# **Enriching Scientific Research with Metadata: Electronic Lab Documentation Landscape at HZDR**

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### How to get started

- Analyse the whole experiment pipeline and identify the essential elements to be described by meta data (e.g. Sample, Measurement, data sets)
  Which properties describes each element?
- What are the relationships between the elements?
- Which elements/properties are already in digital form and how can they be accessed?
- What are the IT resources and how can the electronic documentation be mapped to them?

# Goal – Most complete description of the data set



# **Starting page examples**

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### Mindmap for Components of Documentation



# Advantages of Electronic Documentation

- Gather information in individual ways from different sources by reusing already collected data
- Time savings by reusing gathered data through connecting existing elements to new elements
- Collaborative working from different places by multiple persons
- Advanced search for structured meta data, strongly depends on selected tool (data base type, API, etc.)
  Search within the program and from other programs
  e.g. within a Jupyter notebook, query the API of the documentation tool for all datasets for device "xyz" measured with sample "abc" parameter 1 = "1 unit" and parameter > "2 units" from the last beamline experiment



#### Lab Documentation Ecosystem



# Why we use Mediawiki which is not an ELN

Mediawiki is not a typical ELN, but can be a central part for electronic documentation. We have chosen it for the following reasons:

 $\checkmark$  Open source

 $\checkmark$  Was already in use by several groups

✓ Highly adjustable pages including Template, Forms, flexible linkage ...

✓ Large development community

 $\checkmark$  rich on extensions: Draw.io, external data, ...

 $\checkmark$  Extensive API, various import and export formats

 $\checkmark$  Good integration into our existing IT landscape

 $\checkmark$  Storing information in structured and unstructured ways possible

 $\checkmark$  Advanced search options

× Rights management needs work

× Time consuming setup of an ELN for a group

### **Typical Structure of the Lab Documentation**

#### Don't loose your head! Begin with your Electronic Lab Documentation now!

The search for an appropriate ELN can be tedious and might take long, while there might not be a perfect one in the end that meets all your requirements. Don't spend too much time trying too many tools!

- Most of the work is in talking to scientists about how they structure their work to create a suitable electronic documentation
- Even unstructured electronic notes (freetext wiki, HedgeDoc) are better than handwriting on paper...

Q,

Mattermost

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