

Karlsruhe Institute of Technology

Institute for Applied Materials

T SAN (HMC)



## **Collaborative Metadata Definition using FAIR Controlled Vocabularies, and Ontologies**

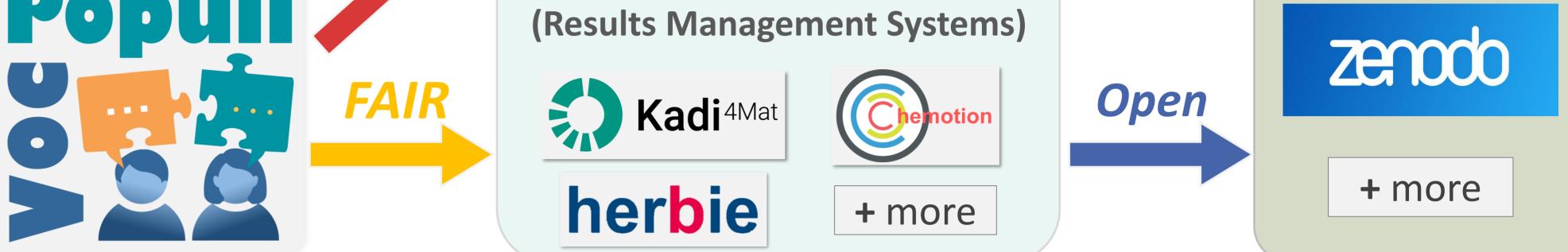
## Nick Garabedian, Ilia Bagov, Christian Greiner

Karlsruhe Institute of Technology, Institute for Applied Materials, Germany



**Public/Private Open/Closed** Repository

- Easy tools for collaborative building of FAIR vocabularies are missing
- Vocabularies are an intuitive first step for any lab undergoing digitalization



## VocPopuli

VocPopuli List terms	New term Import vocabulary	Last repository activity at: 2022-10-25T12:58:43.846Z	imen Cleaning 🗸 Select	
> Ultrasonic Cleaner ~ Specimen Cleaning	List terms > Specimen Cleaning	g > Institution (Location)	vocabularies	
<ul> <li>Specimen Cleaning Steps Array</li> <li>General Info (Process)</li> <li>Operator(s) in Charge</li> </ul>	Institution (Lo	Select term version: (New Term] Institution (Lo	ocation) 🗸 Edit Term	
<ul> <li>Location Information</li> <li>Room Number</li> <li>Institution (Location)</li> </ul>		The premises on which an object exists or a process happens. *Not to be confused with an institution as an organization, or as an employer.		
	Synonyms University; Comp			
Timestamp	Datatype 🖻 string	transl	ations	
> Block Specimen	Broader Location Informa	Location Information		
	Related https://purls.heln	https://purls.helmholtz-metadaten.de/Another_VocPopuli/Location		
	Global ID https://purls.heln	https://purls.helmholtz-metadaten.de/VocPopuli_DEMO/Institution_(Location)_1		

- Ease of use by non-experts is first priority
- Any resource can be digitalized: Lab Procedure; Lab Specimen, ELN, ELN Export, Data Analysis
- GitLab login is used to associate user contributions with term versions and vocabularies
- Each term receives a git branch for editing
- GitLab Issues are used to collect comments
- Terms are voted on and approved or not approved

vocabulary Local ID	0b531d28f86939deac4ec9bd49477dc1 optional images	<ul> <li>PROV and SKOS are optional exports</li> </ul>		
contents: procedures and objects👌 o	Images     Images     Images     Approve Term     Approve Term     Discussion Board     Nick Garabedian @nick-garabedian     Images     Images	Vocabulary IDs Global ID: set at birth and never changes Local ID: a hash of the terms' Local IDs Version ID: a hash of all terms' Version IDs; changes when a term is modified	Term IDsGlobal ID: set at birth, neverchanges; it represents a self-contained conceptLocal ID: denotes anapproved version of the termVersion ID: changes forevery unapproved version	
Add a new co	omment:	IRI (PURL): if published	IRI (PURL): if published	
OntoFAIRCook Electronic Lab		otebooks	Contact and	
FAIR vocabularies are	(Results Management Systems) Acknowledgements			
a stepping stone towards FAIR ontologies In this ML-based app	MetaCook Validator MetaCook Validator MetaCook Validator MetaCook Validator	-Analysis Analysis Outboo	This project is a close collaboration with our partners: Frederic Bock, Benjamin Klusemann, Catriona Eschke, Florian Wieland, and Martin Held at Helmholtz- Zentrum Hereon; and Karlheinz Weber,	

In this ML-based app



vocabularies are converted semiautomatically into FAIR data ontologies

- The conversion is actively improved as the ontologies grow
- Ontologies allow for scalable data-driven machine learning
- FAIR-Save Apps interact with vocabularies and ELNs
- Terms used within ELNs are linked to the IDs in the related vocabulary and ontology for an unambiguous definition
- An export of the defined schemes can be used to automatically create structured forms in the ELNs
- The output from the developed tools will be exemplarily first integrated into the ELNs Herbie and Kadi4Mat

Nuoyao Ye, Floriane Bresser, Benedikt Stoll, Malte Flachmann, Jakob Biesinger at the KIT. It was funded by the Initiative and Networking Fund of the Helmholtz Association in the framework of the Helmholtz Metadata hereon Collaboration project call.



Creative Commons Attribution 4.0 International License