

Karlsruhe Institute of Technology

Institute for Applied Materials

T SAN (HMC)



Collaborative Metadata Definition using FAIR Controlled Vocabularies, and Ontologies

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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	
 Specimen Cleaning Steps Array General Info (Process) Operator(s) in Charge 	Institution (Lo	Select term version: (New Term] Institution (Lo	ocation) 🗸 Edit Term	
 Location Information Room Number Institution (Location) 		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	 PROV and SKOS are optional exports 		
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

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