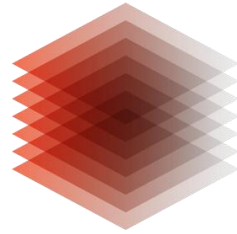

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VIVO-DE: Collaborative ontology editing & management with VoCol

Christian Hauschke, Anna Kasprzik, Tatiana Walther
Technische Informationsbibliothek (TIB)
VIVO Conference 2018, Duke University

Agenda

1. VIVO-DE

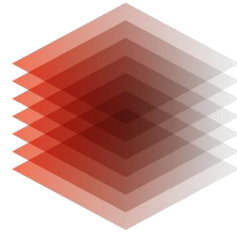
- Why are we doing what we are doing?

2. VoCol

- Features and futures

1. VoCol demo

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VIVO-DE

Why collaborative ontology editing is essential...

VIVO-DE – Why an extension for German institutions?

- Localization requires local ontologies
- Specifics of research infrastructure in Germany
 - Example: grants vs. Projekt
 - Classes for organizations: Lehrstuhl, Fakultät

To achieve interoperability of German VIVOs:

Collaborative approach for an ontology extension

VIVO-DE in numbers

- **Classes: 18**
- **Object properties: 0**
- **Data properties: 1**

Annotations 

[rdfs:label](#) [language: en-us]

URN

[rdfs:label](#) [language: de-de]

URN

[hiddenFromDisplayBelowRoleLevelAnnot](#)

<http://vitro.mannlib.cornell.edu/ns/vitro/role#public>

[hiddenFromPublishBelowRoleLevelAnnot](#)

<http://vitro.mannlib.cornell.edu/ns/vitro/role#public>

[inPropertyGroupAnnot](#)

<http://vivoweb.org/ontology#vitroPropertyGroupidentifiers>

[prohibitedFromUpdateBelowRoleLevelAnnot](#)

<http://vitro.mannlib.cornell.edu/ns/vitro/role#public>



VIVO-DE: Research Core Dataset (KDSF)

The KDSF ...

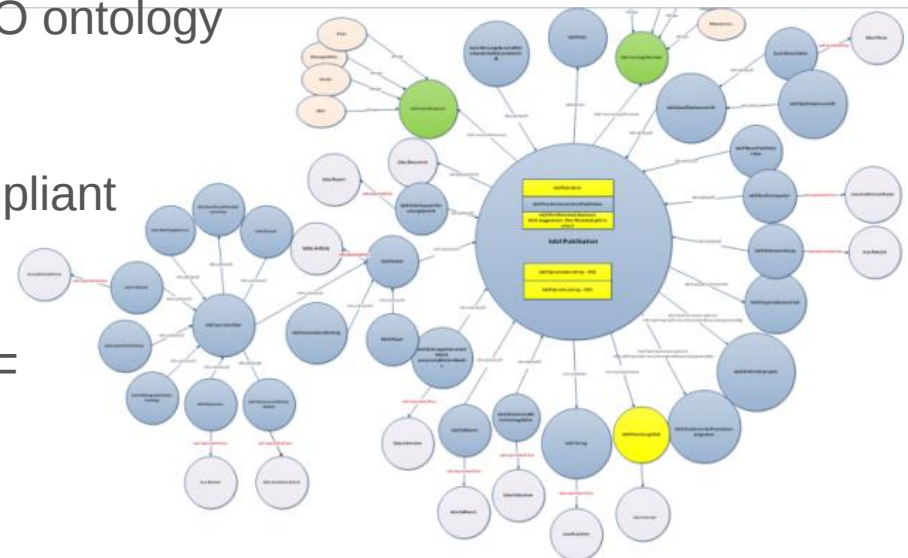
- aims to be a widely used standard for research reporting
- delivers definitions for core indicators in research
- is essential to most research institutions in Germany

To Do

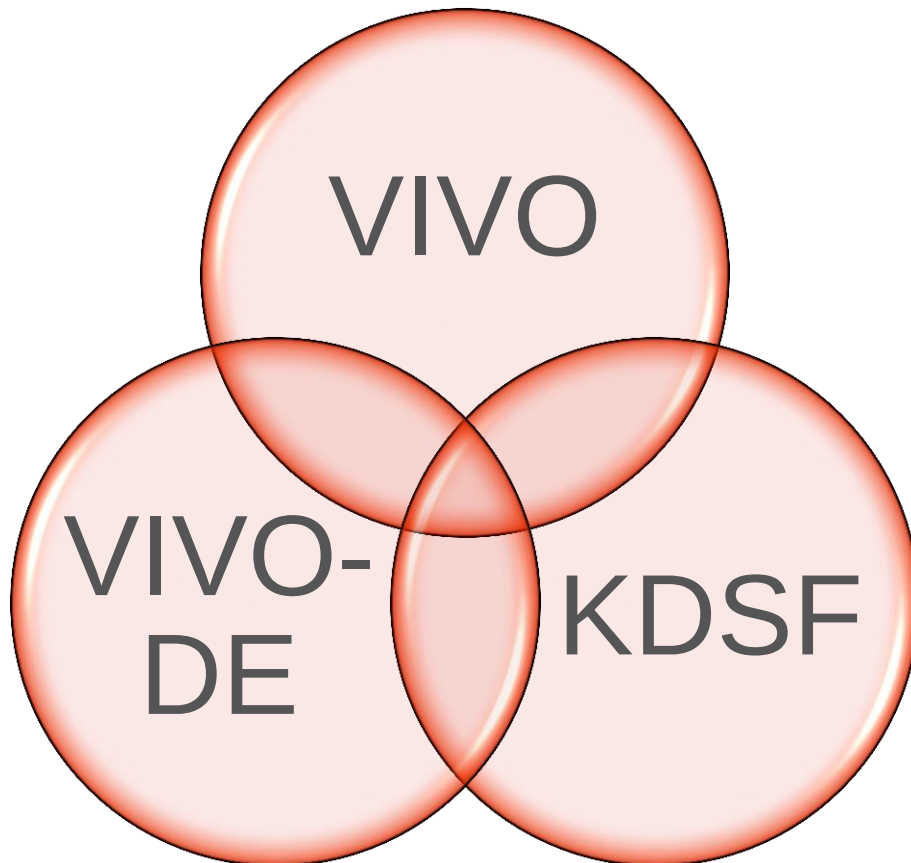
- transformation of the KDSF data model
- matching and merging with the VIVO ontology

Goals:

1. Being able to aggregate KDSF compliant data in VIVO
2. Using data in VIVO to produce KDSF compliant reports



VIVO, VIVO-DE, KDSF... ontologies à la carte



Status quo of ontology editing at VIVO-DE

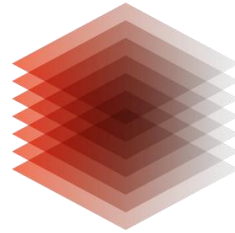
- Github based workflow
 - Github repo with ontology files
 - issues
 - wiki for documentation
- Communication
 - mailing list
 - video calls to discuss issues
 - meeting at the German VIVO-Workshop

<https://github.com/VIVO-DE>

Github is not user-friendly...

... if the user is not a computer scientist.

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VoCol

Collaborative Ontology Development on Distributed
and Heterogeneous Environments

About VoCol

[European Knowledge Acquisition Workshop](#)

..... EKAU 2016: [Knowledge Engineering and Knowledge Management](#) pp 303-319 | [Cite as](#)

VoCol: An Integrated Environment to Support Version-Controlled Vocabulary Development

Authors

[Authors and affiliations](#)

Lavdim Halilaj , Niklas Petersen, Irlán Grangel-González, Christoph Lange, Sören Auer, Gökhan Coskun, Steffen Lohmann

- Collaborative ontology development
- Heterogenous and distributed environments
- Developed at Fraunhofer-Institut für Intelligente Analyse- und Informationssysteme (IAIS)

Turtle editor

- Basic editing capabilities
- Auto-completion
- just-in-time debugging included in TurtleEditor
- Syntax validation after push

Editing Turtle on GitHub Load, view, edit, check, and save a turtle file on GitHub.

Username (for login)

Password or Token

Owner of Repository

Repository

Branch

Filename

Load Files

Save File

Content editor: kdsf-vivo-alignment.ttl

```

60
61
62 ### http://vitro.mannlib.cornell.edu/ns/vitro/0.7#offerCreateNewOptionAnnot
63 vitro:offerCreateNewOptionAnnot rdf:type owl:AnnotationProperty .
64
65
66 ### http://vitro.mannlib.cornell.edu/ns/vitro/0.7#prohibitedFromUpdateBelowRoleLevelAnnot
67 vitro:prohibitedFromUpdateBelowRoleLevelAnnot rdf:type owl:AnnotationProperty .
68
69
70 ### http://vitro.mannlib.cornell.edu/ns/vitro/0.7#publicDescriptionAnnot
71 vitro:publicDescriptionAnnot rdf:type owl:AnnotationProperty .
72
73
74 ### http://vitro.mannlib.cornell.edu/ns/vitro/0.7#selectFromExistingAnnot
75 vitro:selectFromExistingAnnot rdf:type owl:AnnotationProperty .
76
77
78 #####
79 # Object Properties
80 #####
81
82 ### http://kerndatensatz-forschung.de/owl/Basis#hatArt
83

```

Syntax check passed.

Commit message

Documentation

- Human-friendly documentation based on WiDOCO

☒ Ignore Case

☒ vivo_owl.ttl

Type

☒ All
 ☐ Class
 ☐ Object Property
 ☐ Datatype Property
 ☐ Individuals

View

☒ RDF(S)
 ☐ SKOS

Show others

☐ Show Type
 ☐ Show File

Documentation

Source

Graphical Depiction

Details: publisher

Predicate	Object
owl:inverseOf	publisherOf
rdf:type	owl:ObjectProperty
IAO_0000112	Public Definition source (http://www.answers.com/topic/publisher).
rdfs:label	publisher@en

Values expected to be one of these types

[Organization](#)

preferredDisplayOrder

preferredNamespaceUri

prefixName

prerequisiteFor

presentedAt

presents

proceedingsOf

prodid

protocolRealizedBy

providesFundingThrough

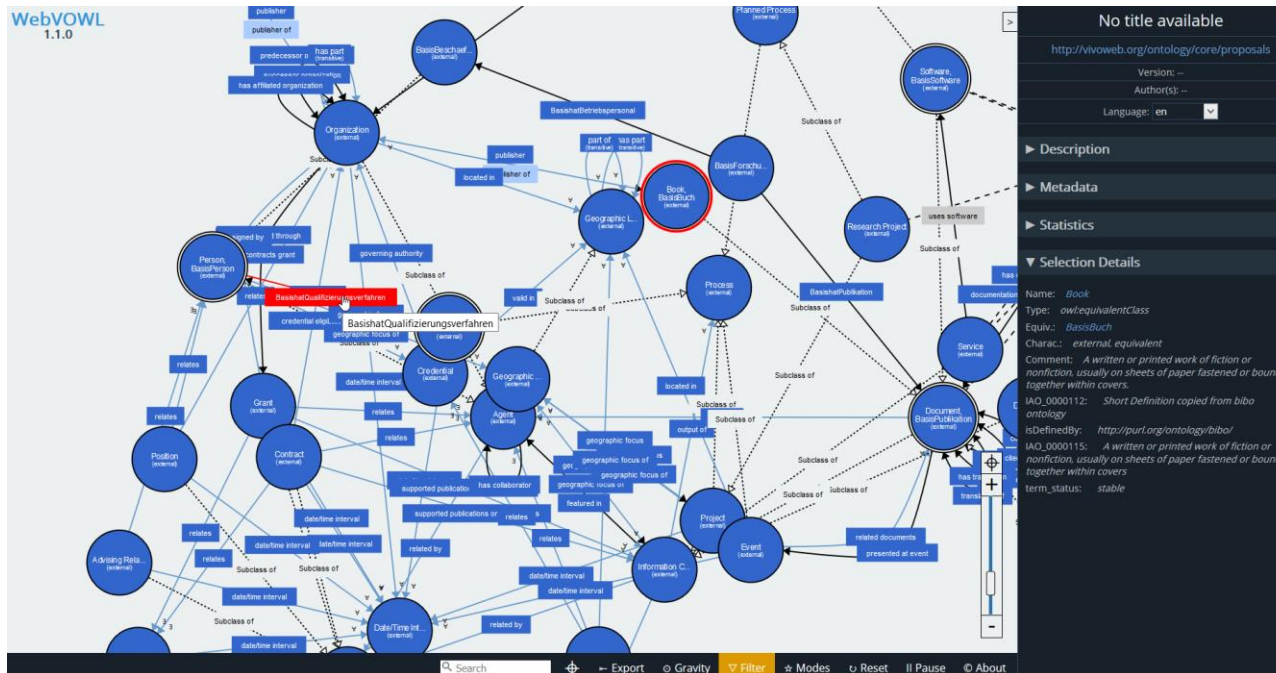
publicationVenueFor

[publisher](#)

[publisherOf](#)

rank

Visualization



- Interactive visualization of ontologies with WebVOWL
- Force-directed graph
- Searchable and customizable

Querying interface

EXAMPLE QUERIES

Selection of triples

Selection of classes111

PREFIXES

rdf

rdfs

owl

xsd

+

SPARQL ENDPOINT

CONTENT TYPE (SELECT)

CONTENT TYPE (GRAPH)

http://vocol.iais.fraunhofer.de/tib/fuseki/dataset/query

JSON

Turtle

1

2

3 SELECT ?subject ?predicate ?object

4 WHERE {

5 <http://vivoweb.org/ontology/core#AcademicDegree> ?predicate ?object

6

7 }

8 LIMIT 25

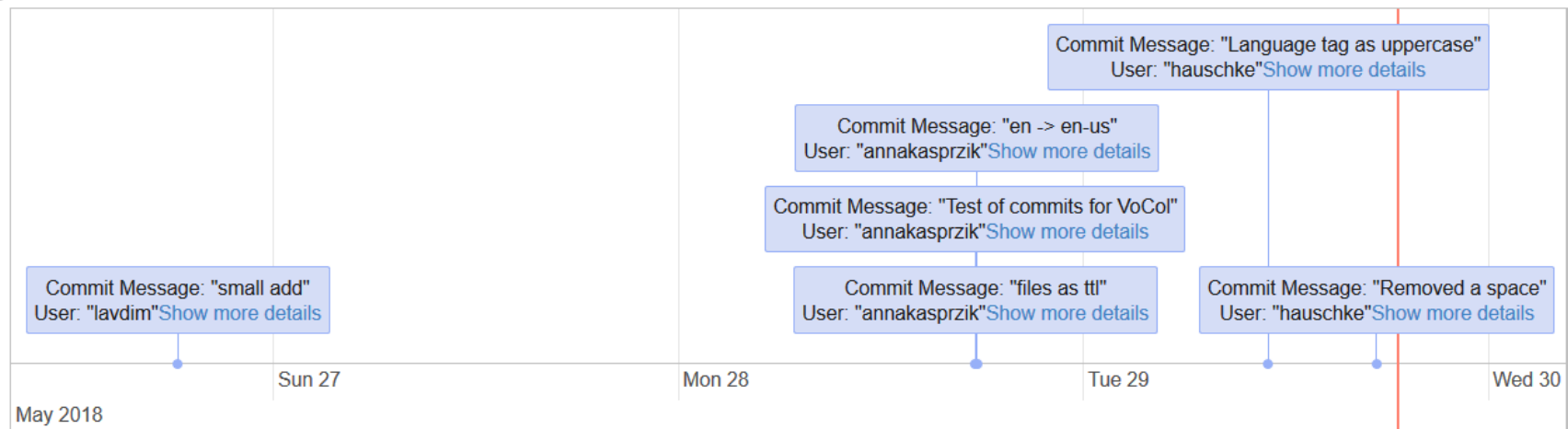
↩

⛶

▶

- SPARQL query tool
- Output as JSON, XML, CSV, TSV

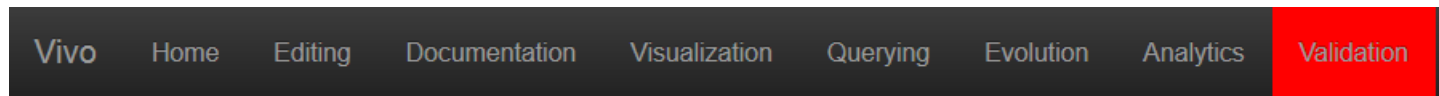
Evolution



- Visualize and inspect the commit history
- pusher, commit message, timestamp, changetype, changed triple
- Searchable commit history

Validation

- Error report for all files in repository
- quick overview about syntax errors



Validation

Error Number: 1

Found in file:./vivo-de-0.3.ttl **Error: Expected dot to follow quad at line 83.**

Error Number: 2

Found in file:./kdsf-vivo-alignment.ttl **Error: Syntax error: unexpected "rdf:type" on line 71.**

Please fix the error(s) in the turtle file(s).

Features: To be done, partly done

- Syntax validation in pre-commit event
- Unique serialization to allow working with multiple editors by preventing false-positive conflicts in pre-commit event
- Automatic checking whether ontology fulfills set of defined Competency Questions represented in SPARQL queries or violates any constraint

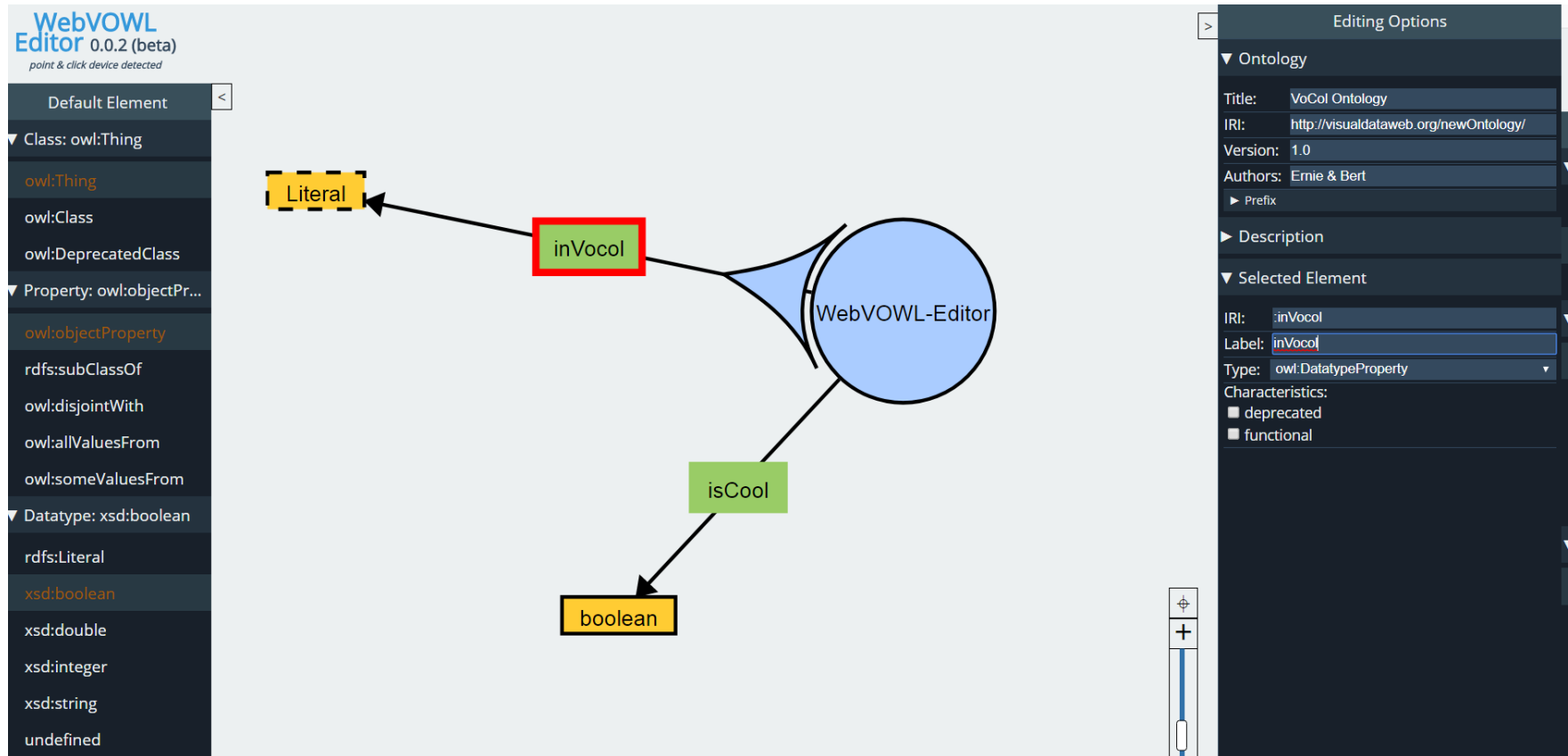
Planned

- Consistency checking
- Support for multiple branches in the same time

Long-term

- VoCol-As-A-Service (VoCol instance will be semi-automatically created after subscription/registration)

A new editor?



http://visualdataweb.de/webvowl_editor/#

How it looks like...

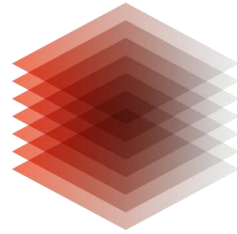


LIVE DEMO

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Thanks a lot!

Contact

Christian Hauschke: christian.hauschke@tib.eu

Contributions & License

Contributions by:

Christian Hauschke

<http://orcid.org/0000-0003-2499-7741>

Anna Kasprzik

<http://orcid.org/0000-0002-1019-3606>

Tatiana Walther

<http://orcid.org/0000-0001-8127-2988>

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Contact

christian.hauschke@tib.eu