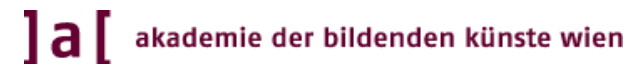**FAIR DATA
AUSTRIA**

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/

TU Graz.

FAIR DATA AUSTRIA

RepManNet
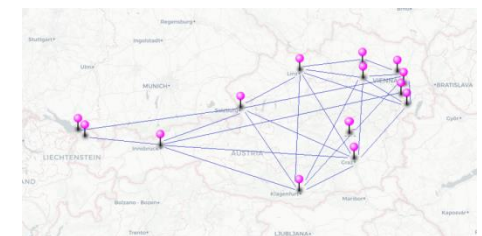
ELECTRONIC LAB NOTEBOOKS

CONTENT

1) Introduction

2) Pros and Cons of ELN

3) eLabFTW

4) Q&A

ELECTRONIC LAB NOTEBOOKS

Jakob Harden (TU Graz)
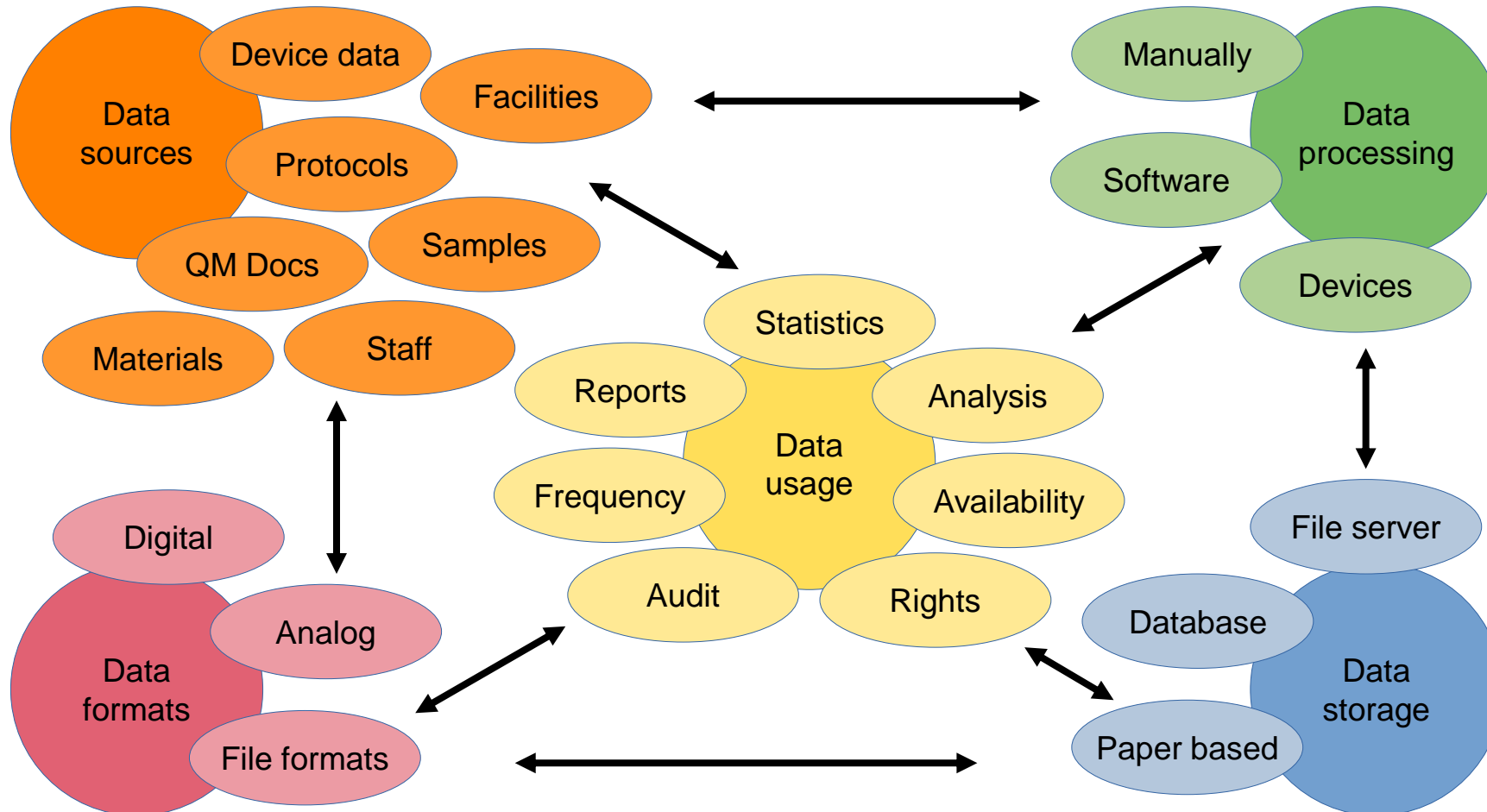
Alexander Gruber (TU Graz)
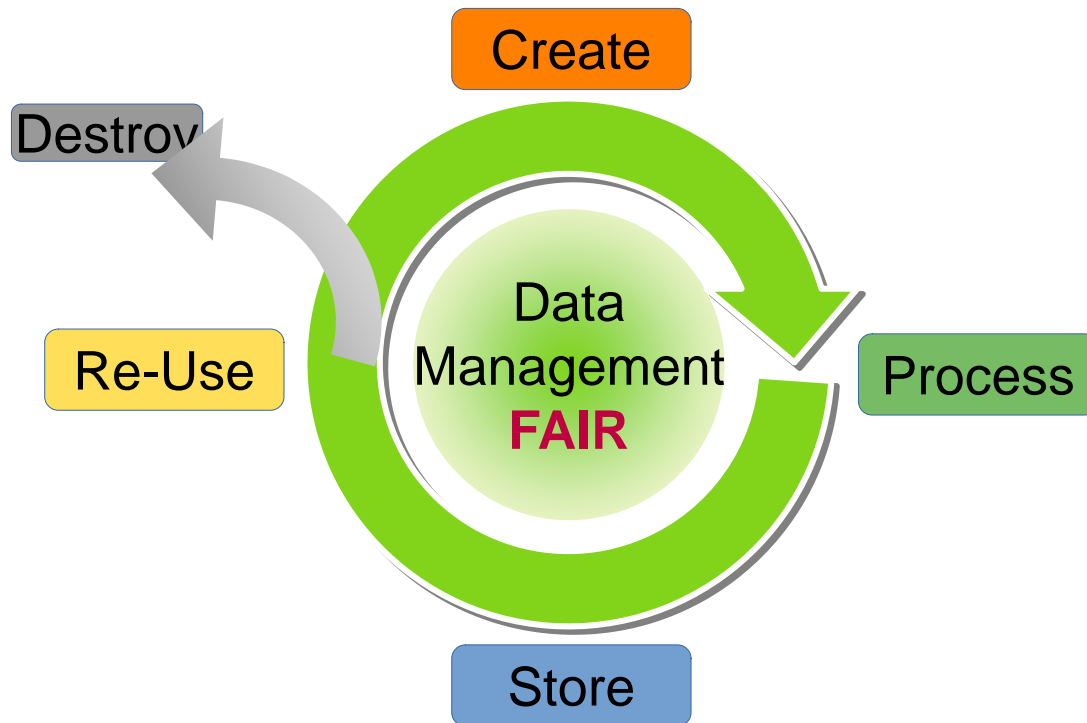
ELECTRONIC LAB NOTEBOOKS

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
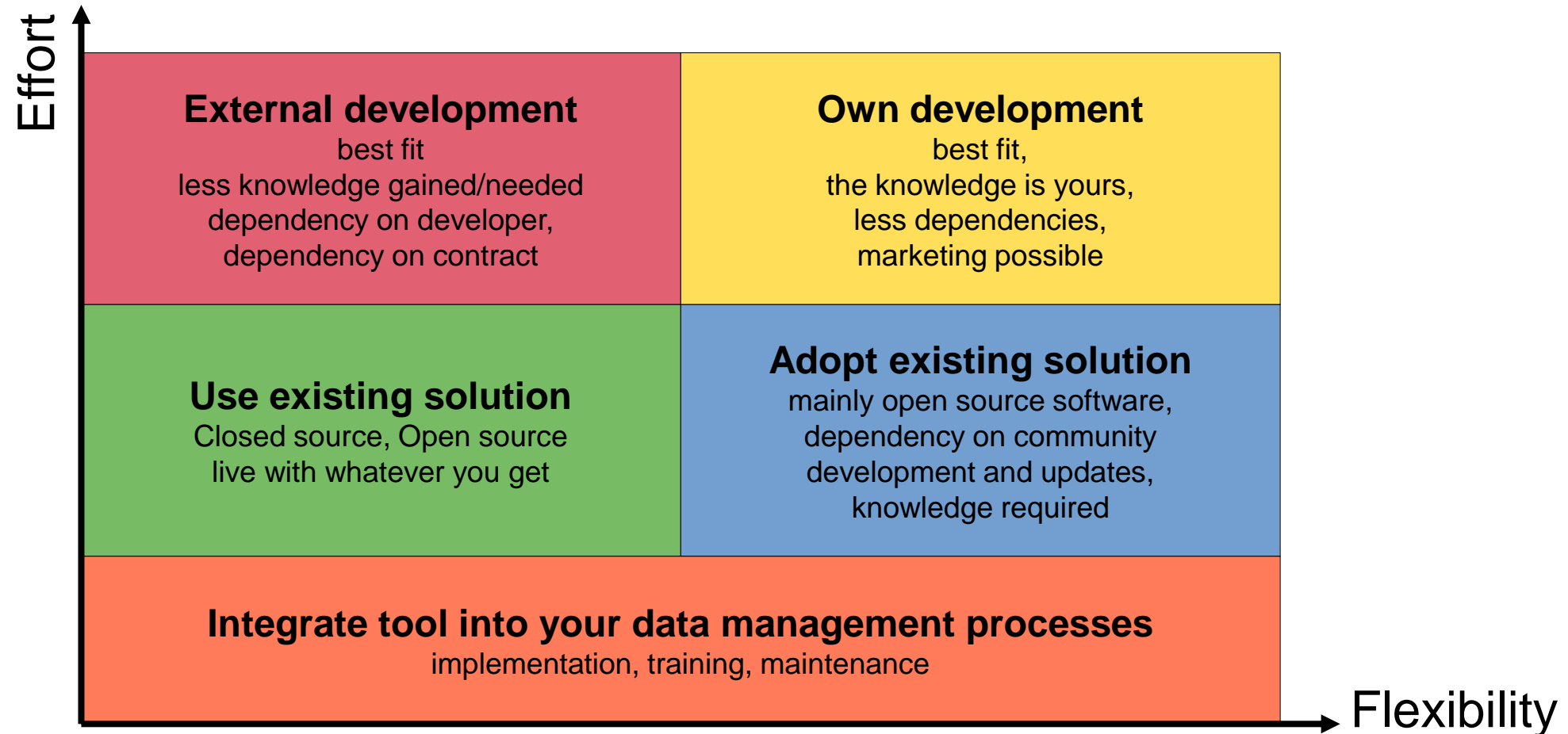
LABORATORY DATA

DATA MANAGEMENT

Create

Destroy

Re-Use

Data Management FAIR

Process

Store

F findable

A accessible

I interoperable

R reusable

FAIR DATA AUSTRIA

PROS AND CONS OF ELN

Effort ↑

External development
best fit
less knowledge gained/needed
dependency on developer,
dependency on contract

Own development
best fit,
the knowledge is yours,
less dependencies,
marketing possible

Use existing solution
Closed source, Open source
live with whatever you get

Adopt existing solution
mainly open source software,
dependency on community
development and updates,
knowledge required

Integrate tool into your data management processes
implementation, training, maintenance

Flexibility →

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 ≠ using software!
- The best solution is the one that fits best to your needs!
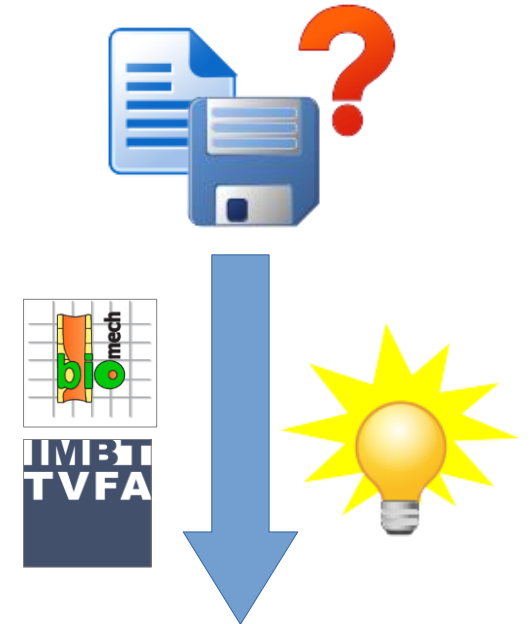
LABNDB – PILOT PROJECT

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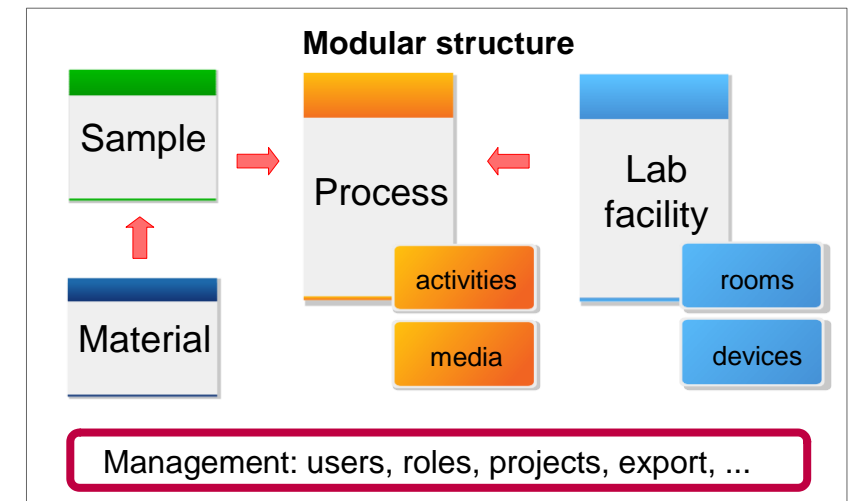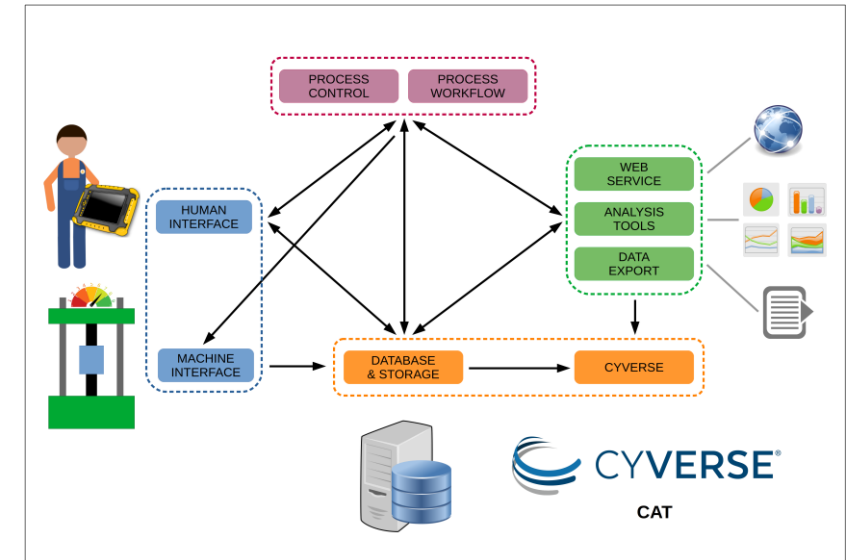- General purpose tool

- **First steps**
- RDM Marketplace Pilot Project
- Cooperation with other institute
- Develop web application „LabNDB"
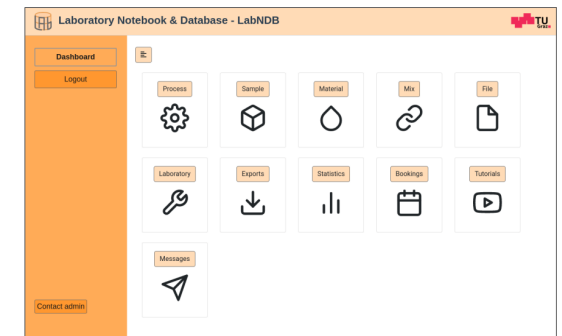
LABNDB - AIMS

- 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

Dashboard

Admin

E-Labbook (eLabFTW)
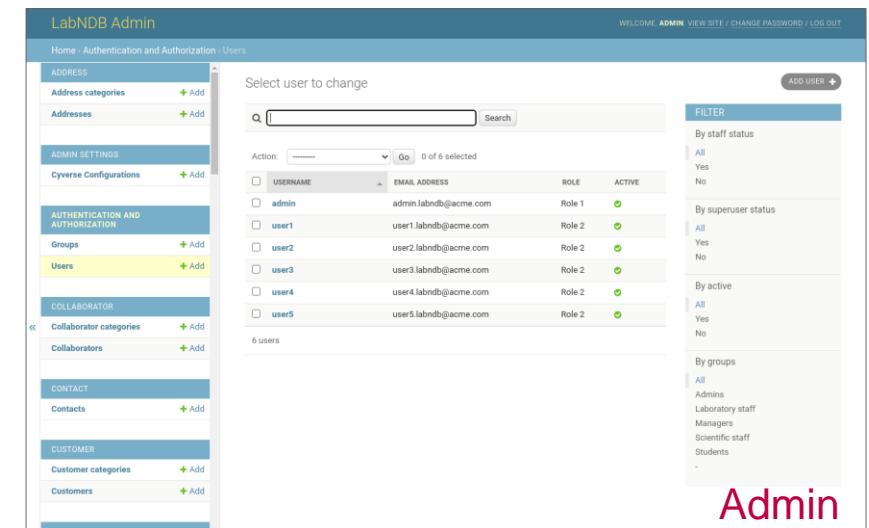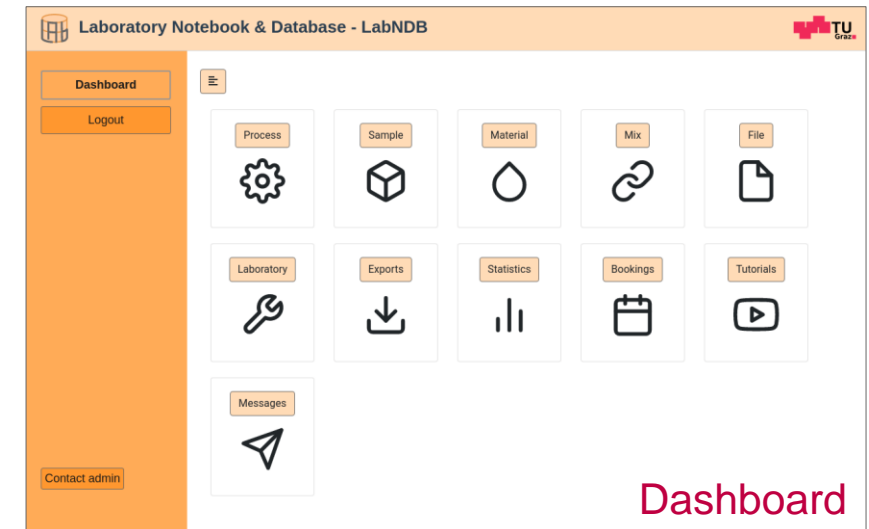
WHAT IS ELABFTW?

- 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.

E-Labbook (eLabFTW)

FAIR DATA AUSTRIA

DOCUMENTATION OF RESEARCH RESULTS AND TASKS - EXPERIMENTS

← *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 →

E-Labbook (eLabFTW)
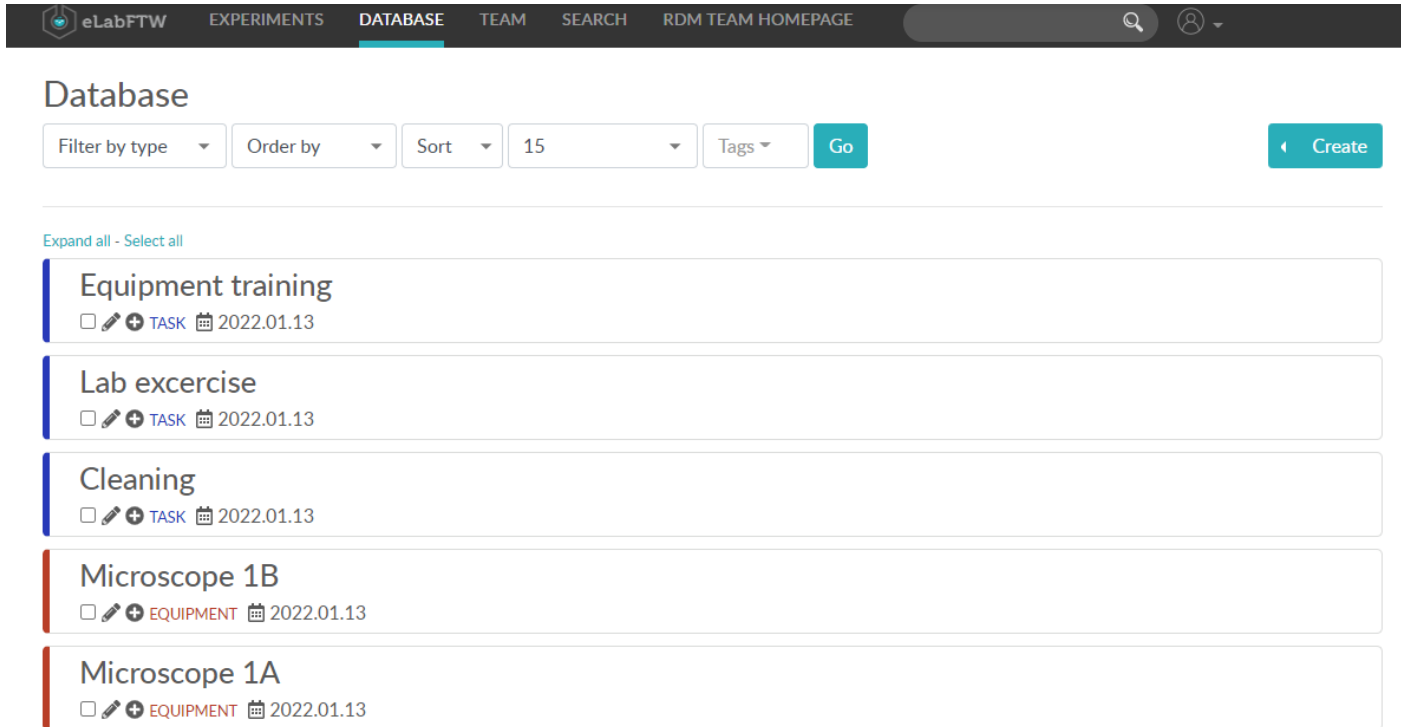
INVENTORY MANAGEMENT WITH FREELY DEFINABLE TEMPLATES - DATABASE

← *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 (schedular) or non-bookable*

← *Creation very similar to experiments*

E-Labbook (eLabFTW)

FAIR DATA AUSTRIA

MEMBER OVERVIEW AND ITEM BOOKING OPTIONS - TEAM

Feature	User	Admin	SysAdmim
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*

E-Labbook (eLabFTW)

FAIR DATA AUSTRIA

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*
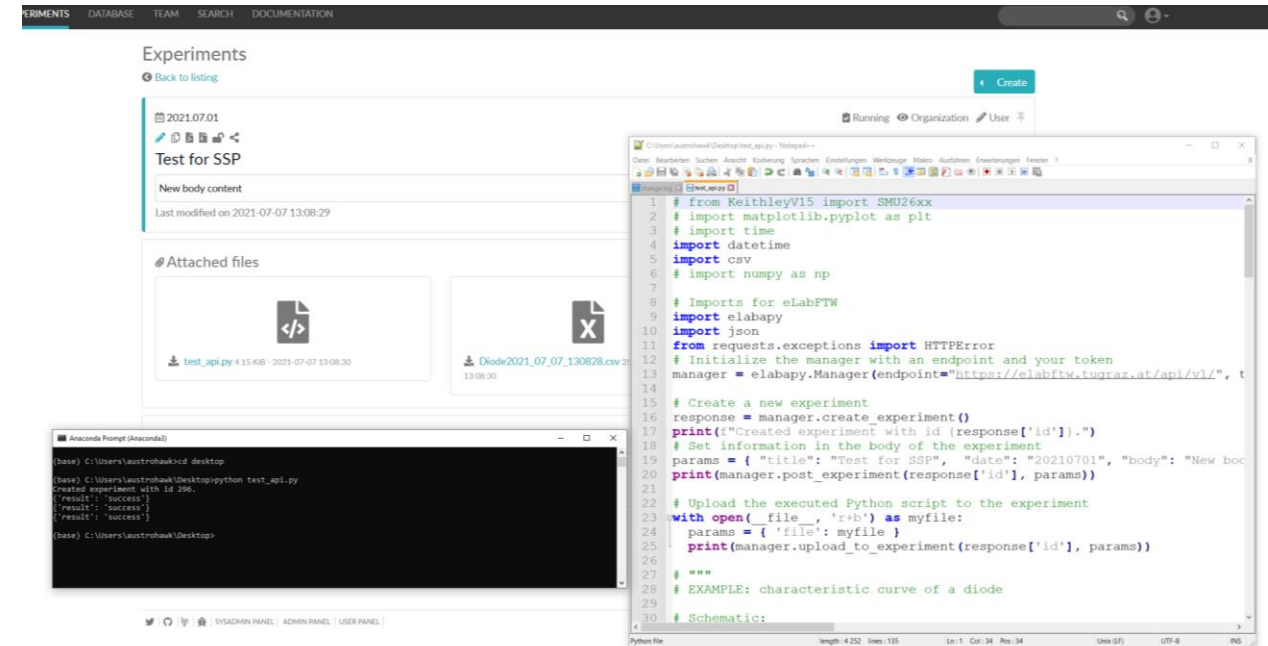
ELECTRONIC LAB NOTEBOOKS

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

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forschungsdaten.at/projekte/fda/