessibility MSAA Indicates that the resource is compatible accessibility API. 	cessible2 ssibility A UI Automation
Accessibility Control:	■ Full Keyboard Control ■ Full M ■ Full Switch Control ■ Full Tou ■ Full Video Control ■ Full Voice Identifies input methods that are sufficient described resource	ch Control e Control
Accessibility Feature:	Alternative Text Annotation Audio Description Book Mar Captions Chemical Markup Described Math Display Tra High Contrast Audio High C Index Large Print Latex Math ML None Print Page Reading Order Sign Langua Structural Navigation Table Tactile Graphic Tactile Obje Timing Control Transcript Unlocked	Pks Braille Language nsformability ontract Display Long Description e Number ge of Contents ct Tagged PDF TTS Markup
	Content features of the resource, such a alternatives and supported enhancemen	•
Accessibility Hazard:	 □ Flashing No Flashing Hazard □ Motion Simulation No Motio □ Sound No Sound Hazard A characteristic of the described resource dangerous to some users. 	n Simulation Hazard

Tech Talk Explore Updates About

< Previous Next >

Module 1: Introduction And Application Scenarios

This module introduces the main principles of Linked Data, the underlying technologies and background standards. It provides basic knowledge for how data can be published over the Web, how it can be gueried, and what are the possible use cases and benefits. The module also includes some multiple choice questions in the form of a quiz, screencasts of popular tools, and embedded videos.

URL: http://www.euclid-project.eu/modules/coursel &

Keywords: Linked Data, Linked Data Principles, Semantic Web, Web of Data, XML, RDF, HTTP URIs, Triple, Graph, SPARQL, Mashup

Publisher: EUCLID Project

Language: http://id.loc.gov/vocabulary/iso639-2/eng

Time required: P2H Educational use: instruction Educational audience: professional & Interactivity type: mixed &

Favorite \$

Competencies

Articulates differences between the RDF abstract data model and the XML and

- Knows the subject-predicate-object component structure of a triple.
- Understands blank nodes and their uses.
- Understands the difference between literals and non-literal resources.
- Understands the use of datatypes and language tags with literals.
- Correctly uses sub-property relationships in support of inference. Demonstrates a working knowledge of the forms and uses of SPARQL result sets
- (SELECT, CONSTRUCT, DESCRIBE, and ASK). Understands that a SPARQL query matches an RDF graph against a pattern of
- triples with fixed and variable values.
- Understands the basic syntax of a SPARQL query.
- Differentiates hierarchical document models (eg, XML) and graph models (RDF). Knows that anything can be named with Uniform Resource Identifiers (URIs), such as
- · agents, places, events, artifacts, and concepts.
- Knows the primary organizations related to Linked Data standardization. Knows the SPARQL 1.1 Update language for updating, creating, and removing RDF
- graphs in a Graph Store
- Understands the difference between SQL query language (which operates on
- database tables) and SPARQL (which operates on RDF graphs). Understands RDF serializations as interchangeable encodings of a given set of triples
- (RDF graph).
- · Understands the role of formally declared domains and ranges for inferencing. Uses the SELECT clause to identify the variables to appear in a table of query
- · results.

Descriptive metadata

Assigned competencies



Learning Resource Descriptions



Explore Learning Resources by Competency

Browse by Competency

- ➤ How does this work?
- New Comp Index (164)
 - ▼ Fundamentals of Resource Description Framework (90)
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常常常常 (Please share your rating)



Module 1: Introduction and Application Scenarios

In Saved Sets

New Version (Abi Evans)
What's This?

Add Resource to Saved Set

- Save to Your Saved Set -

Add to Set

Previous Next >

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Language: http://id.loc.gov/vocabulary/iso639-2/eng

Time required: P2H

Educational use: instruction &

Educational audience: professional

Interactivity type: mixed 🗹

New Learning Resources

- Gap analysis on existing learning resources (over 400 cataloged)
 - Pinpointed areas where content was lacking or weak against the competencies identified in the Competency Index
- New learning resources currently being created
 - Four content partners (Synaptica, Access Innovations, Sungkyunkwan University, and Elsevier) are creating new learning resources (assessments, video tutorials, etc) to partially fill the gaps
 - OCLC also contributed a static set of triples derived from their records as a stable environment to develop repeatable examples for assessment and demonstration purposes in creating new learning resources
- Ultimate goal is for the community to continue adding resources over time,
 enhancing and extending the utility of the service



Toolkit (Part 2)



Module 1: Introduction and Application Scenarios



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Time required: P2H

Educational use: instruction of

Educational audience: professional &

Interactivity type: mixed [3]



Individual Set Listing

List Resources in Saved Set

New Version by Abi Evan▼

Save as New Set

Enter new set name

Set is public

Save New Set

Learning Resources in Saved Set: New Version (3 resources)

Module 1: Introduction and Application Scenarios

This module introduces the main principles of Linked Data, the underlying technologies and background standards. It provides basic knowledge for how data can be published[...]

Deciphering the Semantic Web

What is the Semantic Web? Technology
Voice recently interviewed some leading
Semantic Web researchers with both
academic and industrial experience to find
out what it[...]
Remove from set 12

SPARQL 1.1

Remove from set 18

An overview of SPARQL including its history, and examples of queries with operators. Also includes brief discussion of Apache Jena (a Java Framework for Linked[...]

Remove from set 🗹



Saved Sets

All users

Create a New Saved Set

Enter new set name

Enter new set
description

Set is public

Create New Set

Duplicated Set

Created: 8/8/2016

Testing creation of a new set by saving an existing one with a new name.

Set Creator: dtalley &

New Version DWT

Created: 7/24/2016

Testing creation of a new set by saving an existing one with a new name.

Set Creator: dtalley 🗹

Create a Set then Add Resources

Created: 7/24/2016

Testing for new set creation from the All Saved Sets Listing page.

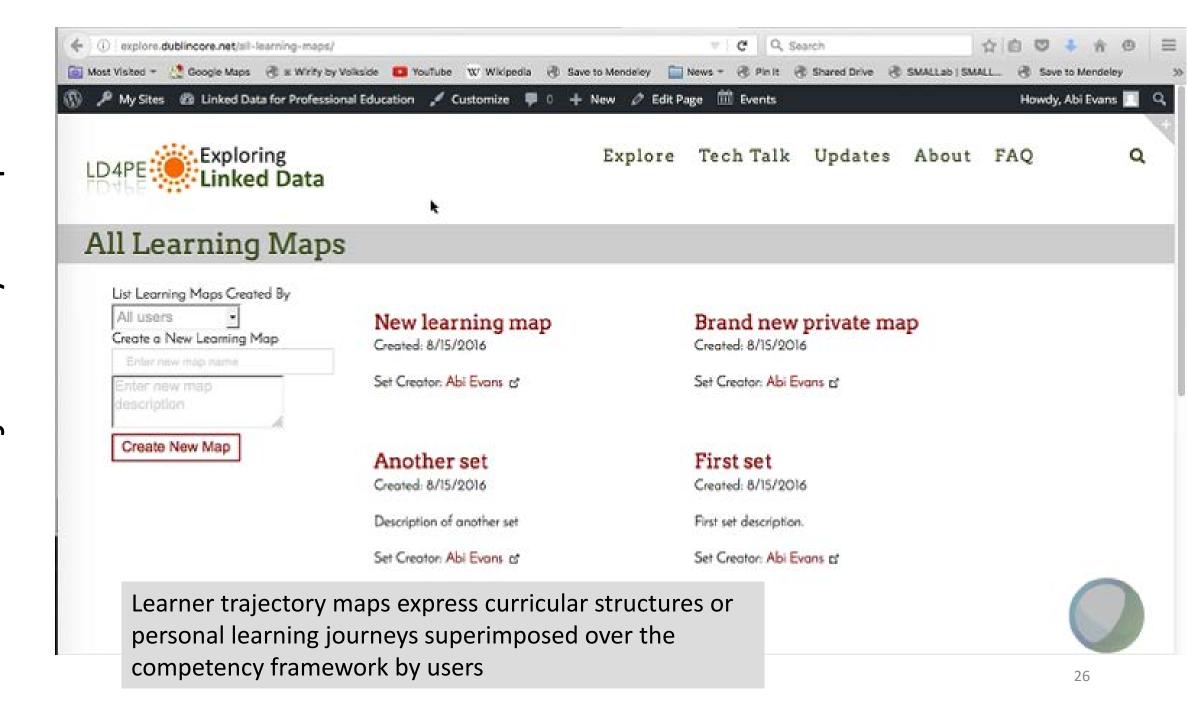
Set Creator: dtalley 🗗

Empty New Set

Created: 7/23/2016

This set is empty!

Set Creator: Abi Evans 🗗





Learning Map Builder

- ▶ New Comp Index Add to map >>
 - ► Fundamentals of Resource Description Framework Add to map >>
 - ► Fundamentals of Linked Data Add to map >>
 - ► RDF vocabularies and application profiles Add to map >>
 - Creating and transforming Linked Data Add to map >>
 - ▶ Interacting with RDF data Add to map >>
 - Creating Linked Data applications Add to map >>

Learning Map: Brand new private map

- ➤ What's This?
- Public (anyone can view) Private (only I can see)

Delete Set Edit Description

Identity in RDF

22 resources | Remove from learning map

RDF data model

71 resources | Remove from learning map

RDF serialization

31 resources | Remove from learning map

Related data models

18 resources | Remove from learning map

Interacting with RDF data

116 resources | Remove from learning map



Brand new private map

















The Website

The LD4PE Website



Welcome



Theory & Background

The primary goal of the RDF-modeled Competency Index for Linked Data is to provide a means for mapping learning resources descriptions to the competencies those resources address to assist in finding, identifying, and election resources appropriate to specific learning needs. — Learn More 13

Featured Resource

Learn About SPARQL 1.1 &

This S5 format slideshow details the changes made to the query language in SPARQL 1.1- it is not a basic introduction to SPARQL and assumes that the reader is already familiar with the basic functions of SPARQL 1.0.

Recent Updates

Updated version (May 2016) of the LD4PE Competency Index available for review and feedback

(5/24/2016)

Current version of the LD4PE Competency Index ready for review and feedback

(1/26/2016)

Webinar: Linked Data Fragments - Querying multiple Linked Data sources on the Web (12/9/2015)

http://explore.dublincore.net/

... LD4PE made possible by the following organizations ...



















Best Practices

Briefing Papers

Tech Talk

Competency Index Overview

Briefing Papers



ASN Briefing #1: ASN-DL Overview

Overview of the ASN Description Language (ASN-DL) including the model, extension, and description of select mapping properties.

http://explore.dublincore.net/asn-briefing-1/ &

ASN Briefing #2: ASN Ontology

Definition of the Achievement Standards Network ontology including full description of all classes and properties.

http://explore.dublincore.net/asn-briefing-2/ &

ASN Briefing #3: Introduction and specification of ASN "Profiles"

Description of mechanisms for extension and refinement of the ASN-DL to meet national or organizational needs.

http://explore.dublincore.net/asn-briefing-3/

ASN Briefing #4: LD4PE Overview

High-level overview of the Linked Data for Professional Education (LD4PE) project. http://explore.dublincore.net/briefing-papers/ld4peoverview/

Categories

- > Briefing Papers
- > Overview Briefings
- > Technical Briefings
- > Uncategorized
- > Webinars

Practices

Final Thoughts

- LD4PE has been designed as a lightweight, replicable, community-driven resource, which can be extended into other domains with minimal overhead
- The editors for the Competency Index and the Learning Resources interact directly with the triple store, allowing easy development of new collections for different purposes
- The community-based services implemented on top of the triple store (ratings, saved sets, learning maps) allow users to share knowledge and drive quality control
- Our hope is that LD4PE will be the first of many instances developed to assist in the teaching and learning of metadata and knowledge organization concepts, adding to the long-term mission of DCMI



Questions?

http://explore.dublincore.net/

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