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Loading LAM data into VocBench3: technical instructions

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Abstract

This document describes how to load the LAM data into Vocbench 3 (VB3) editor. Specific explanations are provided on how to create the projects, how they shall be configured, which custom form shall be created and for which properties, and which additional resources are to be imported.

Introduction

The initiative for modeling the Legal Analysis Methodology (LAM) described in [1] aims, among others, providing a framework and a methodology to maintain the LAM descriptions. Previously LAM data were maintained as a set of Word and Excel documents, which made the editing cumbersome and most importantly error prone. Making references to formal properties in CDM ontology, manually tracking rules and dependencies between LAM elements was increasingly difficult as the descriptions became larger. Moreover, sharing the documents, collecting input and the interaction with stakeholders and partners was also difficult.

In the course of this initiative a data model was designed, LAM-SKOS-AP [2], along with a tabular representation [3] and a set of transformation tools among which, in particular, one [4] was developed to generate RDF [5] representations and another one [6] PDF/HTML documents.

One of the primary needs was to structure and organise the LAM data in order to facilitate its editing, maintenance, validation and dissemination. This should cover a complete description of document classes, properties, metadata and constraints; and enable an easy navigation based on the dependencies between them.

This need is set to be satisfied by adopting VocBench3 (VB3) [7] as the editing tool for the LAM data. VocBench3 is a web-based, multilingual, collaborative development platform for managing OWL ontologies, SKOS(XL)[8] thesauri and generic RDF datasets.

This is possible because the LAM data model was designed specifically with this goal in mind. SKOS constitutes the backbone of the model which was flashed out with project specific extensions into an Application Profile (AP) called LAM-SKOS-AP [2].

The LAM data expressed in LAM-SKOS-AP format can be loaded into VB3, and with some extra configurations can benefit from the fully fledged functionality of the editor. This document sets off to explain exactly this: how the data shall be loaded and what configurations must be done.

Prerequisite resources

This section describes the requirements and the necessary resources that shall be used for the data loading and initial project setup in the VB3 system.

The RDF representation of LAM data is generated by a transformation script from its Excel representation. More information regarding the structure of the excel file can be found in [3] available in the LAM github repository[1]. The outcome of this transformation are three Turtle/RDF **data files**, which are available in the data folder of lam4vb3 repository[2]:

[1] https://github.com/meaningfy-ws/lam4vb3/blob/master/deliverables/wp1-4-excel-structure/main.pdf

[2] https://github.com/meaningfy-ws/lam4vb3/blob/master/data

- LAM properties file (lam_project_classes_v2.ttl)
- LAM classes file (lam_project_properties_v2.ttl)
- Celex classes file (celex_project_classes_v2.ttl)

Each of these data files will be loaded individually into a VB3 project, correspondingly:

- LAM properties project
- LAM classes project
- Celex classes project

The **model** describing structure of the LAM data, the LAM-SKOS-AP application profile, is described in [2] and the UML model can be consulted in the models folder of the lam4vb3 repository[3].

The **custom forms** necessary extending VB3 editing capabilities to the specificities of LAM data are available in the resources folder or lam4vb3 repository[4] and described in the readme.md[5] file.

The **external ontologies** to be imported in each of the projects are provided in the resources folder of lam4vb3 repository[6].

The set of **namespaces** adopted in the LAM data is as follows:

- lam http://publications.europa.eu/ontology/lam-skos-ap#
- lamd http://publications.europa.eu/resources/authority/lam/
- celexd http://publications.europa.eu/resources/authority/celex/

- corporate-body http://publications.europa.eu/resource/authority/corporate-body/
- subject-matter http://publications.europa.eu/resource/authority/subject-matter/
- country http://publications.europa.eu/resource/authority/country/
- resource-type http://publications.europa.eu/resource/authority/resource-type/
- dir-legal-act http://publications.europa.eu/resource/authority/dir-eu-legal-act/
- eurovoc http://eurovoc.europa.eu/
- fd_330 http://publications.europa.eu/resource/authority/fd_330/
- fd_335 http://publications.europa.eu/resource/authority/fd_335/
- fd_340 http://publications.europa.eu/resource/authority/fd_340/
- fd_365 http://publications.europa.eu/resource/authority/fd_365/

[3] https://github.com/meaningfy-ws/lam4vb3/blob/master/models/lam-skos-ap-2021.eapx
[4] https://github.com/meaningfy-ws/lam4vb3/blob/master/resources/vb3_resources
[5] https://github.com/meaningfy-ws/lam4vb3/blob/master/resources/vb3_resources/readme.md
[6] https://github.com/meaningfy-ws/lam4vb3/blob/master/resources/imports_rdf

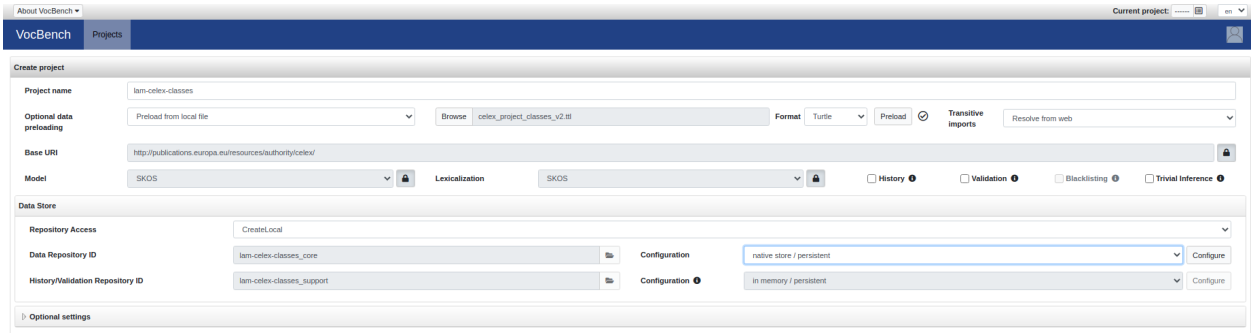
- cdm http://publications.europa.eu/ontology/cdm#
- euvoc http://publications.europa.eu/ontology/euvoc#

- dc http://purl.org/dc/elements/1.1/
- dct http://purl.org/dc/terms/
- skos http://www.w3.org/2004/02/skos/core#
- skos-xl http://www.w3.org/2008/05/skos-xl#
- shacl http://www.w3.org/ns/shacl#

- owl http://www.w3.org/2002/07/owl#
- rdf http://www.w3.org/1999/02/22-rdf-syntax-ns#
- rdfs http://www.w3.org/2000/01/rdf-schema#
- xsd http://www.w3.org/2001/XMLSchema#

Creating projects

1. Click on **Create** button (upper-left corner) and a new VB3 project configuration page will be displayed

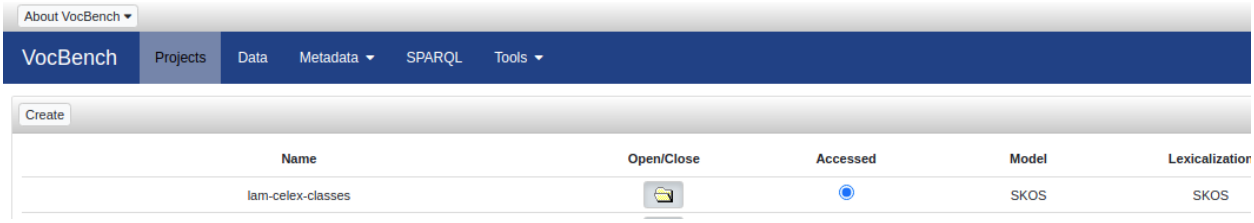


2. Write the preferred **Project name**
3. Choose “Preload from local file” as an **Optional data preloading**
4. **Browse** the local saved .ttl project file
5. **Format** should be Turtle
6. Set **Transitive imports** to “Resolve from web”
7. Click on **Preload** button - this will autocomplete the **Base URI**, **Model** and **Lexicalization** fields

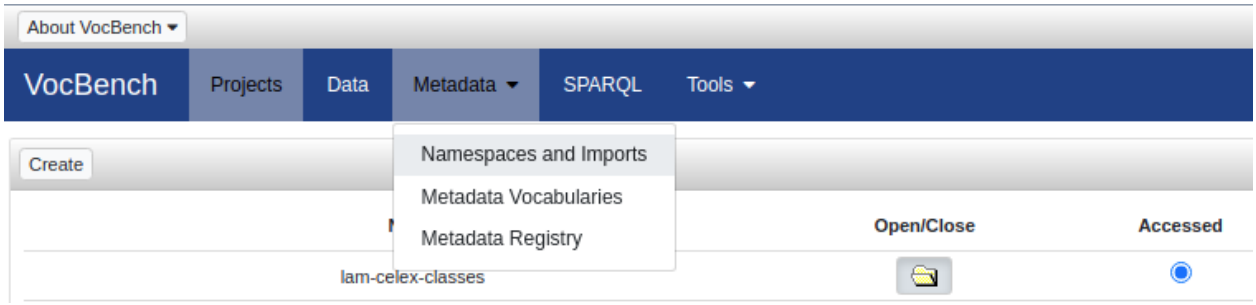
8. Make sure to set Data store **Configuration** to “native store / persistent”
9. Click on **Create** button (bottom-right corner)

Configuring projects

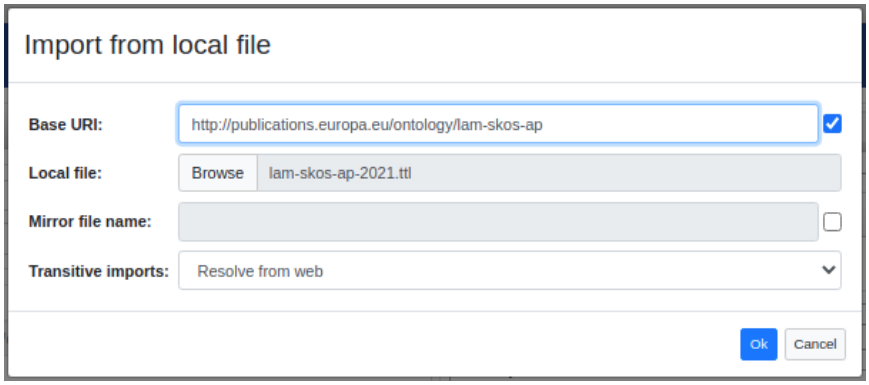
1. Select the desired project by using the radio button in the **Accessed** column



2. Click on **Metadata** -> **Namespaces** and Imports to configure the desired imports



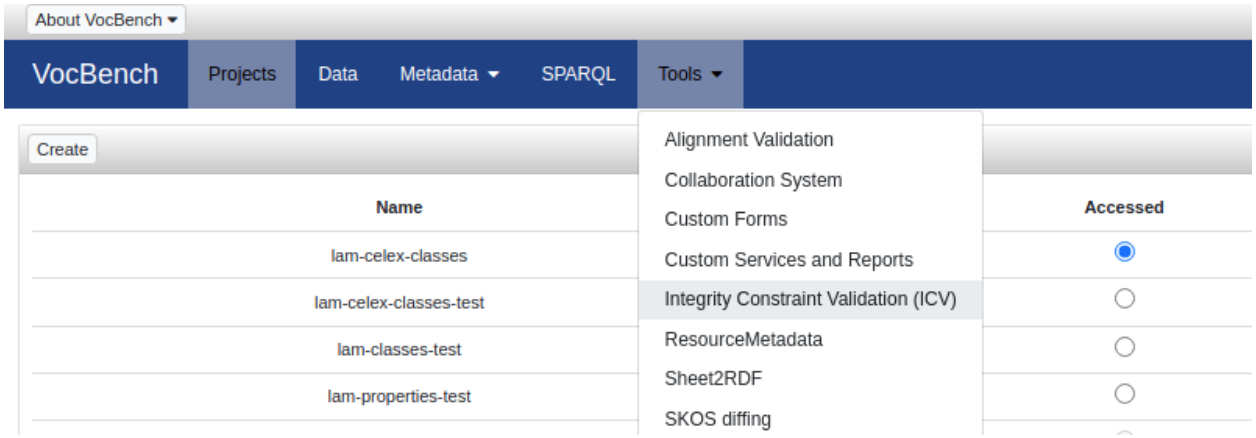
3. On the **Imports field** -> Add import -> From local file



Browse for the *lam-skos-ap-2021.ttl* file provided on the LAM github repository (https://github.com/eu-vocabularies/lam4vb3/tree/master/models/), provide the lam-skos-ap Base URI (http://publications.europa.eu/ontology/lam-skos-ap) and click Ok.

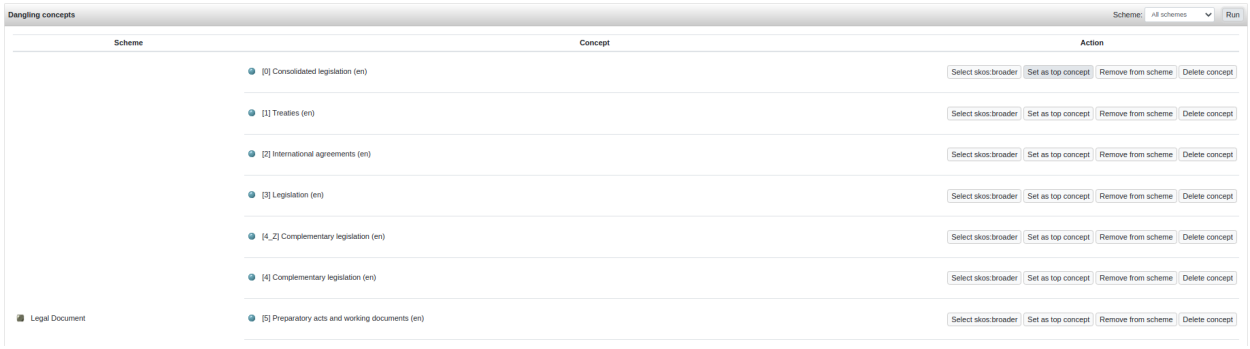
If any Imports fails, choose to Repair from local file to upload the specific import file (e.g. dash.ttl and tosh.ttl from TopBraidComposer workspace).

4. Click on Tools -> Integrity Constraint Validation (ICV) in order to define topConcept relationships



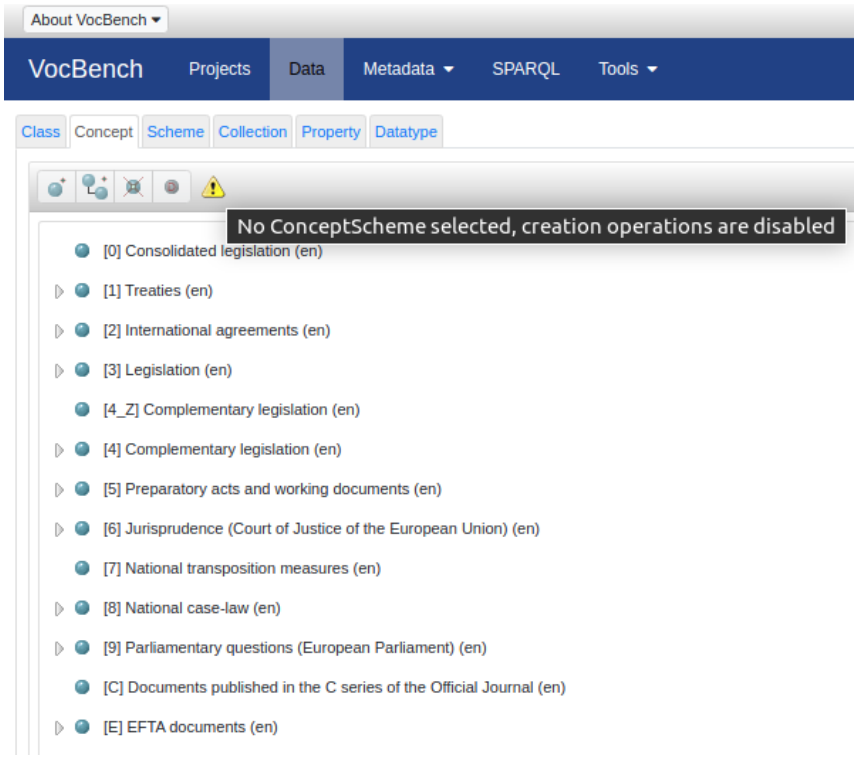
Start a new check-up by clicking **Go** on the **Structural checks** -> **Dangling concepts**. Then press **Run** for All schemes.

For LAM CELEX classes project, only some of the concepts are chosen to be topConcept by clicking on **Set as top concept** for each one.



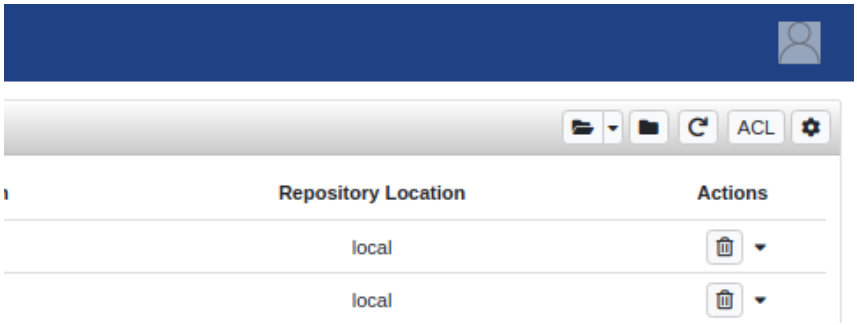
For the other two LAM projects (properties and classes) you should choose all the concepts to be topConcepts by using the **Quick Action** button displayed at the bottom-left corner.

5. Click on **Data** in order to access the project's data



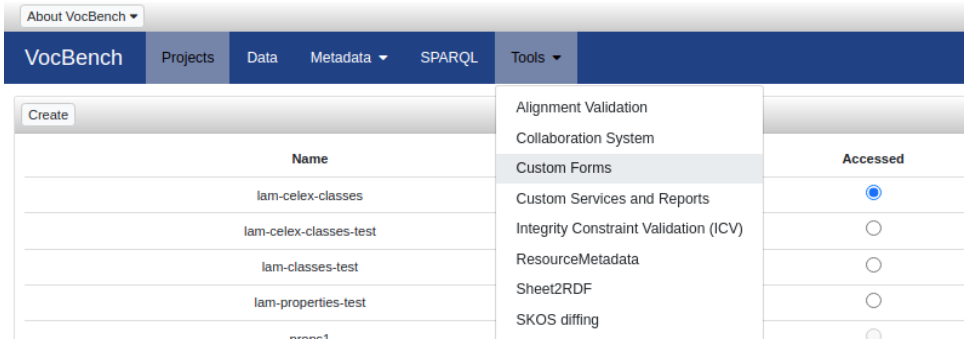
This warning should be fixed by going to the **Scheme** tab and selecting the Legal Document scheme.

6. On the **Projects** tab, click on the **ACL** button (upper-right corner)



Here the permissions per each project can be defined. Edit each project so that they have Read permission for the other two projects. The final permission matrix should look like in the following image:

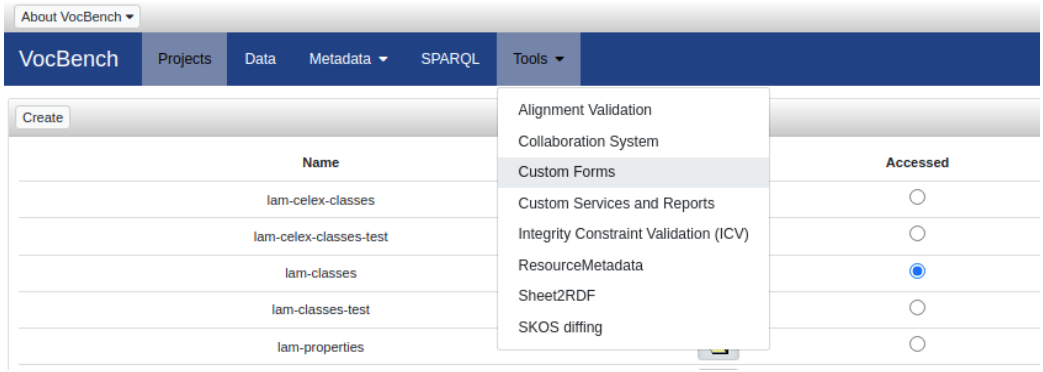
7. Click on **Tools** -> **Custom Forms** to edit customer forms.



The custom forms can be found in the LAM github repository (https://github.com/meaningfy-ws/lam4vb3/tree/master/resources/vb3_resources) in the readme file.

Configuring custom forms

To configure Custom Forms, a management page is accessible through the VocBench Tools menu.

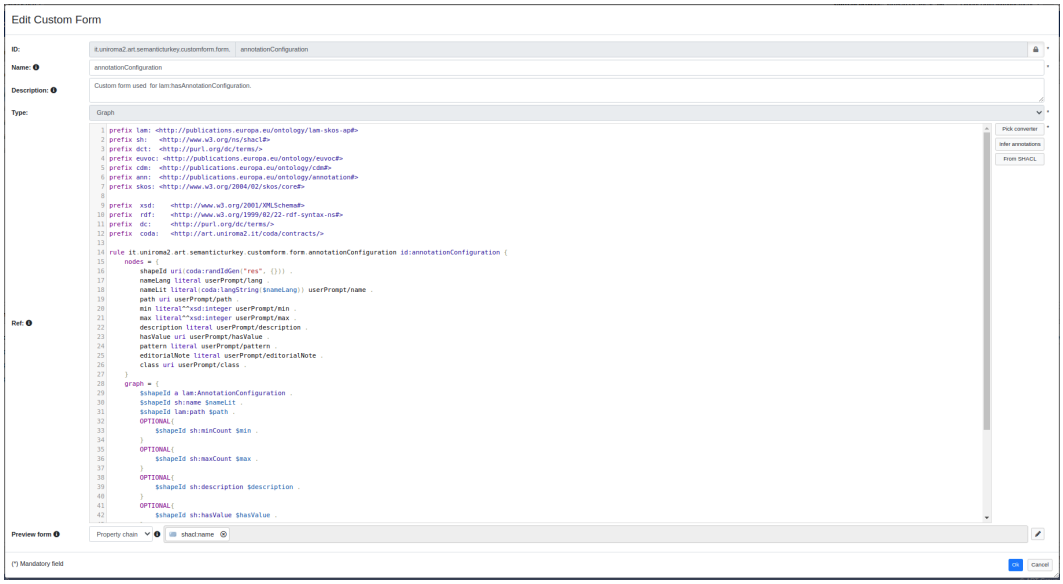


The Custom Forms configuration panel is composed of three main sections:

- the top left (Custom Form) section that allows authorized users to create, edit and remove Custom Forms
- the top right section (Custom Collection) that allows authorized users to create, edit and remove Collections of Custom Forms
- the bottom section (Forms mapping) that allows authorized users to establish mappings between Form Collections and classes, thus realizing Custom Constructors, or properties, thus defining Custom Ranges

A click on the create button (+ icon) produces the following form form for creating a new Custom Form from scratch:

Custom Forms can also be edited if you click on the pencil icon.



Here follows a description of the fields in the form:

- **ID**: a namespaced identifier;
- **Name**: a short name which at the same time may suggest the nature of the resource being created through the form. This is also used in the UI to present the entry as a choice;
- **Description**: a natural language understandable explanation of the form. This is used as tooltip when the mouse hovers over the choice;
- **Type**: tells the nature of the custom creation: graph for complex resource description or node for URI or literal. Simple nodes can be useful in Custom Ranges, which might be useful to override existing ranges or specify ranges that are not present in the ontology
- **Ref**: the content of this property depends on the type of the entry.
- **Preview form**: optional and only available for graph entries. Tells VocBench how to render the preview of the CustomForm values in the ResourceView. Here we select Property chain;
- **Property chain**: specifies the (chain of) properties to "follow" in order to reach the resource to be shown as the object of a triple in any resource-view. Here select the shacl:name property;

Editing data

Please refer to the Vocbench 3 user manual for more information on how to create and edit data: http://vocbench.uniroma2.it/doc/user/.

Also, please take into consideration the LAM model structure provided at the beginning of this document.

References

[1] Costetchi, Eugeniu. 2019. ‘Preliminary Requirements Specification for the Legal Analysis Methodology Models’. v1.2. Initiative for Modelling the Legal Analysis Methodology. Publications Office of the European Union.

[2] Costetchi, Eugeniu. 2012. ‘LAM-SKOS-AP: An Application Profile for the Legal Analysis Methodology Description’. v1.1. Initiative for Modelling the Legal Analysis Methodology. Publications Office of the European Union.

[3] Costetchi, Eugeniu. 2021. ‘The Structure of Excel Workbook for Bootstrapping the Legal Analysis Methodology Descriptions’. v1.2. Initiative for Modelling the Legal Analysis Methodology. Publications Office of the European Union.

[4] Costetchi, Eugeniu and Meaningfy.ws. 2019. A Transformation Tool from Excel into RDF Representation for the LAM Data (version 2.0). Python3. Initiative for Modelling the Legal Analysis Methodology. Publications Office of the European Union.

[5] Wood, David, Richard Cyganiak, and Markus Lanthaler. 2014. ‘RDF 1.1 Concepts and Abstract Syntax’. W3C Recommendation. W3C.

[6] Costetchi, Eugeniu and Meaningfy.ws. 2020. A Transformation Tool from RDF into Human-Readable Document Representation for the LAM Data (version 1.0). Python3. Initiative for Modelling the Legal Analysis Methodology. Publications Office of the European Union.

[7] Stellato, A., M. Fiorelli, A. Turbati, T. Lorenzetti, W. Van Gemert, D. Dechandon, C. Laaboudi-Spoiden, et al. 2020. ‘VocBench 3: A Collaborative Semantic Web Editor for Ontologies, Thesauri and Lexicons’. Semantic Web 11 (5). https://doi.org/10.3233/SW-200370.

[8] Miles, Alistair, and Sean Bechhofer. 2009. ‘SKOS Simple Knowledge Organization System Reference’. W3C Recommendation. W3C.