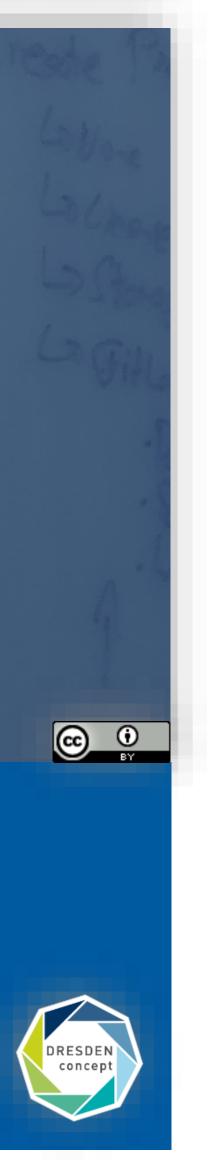
Electronic Lab Documentation at HZDR From Small Experiments to Large-Scale Research Facilities

Workshop on FDM in Core Facilities, B CUBE, 6. November 2023 Thomas Gruber, Oliver Knodel, Stefan E. Müller and Guido Juckeland // contact: t.gruber@hzdr.de





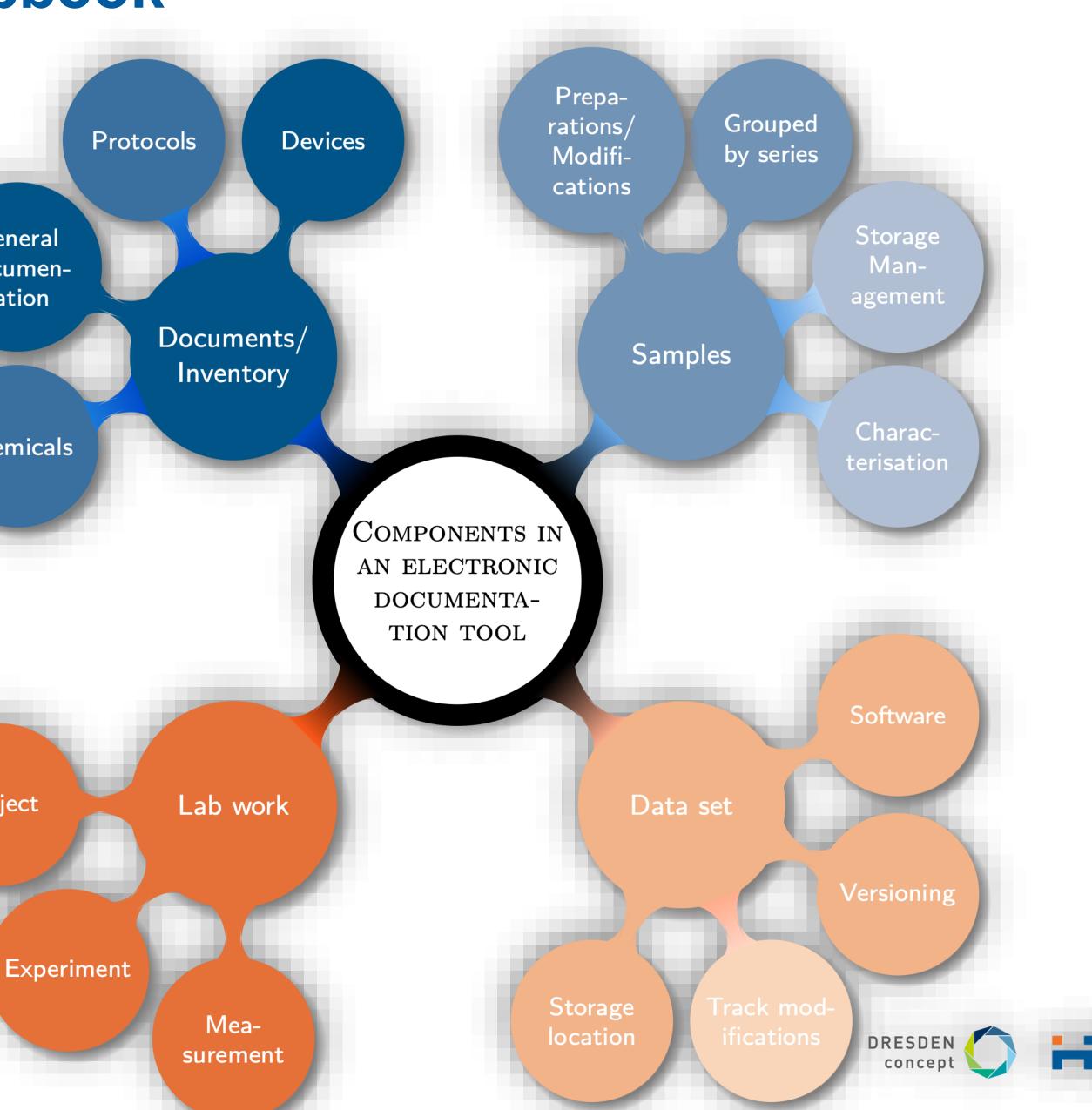
Documentation in our E-Labbook

- The Electronic Lab Documentation (E-Labbook) is an essential component in the experiments lifecycle.
- Metadata from an experiment is _____ generated or stored in different third-party systems or services.
- Various third-party systems can provide additional (meta) data.
- First steps in creating an E-Labbook:
 - Identify essential elements,
 - Define properties describes each element,
 - Access (meta)data in other systems,
 - Define relationships.



Project



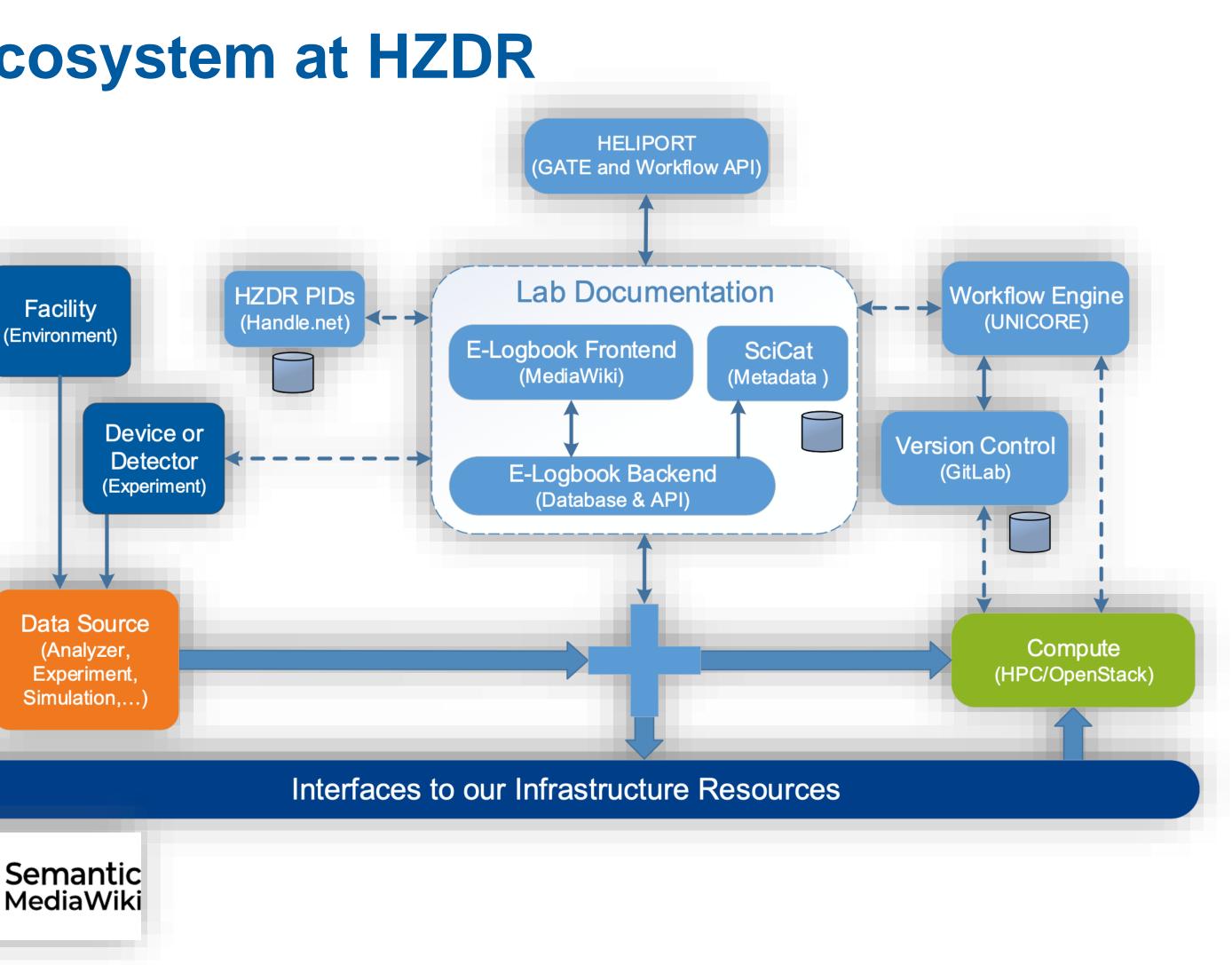




Surrounding Documentation Ecosystem at HZDR

- Our Electronic Lab Documentation is a central database gathering information from various systems:
 - Proposal management (GATE),
 - Environmental data,
 - Devices (e.g. Labview),
 - Workflows,
 - (Meta)data databases.
- Different frontends are available:
 - SciCat (metadata only),
 - MediaWiki (structured user-definable views).
- The backend is based on:
 - Mediawiki,
 - Semantic MediaWiki extension,
 - Cargo tables for (meta)data and API requests.



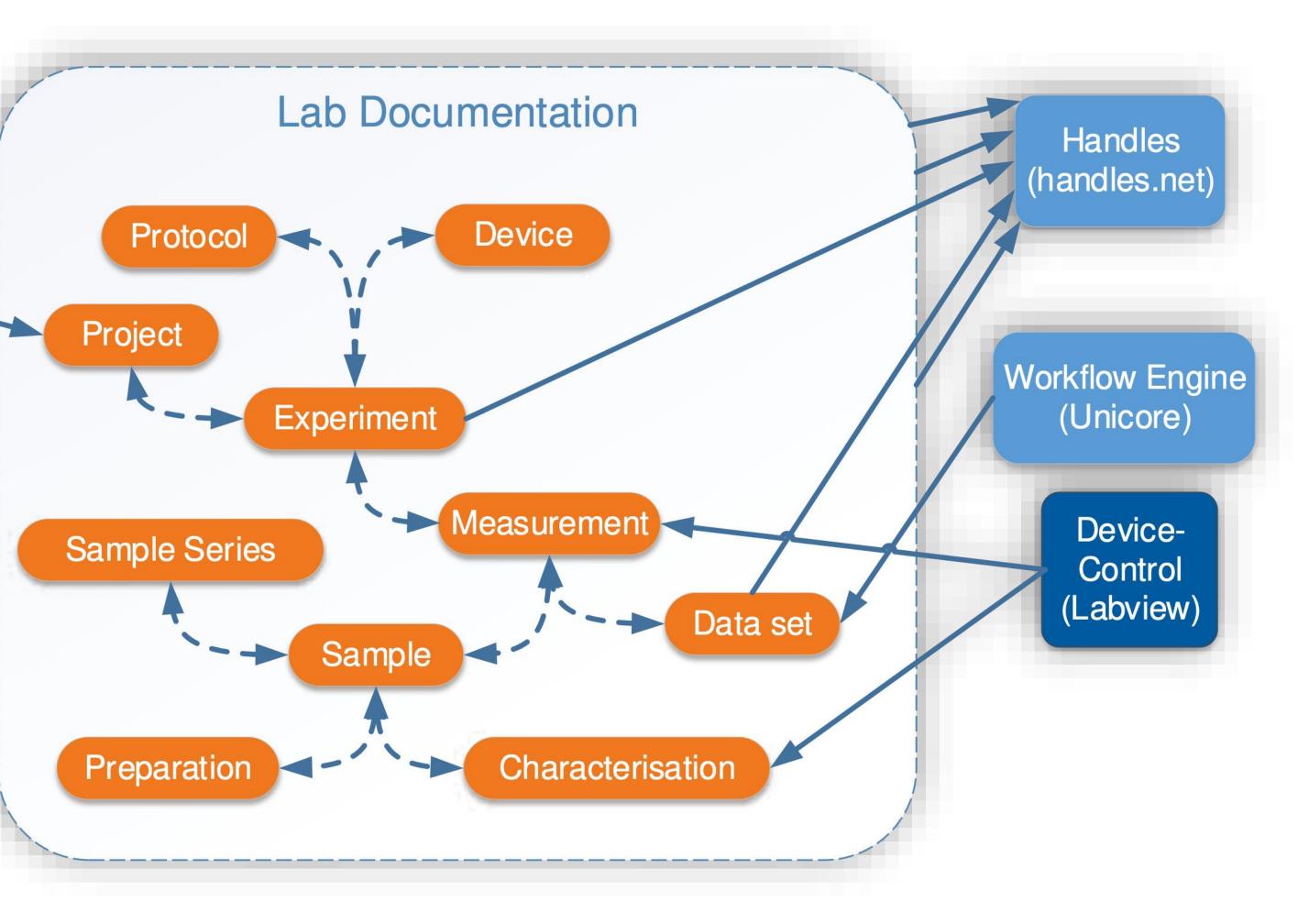




Example of an E-Labbook Structure

- For a well structured (E-Labbook), experience and feedback from the community is required.
- Every lab book page is assigned to a category (template).
- An optimal structure allows:
 - Collaborative work,
 - Information from different sources and reusing available data,
 - Search within the Labbook is also possible from external applications (e.g. Jupyter notebooks).

Proposal Management (GATE)





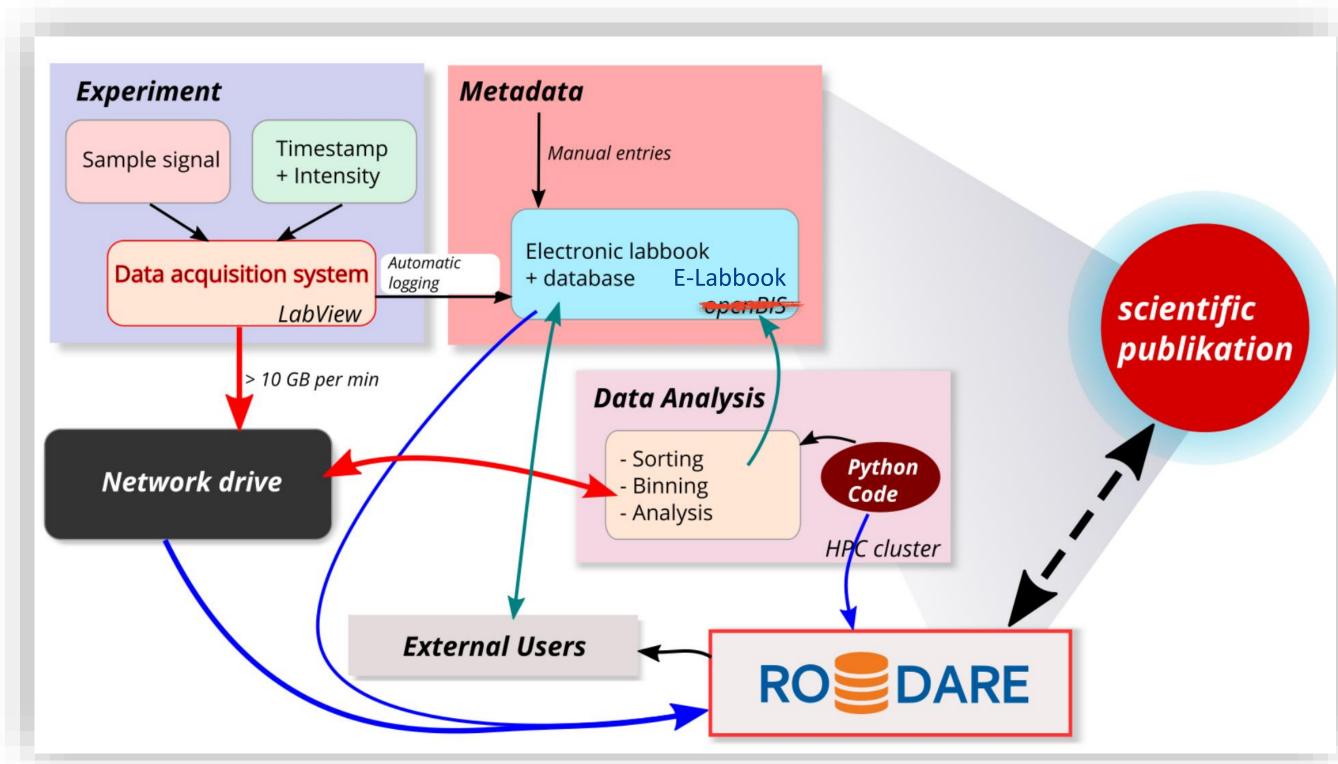


Example: Terahertz facility at the ELBE center for High-Power Radiation Sources



Data Management View of the TELBE Experiment

- Terahertz facility with a sophisticated data management process.
- The data acquisition system (LabView) transfers metadata to the E-Labook API and starts an analysis job on the HPC Cluster.
- Once the job has been completed the results (metadata and images) are stored in the E-Labbook.



Deinert, Jan-Christophi. (2021, November 18). TELBE data analysis workflow and the PaN training platform UX — Booklet of presentations from the PaN EOSC Symposium 2021. Zenodo. https://doi.org/10.5281/zenodo.5636331







Overview Page of The TELBE Group

- The entry point provides an structured view on all resources such as:
 - Projects,
 - Beamtime,
 - Sample,
 - Detectors and additional devices

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		Investigator	Date
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THz-induced structural phase transition in hybrid perovskites	FWKP	Kovalev, Dr. Sergey	10 March 2022 08
THz-light driven spin-lattice coupling under high static magnetic fields	FWKP		10 February 2022 05:54:35

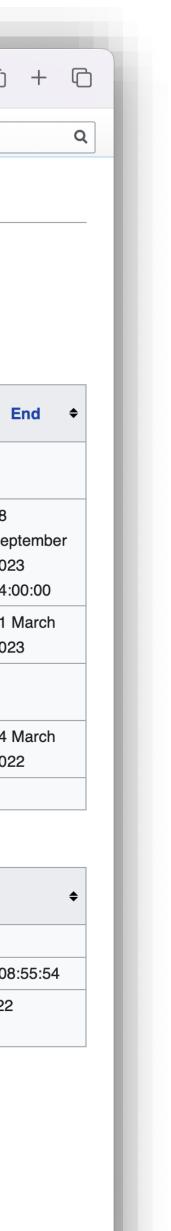
FWKP:Sample DB

Create new Sample → New Sample

Recent Samples:

Sample Name +	Proposal Number 🗢	Sample Origin +
Cuprate Superconductor 001	18101124	Via Stefan Kaiser
Cuprate Superconductor 002	18101124	Via Stofan Kaisor

mantic diaWiki



Measurement Contains Summary and Metadata

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Description [edit | edit source]

Category: FWKP:MeasurementDay

This page was last edited on 10 August 2023, at 09:52.

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Belongs to Project Name	Transient Weyl states in Dirac semimetal Cd3As2
Belongs to Proposal Number	21202633
Participants	User:
Measurement Day	2022/03/13
Frequency THz	0.7 THz, 2 THz

	End Date +	Sample Name +	Frequency THz +	Sample Temperature +	BDA Power +	Polarizer Angle +
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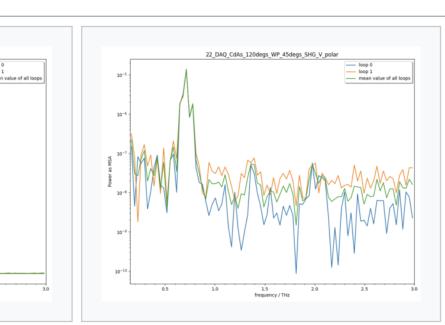




Typical Labbook Entry of a Single Run at TELBE

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Category: FWKP:Log







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API Interface

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    title:
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         LINK:
        SampleProject Name:
                                    "Example Sample Project"
         Department:
                                    "FWGB-A"
         Creation date:
                                    "2023-10-05"
         Creation date__precision:
                                    "1"
  ▼1:
    title:
         LINK:
                                    "FWG:Test test test-01"
         SampleProject Name:
                                    "test test test"
         Department:
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                                    "2023-10-05"
         Creation date:
         Creation date__precision:
                                    "1"
  ▼ 2:
    Title:
                                    "FWG:Test project name-01"
         LINK:
         SampleProject Name:
                                    "test project name"
         Department:
                                    null
         Creation date:
                                    "2023-10-05"
         Creation date__precision:
                                    "1"
  ▼ 3:
    ▼ title:
         LINK:
                                    "FWG:Test1-01"
         SampleProject Name:
                                    "test1"
         Department:
                                    null
         Creation date:
                                    "2023-10-06"
         Creation date__precision:
                                    "1"
  ▼ 4:
    ▼ title:
         LINK:
                                    "FWG:SampleProject.20231117-02"
```

MediaWiki API help

This is an auto-generated MediaWiki API documentation page. Documentation and examples: https://www.mediawiki.org/wiki/Special:MyLanguage/API:Main_page

action=cargoquery

(main cargoquery)							
Runs a query on th	e Cargo data.	• This module requires read right					
Parameters:		Source: CargoLicense: GPL-2.0-or-later					
limit:	A limit on the number of results returned	• License: GPL-2.0-01-later					
	Type: integer or max						
	The value must be between 1 and 5,000.						
	Default: 50						
tables: The Cargo database table or tables on which to search							
fields:	lds: The table field(s) to retrieve						
where:	The conditions for the query, corresponding to an SC	QL WHERE clause					
join_on:	Conditions for joining multiple tables, corresponding	g to an SQL JOIN ON clause					
group_by:	Field(s) on which to group results, corresponding to	an SQL GROUP BY clause					
having:	Conditions for grouped values, corresponding to an	SQL HAVING clause					
order_by:	The order of results, corresponding to an SQL ORDE	ER BY clause					
offset:	The query offset						
	Type: integer						
	The value must be no less than 0.						
	Default: 0						





