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This report gives an overview about Open Source web applications to create, manage, and publish Knowledge Organization Systems (KOS).

Background

To manage concordances between Knowledge Organization Systems (KOS) in project [coli-conc](#), access to each of these KOS is required. To access and manage KOS there are several tools, as listed in a first report (Voß 2016b). This new report contains an update of this list, narrowed down to web applications. The collection only contains applications with main focus on KOS management. More application exist to make use of controlled vocabularies as part of another task,¹ but their evaluation would require a much larger study.

Open Source web applications for KOS

The list given in [coli-conc report 2](#) has been updated with information about KOS editing and API features, source code repository, year of last update, and rough number of contributors.

Name and Link	Editor	API	Language	License	Source	Update	Contributors
Semantic MediaWiki	yes	yes	PHP	GPL	GitHub	2016	50
Wikibase	yes	yes	PHP	GPL	Wikimedia	2016	30
TemaTres	yes	yes	PHP	GPL	GitHub	2016	3
iQvoc	yes	yes	Ruby	Apache	GitHub	2016	12
SKOS Editor	yes	yes	Java	LGPL	GitHub	2016	7
Ginco	yes	yes	Java	CeCILL	GitHub	2016	9
VocBench	yes	no	Java	?	Bitbucket	2016	4
Web Protégé	yes	?	Java	BSD	GitHub	2015	4
SKOSjs	yes	no	JavaScript	Apache	GitHub	2014	4
VoCol	yes	no	JavaScript	MIT	GitHub	2016	5
OpenSKOS	no	yes	PHP	GPL	GitHub	2016	10
Django C.V.²	no	no	Python	BSD	GitHub	2016	4
Skosmos	no	yes	PHP	MIT	GitHub	2016	4
SKOS Play	no	no	Java	CC-BY-SA	Bitbucket	2016	1
SISSVoc	no	yes	XSLT	Apache	GitHub	2015	6
ASKOSI	no	?	Java	GPL	Archive	2011	1

¹For instance Annotation applications such as [Annot](#).

²Django Controlled Vocabularies

Software development

The updated list contains 16 web applications for knowledge organization systems, written in six different programming languages (Java: 7, PHP: 5, JavaScript: 2, Ruby/Python/XSLT: 1 each). All applications except SISSVoc and Django Controlled Vocabularies also use JavaScript for their web interface. All projects except ASKOSI use git for version control, mainly hosted at GitHub. At least half of the applications implement a web API to query or modify KOS content in machine-readable form.

ASKOSI and SKOSjs will be excluded from the following evaluation because they have not been updated since more than two years. All remaining projects except SISSVoc have been updated in the last nine months, showing active development. The number of contributors gives a rough estimate of the developer community.

Typology of KOS applications

The applications can be grouped by several criteria for further evaluation.

KOS tools vs. general ontology tools

Semantic MediaWiki, Wikibase, and Web Protégé are not KOS applications in a stricter sense but they aim at the creation and management of ontologies, semantic networks, or knowledge bases. It is possible to use them for KOSs but more serious work requires some configuration, usage guidelines, and additional tools or extensions (Voß 2016a).

KOS editors vs. KOS publishing tools

KOS editors can be used to create and modify taxonomies, thesauri, glossaries or other kinds of KOS. Nine applications (including the general ontology tools) can be used as KOS editor and five only provide read access. For instance VocBench provides advanced editing capabilities with workflow and user management but it recommends a SKOS Browser such as Skosmos to provide public access to the resulting systems. KOS editors can further be grouped into simple KOS editors and tools for KOS management. The latter include an editorial workflow with user roles (e.g. editors and publishers) and publication states (e.g. new, suggested, published, and deleted concepts).

Resulting categories

The analysis of Open Source KOS web application types results in four categories. KOS management tools and editors can mostly be used also for KOS publishing but with less access-oriented features.

type	applications
Ontology editor	Semantic MediaWiki, Wikibase, Web Protégé
KOS management	iQvoc, TemaTres, VocBench, Ginco
KOS editor	SKOS Editor, VoCol
KOS publishing	OpenSKOS, Skosmos, SKOS Play, SISSVoc, Django Controlled Vocabularies

Two applications should be sorted out before evaluation because of their specialized use case:

- SKOS Play generates visualizations and printable forms of KOS given in SKOS format.
- VoCol is a framework to support collaborative management of vocabularies in git repositories.

Evaluation

An in-deep evaluation would first require definition of criteria and goals. This report only gives an overview and recommendations for project coli-conc. The project does not include editing KOS but creation of uniform access methods to KOS information from multiple sources in JSKOS format (Voß 2016c). For each KOS applications the question is whether to

- engage into adding JSKOS features to the software,
- create a wrapper to access the application's API,
- or to use exported SKOS files (if available).

ASKOSI, SKOSjs, SKOS Play and VoCol have been selected to be ignored. For ontology editors it neither makes sense to create a dedicated JSKOS API. A wrapper to convert Wikidata (based on Wikibase) to JSKOS has already been started instead.³ Focus on most used programming languages also makes iQVoc (Ruby), Django Controlled Vocabularies (Python), and SISSVoc (XSLT) candidates for more wrappers instead of adding features to them.

Engagement in developer community should be considered for six projects to natively support an API for querying KOS information in JSKOS format: TemaTres, Skosmos, OpenSKOS (PHP) and SKOS Editor, Ginco, VocBench (Java). A PHP framework for JSKOS processing and access is already being developed as part of project coli-conc to build on.⁴

Summary

This report collected information about sixteen Open Source web applications for Knowledge Organization Systems (KOS). The applications can be grouped in four categories (ontology editor, KOS management, KOS editor, KOS publishing). The report does not include a detailed evaluation but recommendations for project coli-conc. Three PHP-based projects and three Java-based projects have been identified for possible collaboration in software development.

References

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- . 2016c. *JSKOS Data Format for Knowledge Organization Systems*. Version 0.1.2. <http://gbv.github.io/jskos/>.

³See <https://github.com/gbv/jskos-php-examples>

⁴See <https://github.com/gbv/jskos-php>