

A Laboratory Workflow Solution for Experimental Geophysical Research

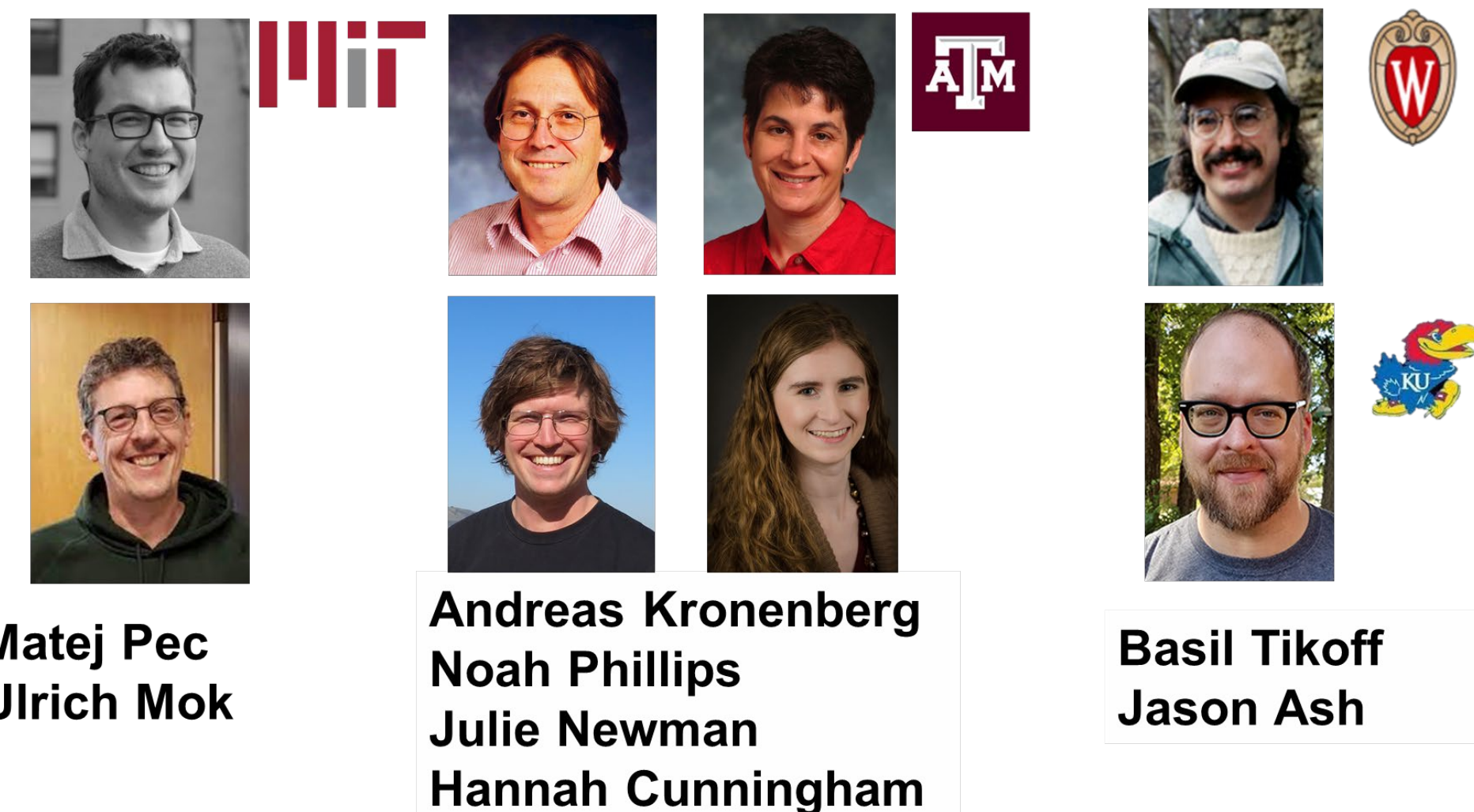
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Introduction

The Team



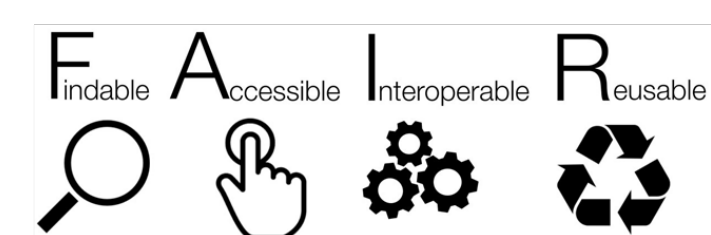
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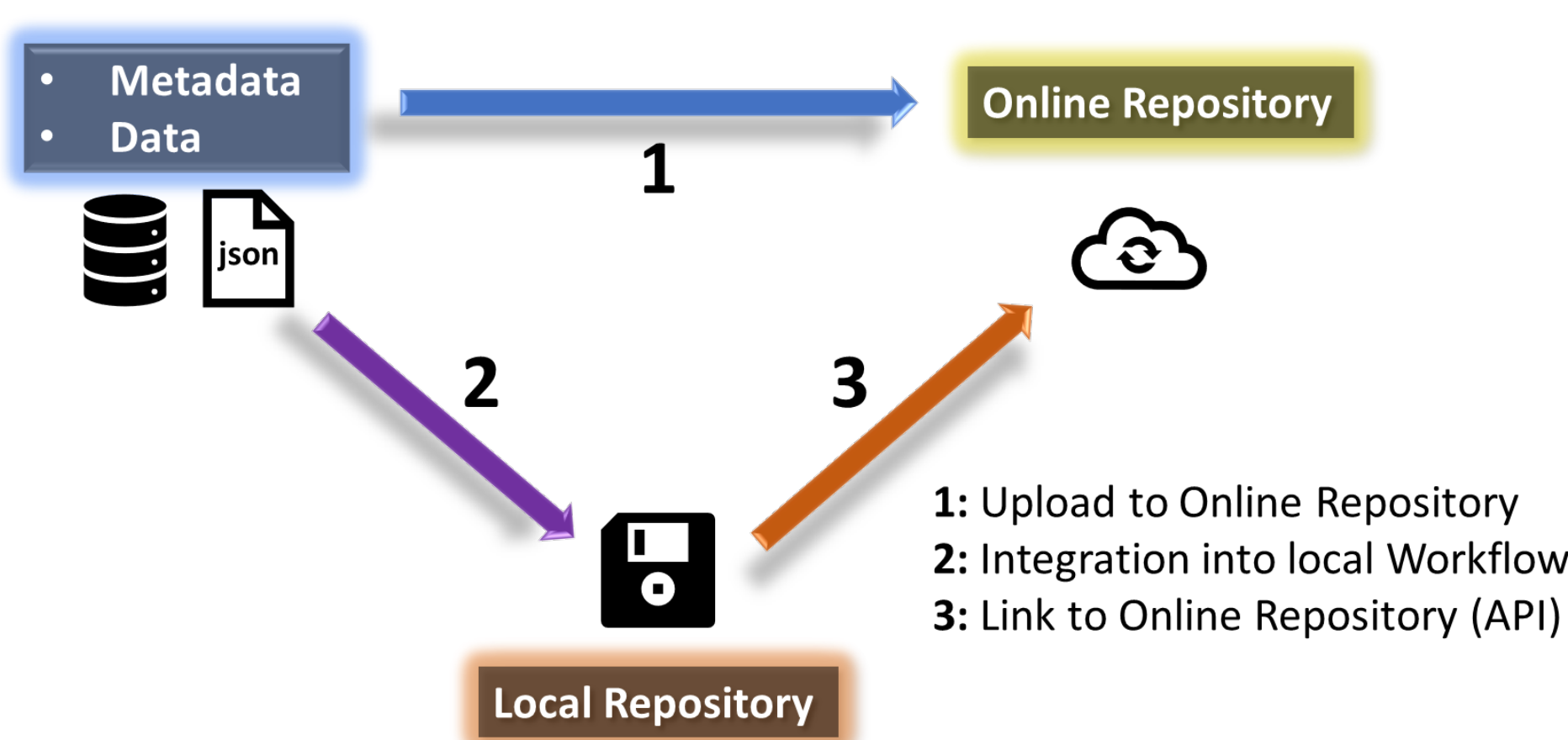
Practical GeoScience Data Challenges

To publish my work, I need to make data and procedures publicly available.



- Which repository is suited for me?
- Ease of Use?
- Longevity of Storage?
- Private access (if I am not ready to share the data yet)
- Upload / Download Capability
- Can I search effectively for similar datasets
- External access – API for data mining?

Goal: To create a Flexible Data Workflow



Experimental Records - Metadata

64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
64	Time	Std. Deviat	Confining	Pore Press.	Asiat-Er	Radial	ev	Volur								
65	sec	MPa	MPa	MPa	%	%	%	%								
66	0.1	1.0200	120	43	-0.0055	0.0008	-0.0012									
67	0.2	1.0212	120	43	-0.0058	0.0007	-0.0012									
68	0.3	1.0222	120	43	-0.0059	0.0004	-0.0012									
69	0.4	1.0239	120	43	-0.0053	0.0007	-0.0012									
70	0.5	1.0248	120	43	-0.0058	-0.0006	-0.0013									
71	0.6	1.0223	120	43	-0.0059	0.0007	-0.0013									
72	0.7	1.0217	120	43	-0.0051	0.0003	-0.0016									
73	0.8	1.0247	120	43	-0.0058	0.0008	-0.0017									
74	0.9	1.0207	120	43	0	0.0001	0.0001									
75	1.1	1.0235	120	43	-0.0062	0.0002	-0.0019									
76	1.2	1.0238	120	43	-0.0061	0.0001	-0.0016									
77	1.3	1.0219	120	43	-0.0059	0.0006	-0.0016									
78	1.4	1.0235	120	43	-0.0055	-0.0006	-0.0016									

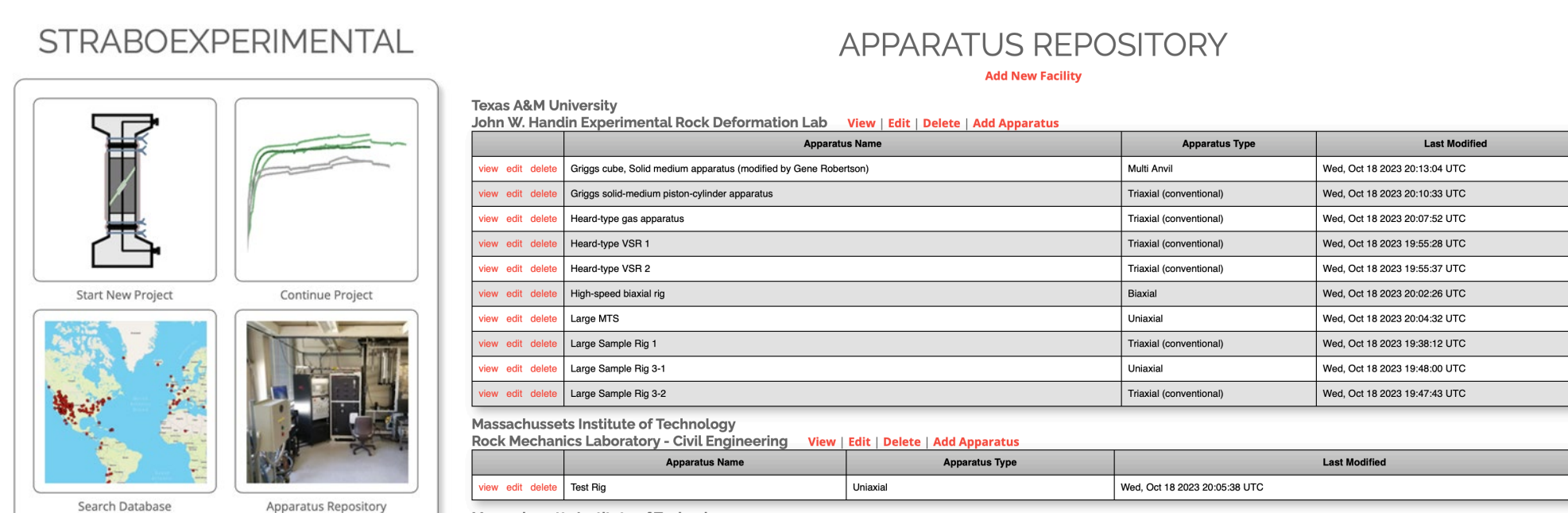
Community Development of Vocabulary and Metadata Structure

StraboExperimental

What is StraboExperimental?

A digital repository for experimental information and data. As part of the Strabo Ecosystem, it utilizes features from Strabo Micro in addition to capabilities specifically designed for experimental data.

Interface + Apparatus Repository



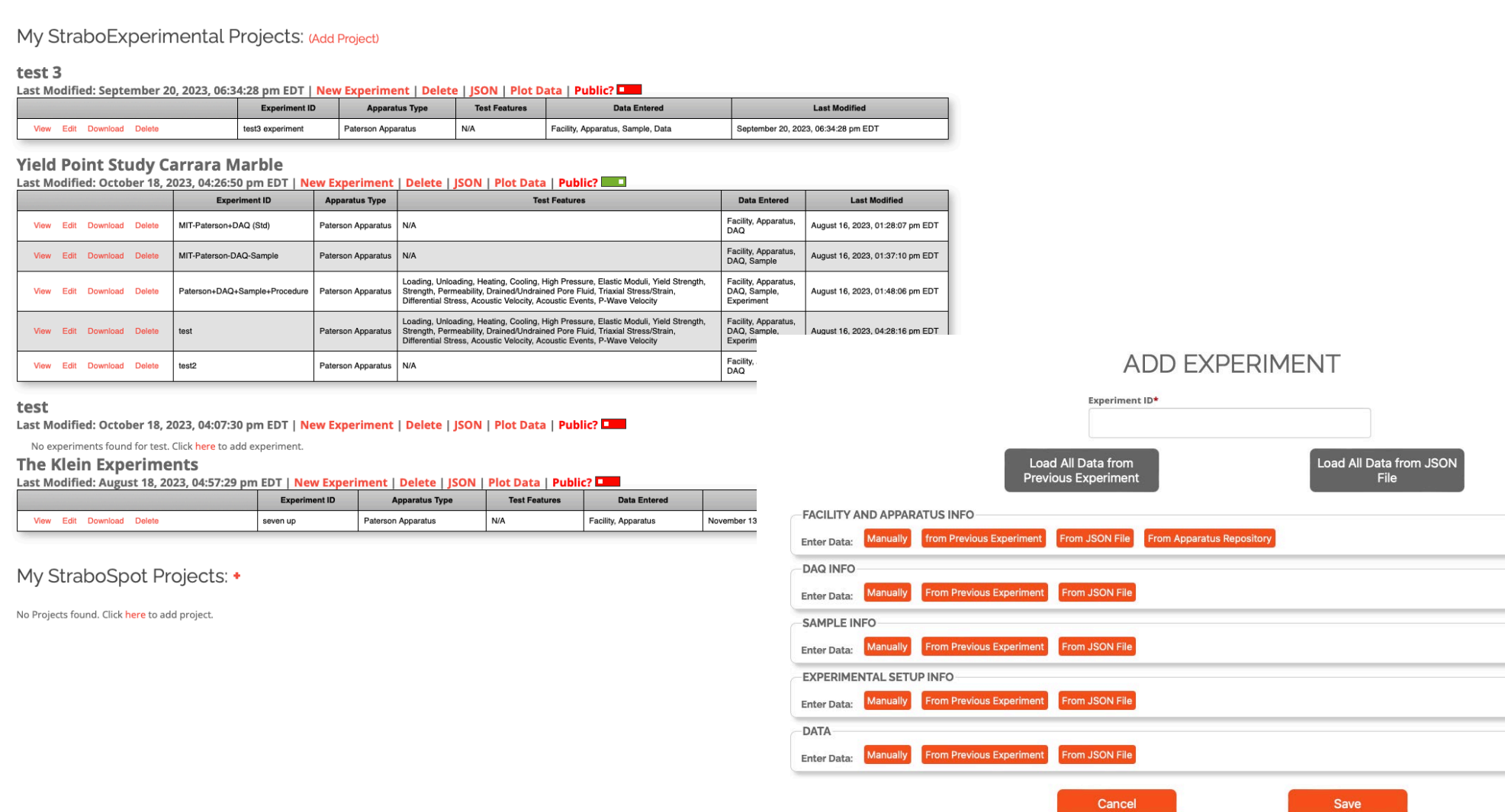
A. Technical Challenges

- Permanent Physical Storage
- Database Maintenance and Longevity
- Data Access (Software, API)
- Processing Tools
- Multiple solutions in development (Strabospot, Epos)...

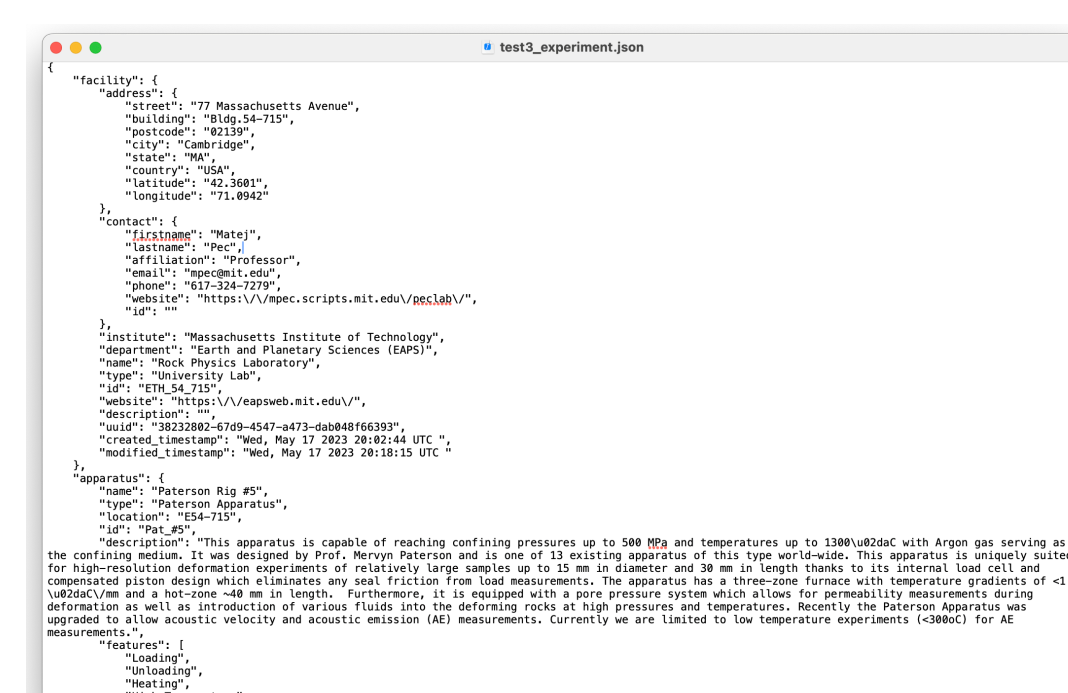
B. Societal Challenges - Community Standards

- Metadata and Vocabulary
- Which data to include (processed-unprocessed)?
- Avoid data Inconsistencies
- Data Quality Criteria
- Copyright, Privacy Issues

Project Management + Experimental Details



Re-Usable Templates + JSON Import/Export

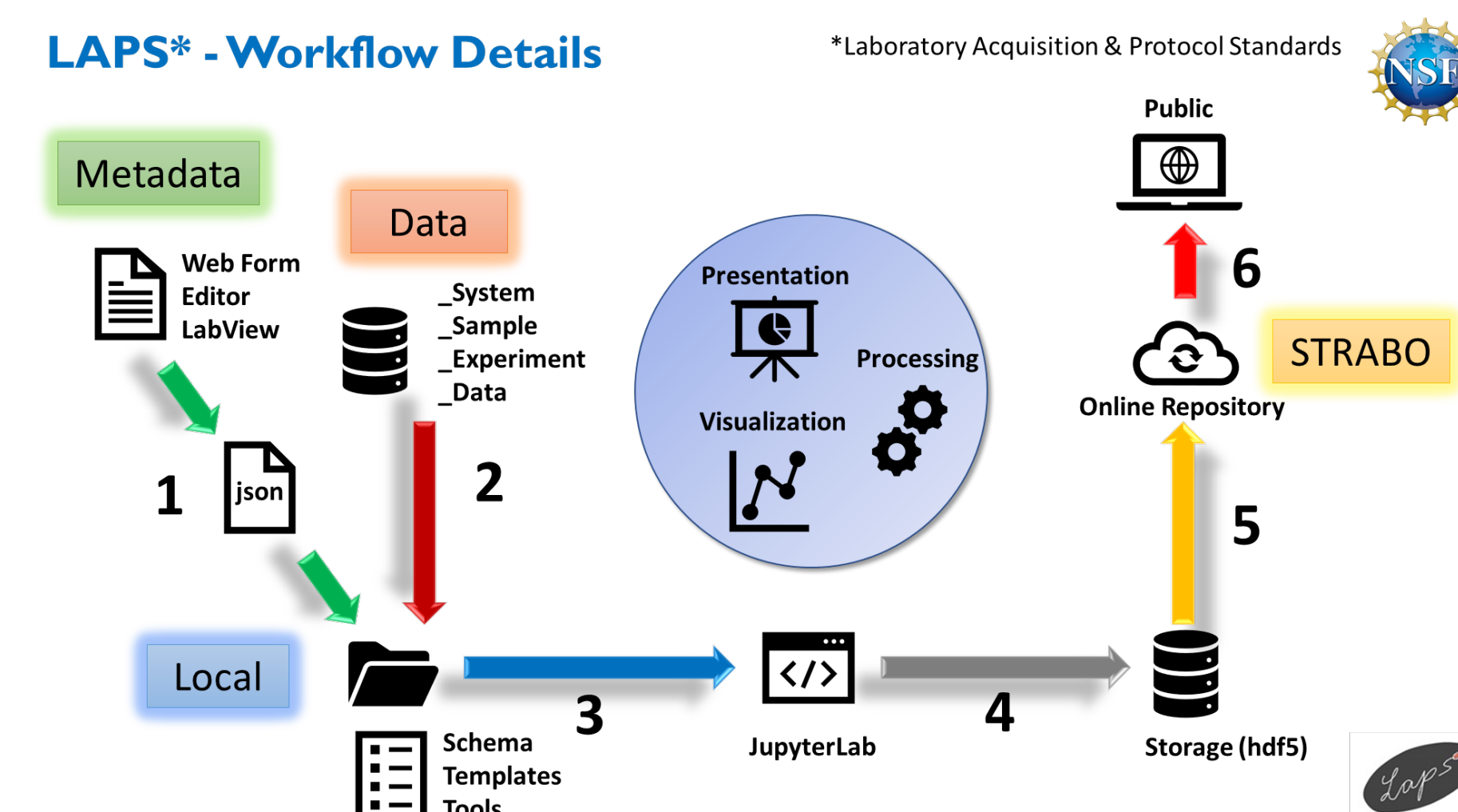


LAPS

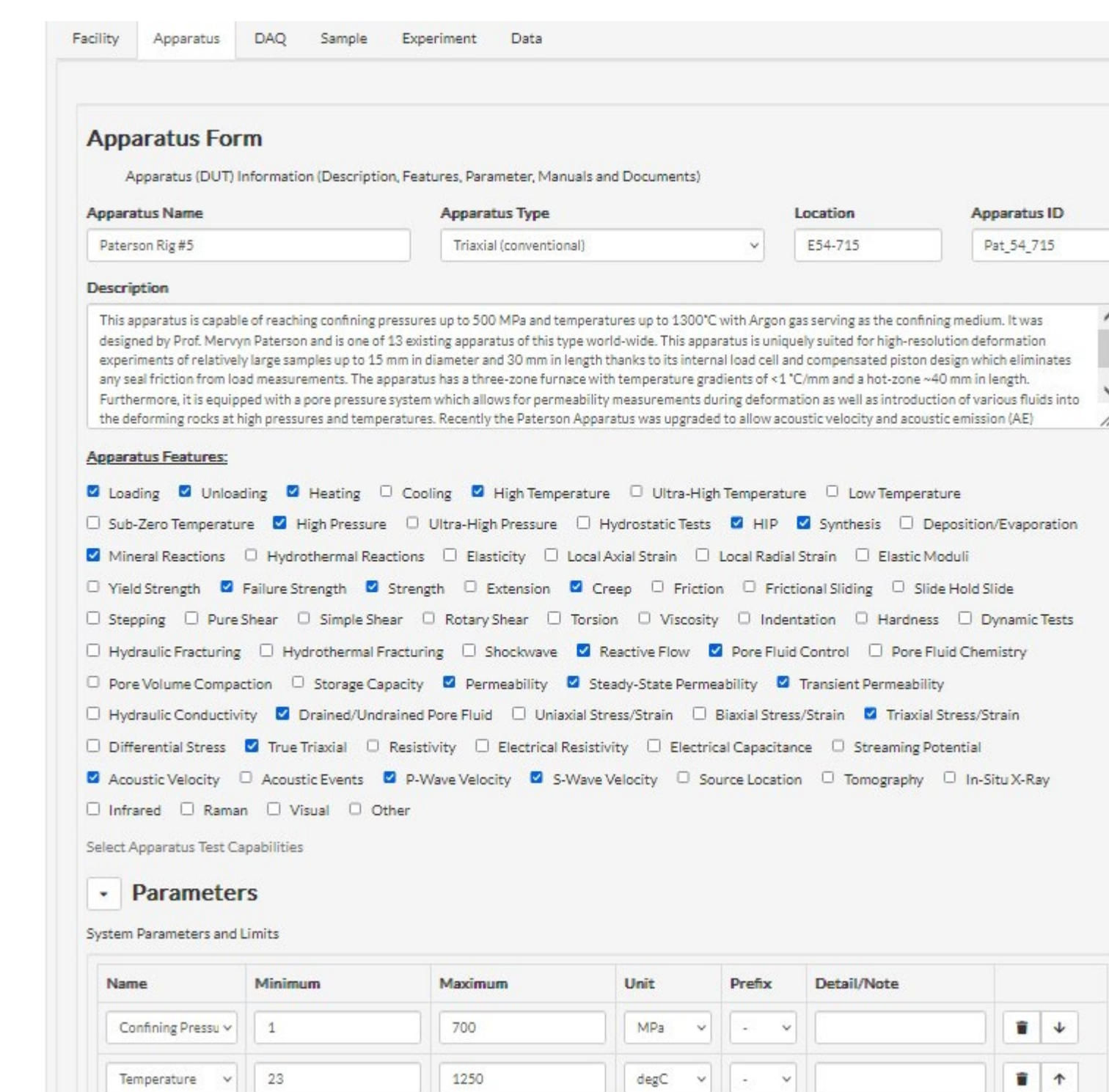
What is LAPS?

LAPS is a framework for preparing and storing experimental data locally. It comprises a set of instructions and workflow tools for gathering and organizing experimental results. Functionality includes upload capability to StraboExperimental via API.

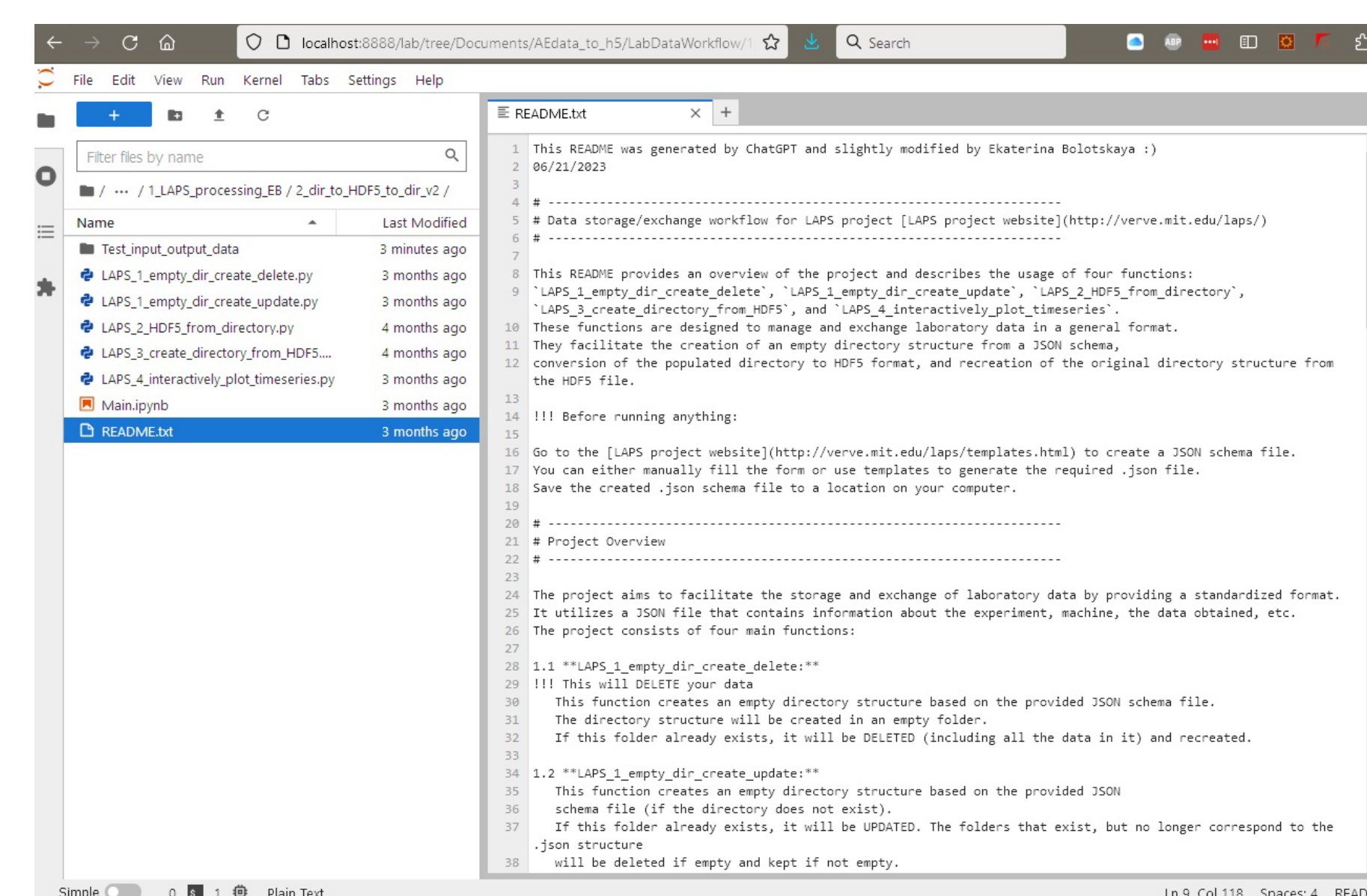
Shares Metadata Schema with Strabo



Offline Metadata Form matches Strabo



JupyterLab/Python Tools for Data Management



Summary

StraboExperimental and LAPS offer experimentalists easy to use set of tools to make their data ready to be shared and accessible.

Each dataset contains the experimental results as well as comprehensive information about experimental apparatus, sample, setup and procedure. The extensive use of metadata guarantees efficient search features for the end users.

Stringent access control prevents public access until the researcher chooses to allow it.

For data that needs to be stored locally, LAPS gives the user the option to add metadata and manage their data workflow on premise. The metadata schema is fully compatible with StraboExperimental.

StraboExperimental-LAPS Comparison

	STRABO EXPERIMENTAL	LAPS
Digital Repository	✓	✓ (single Test only)
Public Access	✓ (online)	✗ (offline)
Access Control	✓	✗
Community Standards	✓	✓
Structured Data	✓	✓ (json+hdf5)
Open Source	○	✓
Data Entry Forms	✓	✓
Database	✓	✗
External Data Reference	✓	✓
Workflow Integration	✗ (standalone)	✓
Strabo Integration	✓	○
API	✓	✓
Readiness	2024	2024

Outlook

- Integration with StraboMicro and StraboSpot
- Expand Apparatus Repository
- Engage Community
- Add and Improve WorkFlow Tools (LAPS)
- Compatibility with other Open Data Repositories.
- Incorporate Legacy Data

Acknowledgements

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