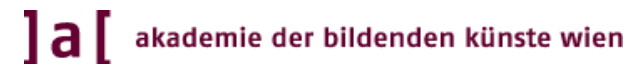




FAIR DATA
AUSTRIA

ELECTRONIC LAB NOTEBOOKS

JAKOB HARDEN & ALEXANDER GRUBER, 22. MARCH 2022



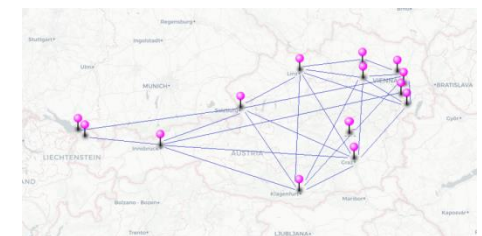
EVENT SERIES „RESEARCH DATA MANAGEMENT IN AUSTRIA“

The event series "Research Data Management in Austria" is aimed at researchers and/or research support staff and serves to promote networking and exchange on the topic of research data management, writing a data management plan, and similar related topics.

- Slides and recording on the project website soon:
forschungsdaten.at/en/fair-data-austria/materials/



RepManNet



ELECTRONIC LAB NOTEBOOKS

CONTENT

- 1) Introduction
- 2) Pros and Cons of ELN
- 3) eLabFTW
- 4) Q&A

ELECTRONIC LAB NOTEBOOKS

Jakob Harden (TU Graz)



Alexander Gruber (TU Graz)

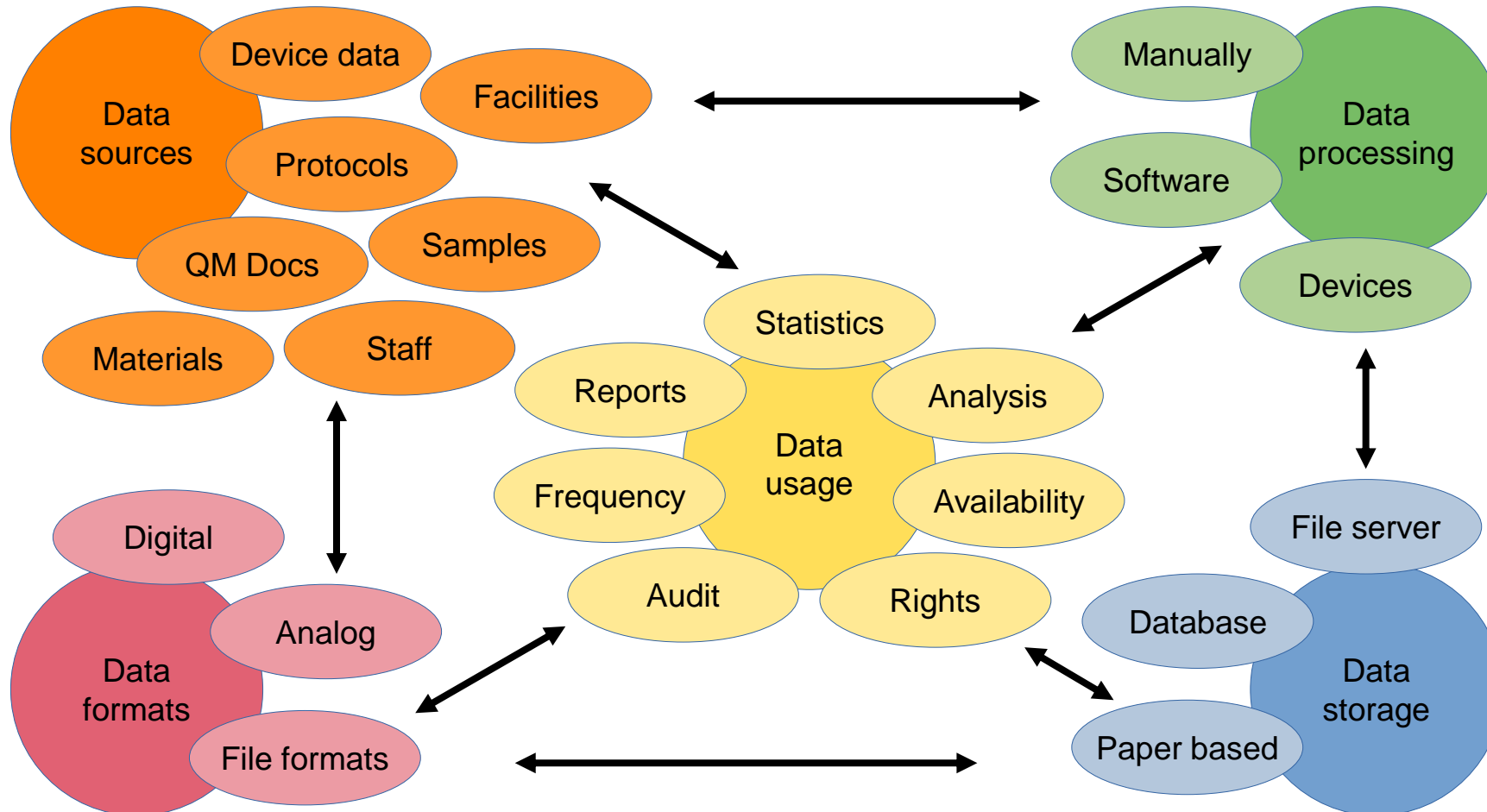


ELECTRONIC LAB NOTEBOOKS

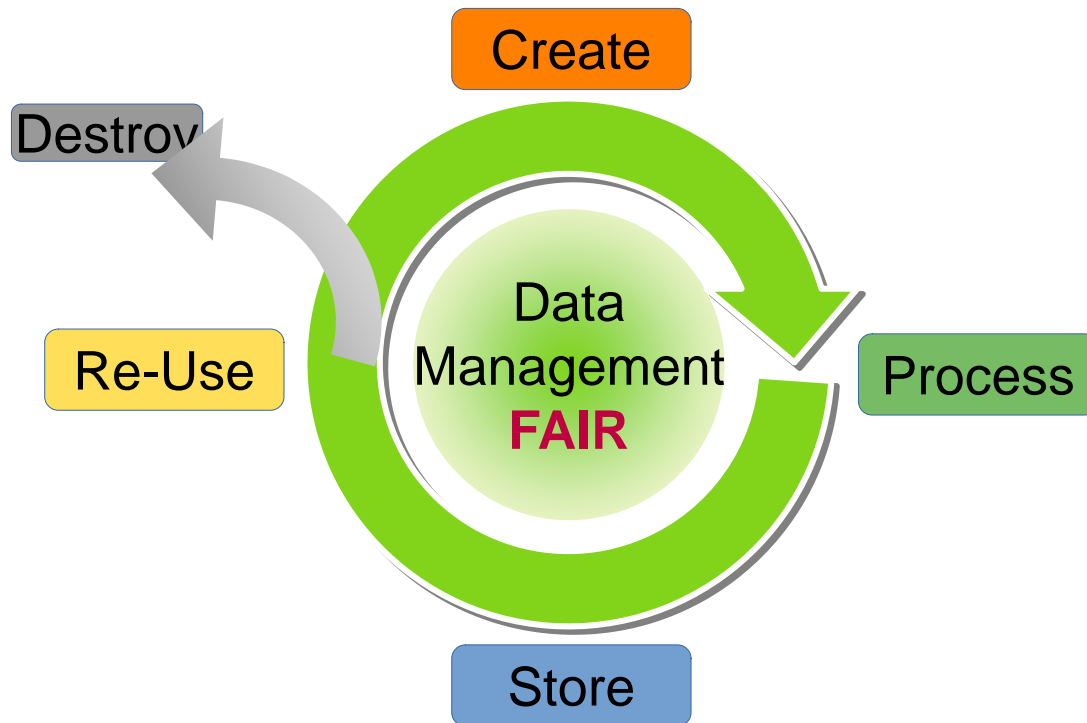
INTRODUCTION

- Designed to replace paper laboratory notebooks
- Different kinds of ELN: Specific or cross-disciplinary
- Main purpose: taking notes, data storage, organization
- Open Source and commercial solutions

LABORATORY DATA



DATA MANAGEMENT



F findable



A accessible



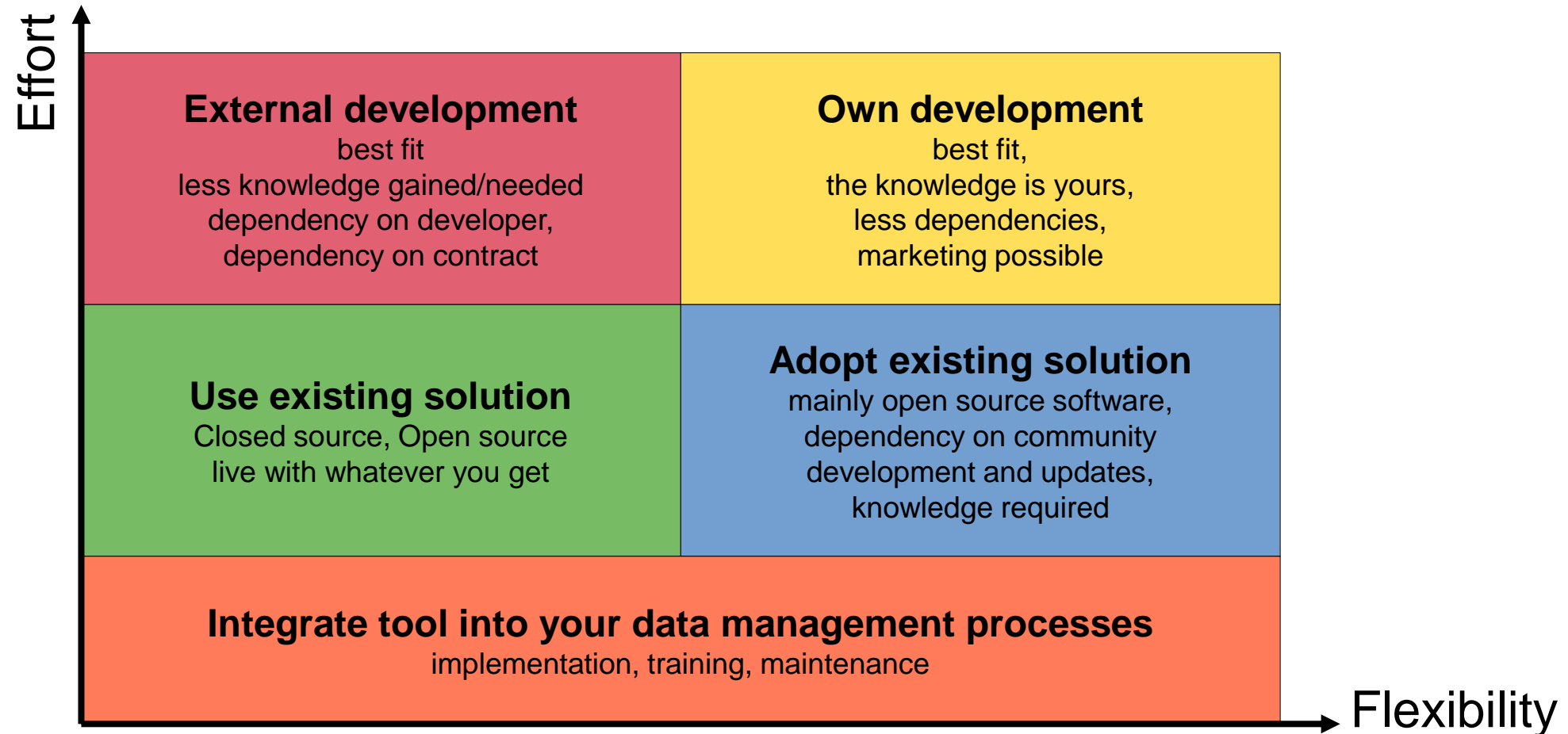
I interoperable



R reusable



PROS AND CONS OF ELN



PROS AND CONS OF ELN

Feature/Description	eLabFTW	SENAITE	LabNDB
Main purpose	Chemistry	Chemistry	General
Processes (laboratory tests)	✓	✓	✓
Materials		✓	✓
Samples	✓	✓	✓
Subsamples		✓	✓
Devices	✓	✓	✓
Laboratory areas, rooms	✓	✓	✓
Customers, funders, suppliers, ...		✓	✓
Projects	✓		✓
Data/File export	✓	✓	✓
Exchange messages	✓		✓
Role based authorization/permissions		✓	✓
Web based userinterface, cross platform	✓	✓	✓
Management, settings	✓	✓	✓

PROS AND CONS OF ELN

- What do I need to manage?
- What do I want to manage?
- What results do I expect?

Be aware!

- Data management \neq using software!
- The best solution is the one that fits best to your needs!

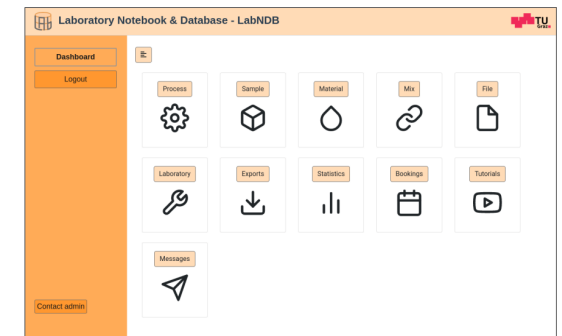
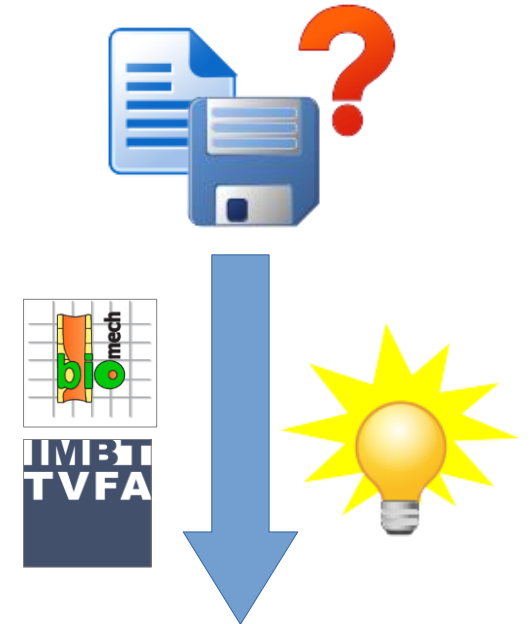
LABNDB – PILOT PROJECT

■ Requirements

- Need for laboratory data management
- For researchers and lab staff
- For analysis, support publication process
- General purpose tool

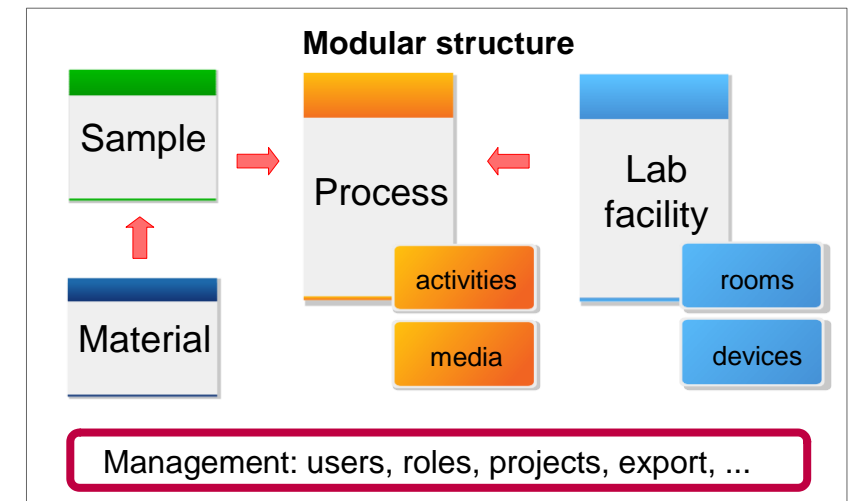
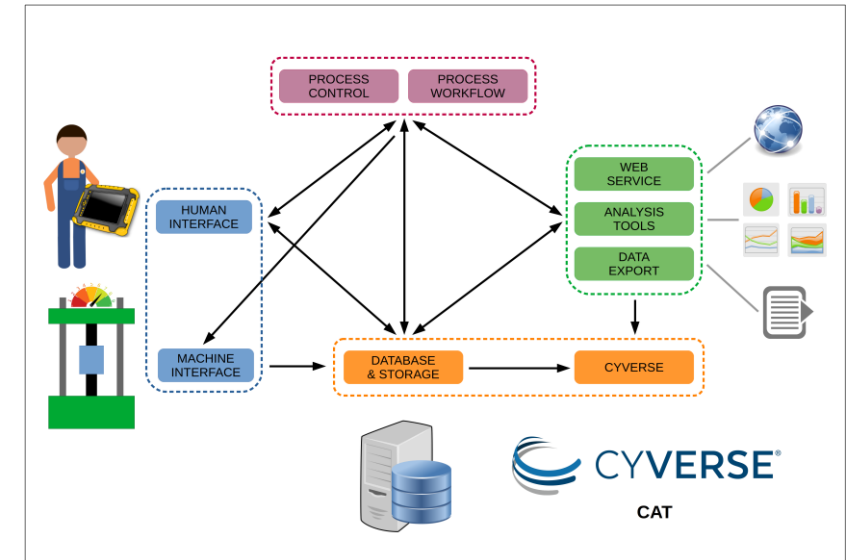
■ First steps

- RDM Marketplace Pilot Project
- Cooperation with other institute
- Develop web application „LabNDB“



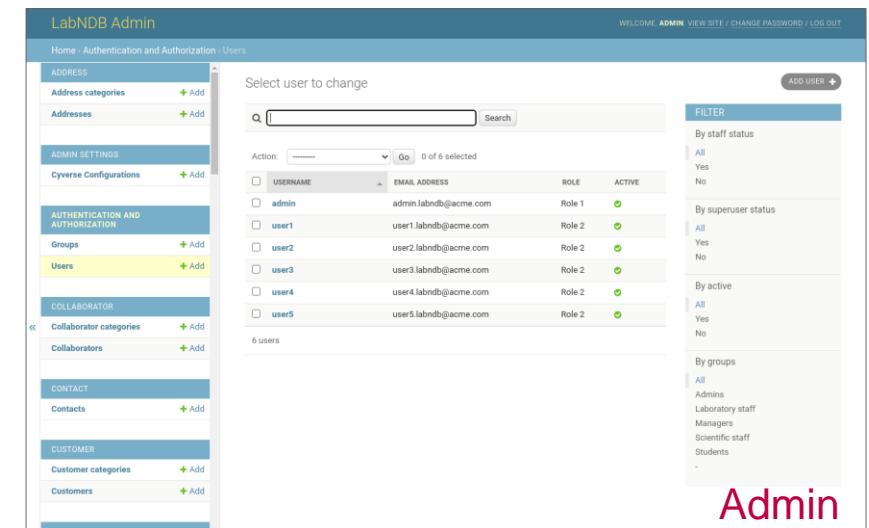
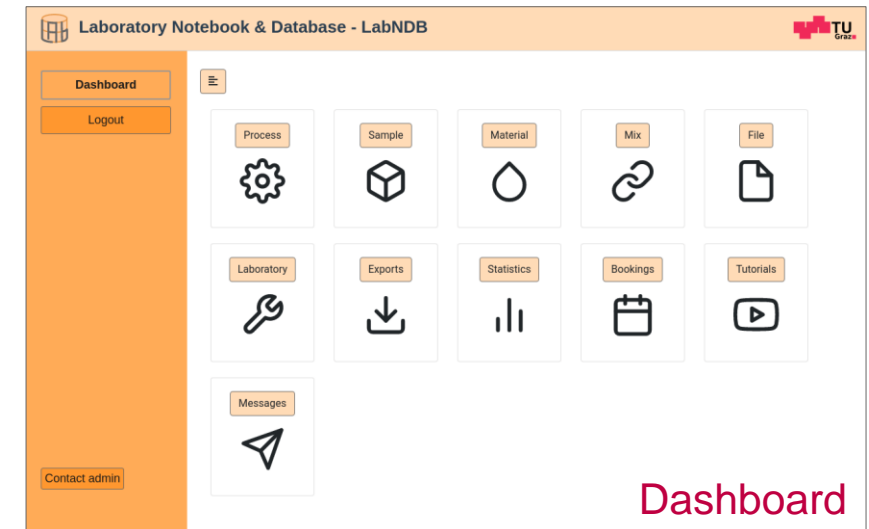
LABNDB - AIMS

- Gather laboratory test data
- Store and manage data
- Handle materials, samples, processes
- Export data
- Modular structure, open architecture
- Device/Platform independent
- Based on open-source tools
- FAIR data principles



LABNDB - PROTOTYPE

- Handle laboratory test processes
- Manage materials, samples
- Manage laboratory facilities
- Manage projects, customers, suppliers, ...
- Data export to files, CyVerse
- Web-based userinterface
- Web-based administrative interface
- Demo version



WHAT IS ELABFTW?

- Applicable in research and teaching (laboratory exercises)
- Main purpose: *taking notes, limited data storage, organization*
- Metadata documentation
- Lab management
- Collaborative work tool



- Designed by researchers for researchers
- Hosted at central computer facility at TU Graz.
- Free open source software, freely modifiable (AGPL license), highly customizable.
- Runs on all common operating systems.
- Powered by PHP/MySQL in Docker containers.
- Web-based application.

Features

 Free Open-source with an AGPL licence means free as in beer but also free as in freedom. You have the freedom to modify it, look how it works and even redistribute your changes!	 Secure Strong encryption, good practices and modern codebase offers the best security for your data. The only ELN with A+ rating on Mozilla's Observatory	 Responsive You can access your lab book from any device, running any operating system, from anywhere in the world!
 Cross-platform Use your favorite operating system. You only need a recent browser.	 Timestamps RFC 3161 compliant timestamping of experiments (for intellectual property).	 Inventory management Store reagents, protocols, plasmids, cell lines, mice or anything you want, you can customize everything!
 Stay master of your data Import and export your data in common file formats (PDF, ZIP, CSV, JSON). Your data is not locked somewhere.	 Internationalization eLabFTW is translated in several languages because not everyone is comfortable with english.	 Scheduler Use the integrated scheduler to book anything you need to like microscopes, rooms, machines, etc.

DOCUMENTATION OF RESEARCH RESULTS AND TASKS - EXPERIMENTS

Experiments

Back to listing View mode Create

Started on 13.01.2022

Status Running

Title Lore 3

Tags Add a tag

File Edit View Insert Format Tools Table

Heading 2 20px B I U

Lorem ipsum dolor sit amet

Ut vihi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit laboris nial ut aliquo ex ea commodo consequat. Duis autem vel eum irure dolor in hendrerit in vulputate velit esse molestie consequat, vel illum dolore eu feugiat nulla facilisis. Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat.

SAVE SAVE AND GO BACK

Steps Linked items

Add a step Add a link from the database Any category

← Modification in the graphical text editor

← Permission management

← Status and time stamping available

Attach files with preview →

Add metadata via JSON editor →

Create sketches and molecules directly →

Attach a file

Drop files here to upload

Attached files

three-ways-draw-chemical-structure-260nw-1416346544.jpg 19.21 KiB - 2022-01-13 15:59:34 Click to add a comment

FAIR_Principles.pdf 1.14 MiB - 2022-01-13 15:59:59 Click to add a comment

Test_molecule.mol 852.00 B - 2022-01-13 15:58:23 Click to add a comment

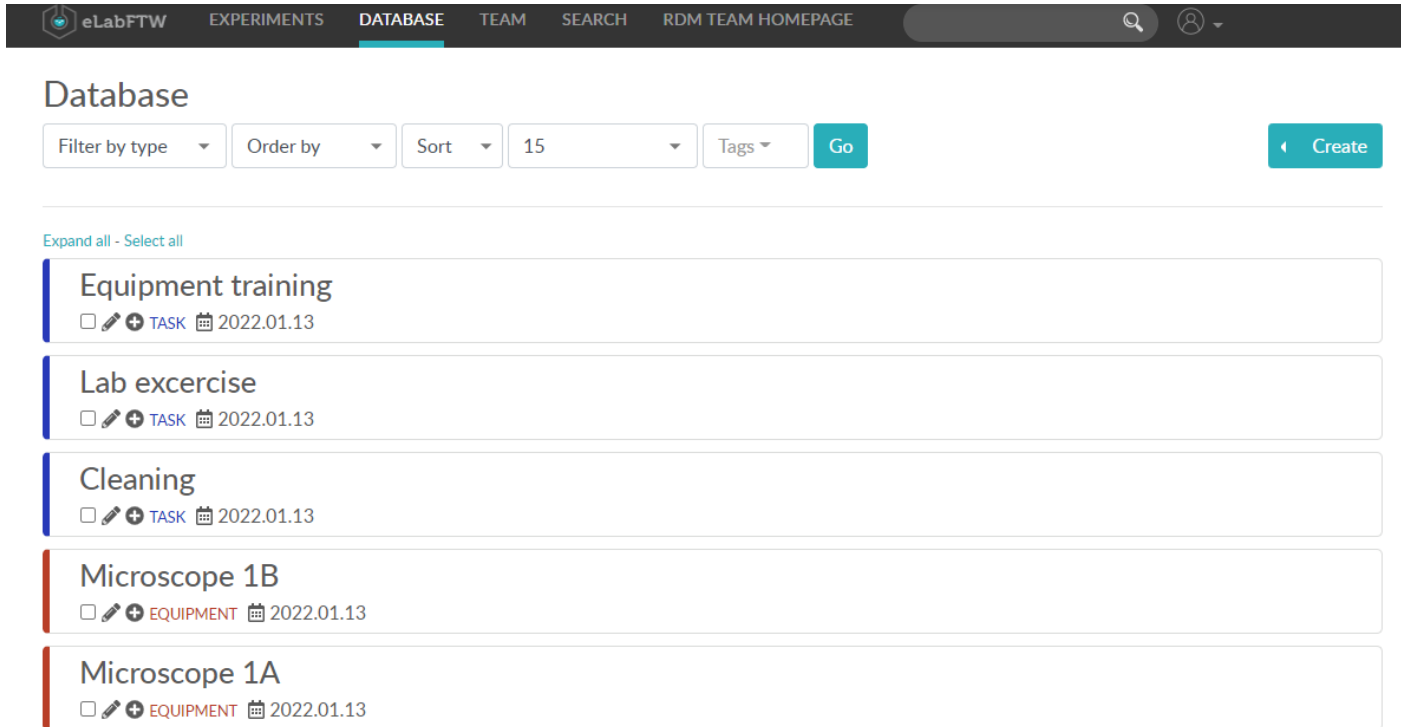
JSON Editor Load metadata

Draw something

Molecule drawer

Powered by eLabFTW 4.2.2
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INVENTORY MANAGEMENT WITH FREELY DEFINABLE TEMPLATES - DATABASE



The screenshot shows the eLabFTW Database interface. At the top is a navigation bar with links for eLabFTW, EXPERIMENTS, DATABASE (highlighted), TEAM, SEARCH, and RDM TEAM HOMEPAGE. Below the navigation bar, the 'Database' section is visible. It includes a 'Filter by type' dropdown, 'Order by' and 'Sort' dropdowns, a '15' items per page selector, a 'Tags' dropdown, and a 'Go' button. A 'Create' button is also present. Below these controls, a list of database items is shown, each with a checkbox, an edit icon, a plus icon, a label, and a date. The items are: 'Equipment training' (TASK, 2022.01.13), 'Lab exercise' (TASK, 2022.01.13), 'Cleaning' (TASK, 2022.01.13), 'Microscope 1B' (EQUIPMENT, 2022.01.13), and 'Microscope 1A' (EQUIPMENT, 2022.01.13). A link 'Expand all - Select all' is located above the list.

Item	Type	Date
Equipment training	TASK	2022.01.13
Lab exercise	TASK	2022.01.13
Cleaning	TASK	2022.01.13
Microscope 1B	EQUIPMENT	2022.01.13
Microscope 1A	EQUIPMENT	2022.01.13

← Create/Share database items

← Different types of items individually configurable

← Like instruments, chemicals, tasks, guides, data sets, media, ...

← Types are defined by Admin

← Items can be bookable (scheduler) or non-bookable

← Creation very similar to experiments

MEMBER OVERVIEW AND ITEM BOOKING OPTIONS - TEAM

eLabFTW EXPERIMENTS DATABASE **TEAM** SEARCH RDM TEAM HOMEPAGE

Team

SCHEDULER INFORMATION TEMPLATES EMAIL

Select an equipment ▾

< > today Jan 10 – 16, 2022 week list month

	MON 1/10	TUE 1/11	WED 1/12	THU 1/13	FRI 1/14	SAT 1/15	SUN 1/16
6am							
7am							
8am	8:00 - 10:30 [Equipment training] Training MC 1A (Alexander Gruber)						
9am			8:30 - 11:30 [Microscope 1A] Examination Sample XXY2A (Alexander Gruber)				
10am							
11am							
12pm							
1pm							
2pm							
3pm							
4pm				4:00 - 4:30 [Cleaning] Cleaning Room P00421 (Alexander Gruber)			
5pm							
6pm							
7pm							
8pm							
9pm							
10pm							
11pm							

Twitter GitHub Docker SysAdmin Panel Admin Panel User Panel

Powered by eLabFTW 4.2.2
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Feature	User	Admin	SysAdmin
Modify Profile Information	x	x	x
Use ToDo-List	x	x	x
Create/Edit/Delete Experiments	x	x	x
Upload to Database	x	x	x
Add Users		x	x
Create Groups		x	x
Add Database item types		x	x
Define Experiment Status		x	x
Create Teams			x
System Settings			x
Security & Email settings			x

← Schedule tasks, manage
experiment templates

← Built-in email system

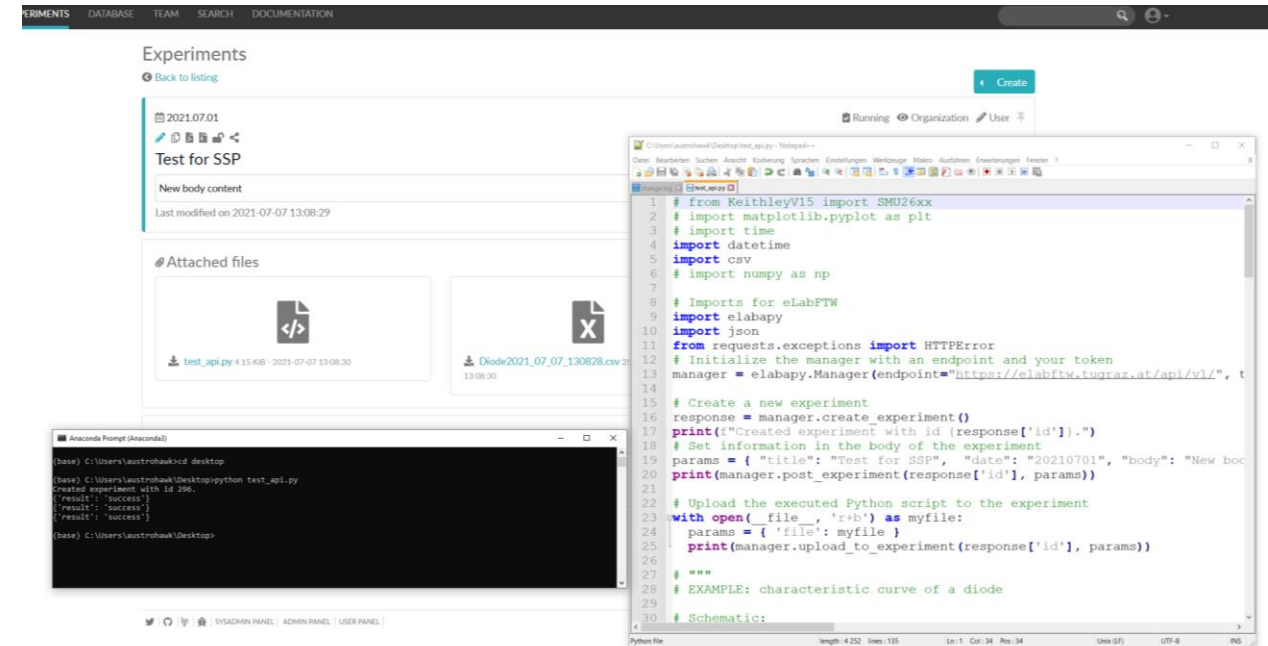
↑ 3 types of actor status

↑ Subset of teams: groups

↑ User can be part of multiple-teams

ACCESS VIA API (PYTHON SCRIPTS)

- eLabFTW access by web browser or **API**
- *Scripts for various tasks possible*
- Create experiments, items, tags, templates, ...
- Upload/Download files
- Get backup of experiments and lists of team members
- eLabFTW API [documentation](#)



ELECTRONIC LAB NOTEBOOKS

ELABFTW LIVE DEMO

ELECTRONIC LAB NOTEBOOKS

Q&A

SAVE THE DATE

AN EXPLORATION OF PERSISTENT IDENTIFIERS: USE, VALUE AND FUTURE

- 27. April 2022, 10-12 am



CONTACT

fairdata_wp1@mlist.tugraz.at

forschungsdaten.at/projekte/fda/