

Cocoda Technical Report 1

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This report briefly summarizes prototype and architecture of a mapping tool that is being created as part of project coli-conc¹ at the head office of GBV Common Library Network (VZG). Project coli-conc aims at developing an infrastructure to facilitate management and exchange of concordances between library knowledge organization systems. This includes a modular web application named Cocoda.

Overview

For the most part knowledge organization systems in Cocoda are represented in the popular SKOS² data model: a particular knowledge organization system is called a **concept scheme** consisting of a set of possibly connected **concepts** with, **labels**, **notations**, and other properties. A **mapping** relates similar concepts from one concept scheme to concepts of another concept scheme. A set of mappings between two concept schemes is called **concordance**. The main application of Cocoda is going to be the creation and evaluation of mappings and concordances with Dewey Decimal Classification (DDC) as primary use case.

Technical architecture

The technical architecture of Cocoda consists of seven layers. The following table lists each of them with current status and choice of technologies:

description	state	technology
web interface	first prototype	HTML, CSS, JavaScript
JavaScript client modules	alpha releases	AngularJS
JSKOS data format	incomplete draft	JSON(-LD)
JSKOS API and wrappers	drafts and ideas	HTTP, JSON
JSKOS databases	first prototype	CouchDB
mapping recommendation services	ideas & experiments	not implemented yet
quality assessment services	ideas	not implemented yet
user management	ideas	not implemented yet

¹ <https://coli-conc.gbv.de/> (project homepage)

² <http://www.w3.org/TR/skos-reference/>

Web interface

The current user interface of Cocoda web application is only a preliminary prototype to test functionalities. Later versions will be subject to usability studies.

JavaScript client modules

The web interface is build of independent JavaScript modules, which can also be used in other applications. Two of these modules have already been published as early alpha releases: ng-skos³ is a general module for simple knowledge organization systems and ng-suggest⁴ provides typeahead via OpenSearch Suggestions API. All modules are based on AngularJS⁵ because it seemed to be the most popular web application framework. A later version may also choose Web Components, plain jQuery or another JavaScript framework.

JSKOS data format

The JSKOS representation of knowledge organization system data is being developed based on SKOS and JSON-LD.⁶ This format combines the benefit of RDF for data aggregation and JSON for easy manipulation and storage. The current draft of JSKOS is available at <https://gbv.github.io/jskos/>.

JSKOS API and wrappers

Several APIs and services exist to query and store knowledge organization systems (Skosmos,⁷ Poolparty,⁸ iQvoc, VocBench,⁹ Wikidata,¹⁰ lobid.org¹¹...). As part of coli-conc we will evaluate and compare these APIs and create wrappers to a common JSKOS-API. The current prototype makes use of API of lobid.org RVK. Both wrappers and API specification will be made available at <https://gbv.github.io/jskos-api/>.

JSKOS databases

CouchDB¹² databases are used to store concepts and mappings in JSKOS format. A copy of German DDC in MARCXML has been transformed to this format for easy access with Cocoda web application. Both database and DDC data are not public by now.

Mapping recommendation services

The creation and management of mappings will be supported by several mapping recommendation services based automatic search for concept labels, existing mappings, connected concepts, and occurrences in library catalogs. The current prototype contains some static examples for illustration and testing.

³ <https://gbv.github.io/ng-skos/>

⁴ <https://gbv.github.io/ng-suggest/>

⁵ <https://angularjs.org/>

⁶ <http://json-ld.org/>

⁷ <https://github.com/NatLibFi/Skosmos/>

⁸ <http://www.poolparty.biz/>

⁹ <http://vocbench.uniroma2.it/>

¹⁰ <https://wikidata.org/>

¹¹ <http://lobid.org/api>

¹² <http://couchdb.apache.org/>