Transition to an electronic lab notebook experience report

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TECHNICAL ADVANCEMENT

19th century

21st century

S.P. Thompson, P. Reis: Reis' telephone, licence: Public Domain

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TECHNICAL ADVANCEMENT?
DISADVANTAGES OF PAPER LAB BOOKS

- Hard to read
- No Index
- No Search
REASONS FOR AN ELECTRONIC LAB NOTEBOOK

- Seamless transition during staff turnover
- Simplifies team collaboration
- Streamlines protocol and data sharing
- “Bird’s-eye view” of lab-wide activities
- Mandated by many funding agencies
- Integrated automatic backup feature
- Version Control

created by Scriberia with The Turing Way community (modified). Licence: CC-BY 4.0, DOI: 10.5281/zenodo.3332807
SELECTING THE IDEAL ELN

- Analyse the current situation
- Assess your institution’s needs
- Define selection criteria
- Select one or more ELN(s)
- Test the ELN(s)
- Select an ELN
- License the ELN
- Introduce the ELN in research groups
- Monitor the application

modified from Adam & Lindstädt 2021 and Vandendorpe et al. n.d. by ZB MED 2023

ELN Guide
Electronic laboratory notebooks in the context of research data management and good research practice – a guide for the life sciences

DOI: https://doi.org/10.4126/frl01-006425772
KEY FEATURES

- generic ELN
- on-premise and web-based solutions
- no client installation required
- REST API
- compatible with all operating systems
- responsive design for all screen sizes
- Free, open-source software with an active community and developers
IMPLEMENTATION

technical
- VM hosted at local data center
  - 4 CPUs, 8GB RAM, 2x40GB storage
- Backups secured at two separate physical sites
- File size capped at 100 MB, no overarching limit

user training
- initial introduction
- regular workshops

source: David Lohner (modified)
https://flickr.com/photos/davidlohner/32808143587/
ENHANCING USER-FRIENDLY EXPERIENCE

- Tablets in the lab
- Speech-to-Text
- Optical Character Recognition (OCR)
- Direct Links to Data Files & Results
- Provenance with Auto Date/Time Stamps
TECHNICAL DETAILS

- Disk usage: 5 GB of data
- Number of experiments: 4 faculties, 13 groups, 117 users

After 7 months
ADVANTAGES

▪ User-friendly, intuitive interface
▪ Accessible anywhere (conference, home office)
▪ Aided supervision of students
▪ Enhanced transparency with lab activity tracking
▪ Higher efficiency with template use
▪ Documentation with timestamps
DISADVANTAGES

- Initial setup demands significant investment
- Full group participation critical for efficiency
- Implementation often requires top-down directives
- PIs' adoption not reflective of potential benefits

source: Jan Vasek (modified)  
https://unsplash.com/de/@jeshoots
MISSING FEATURES

- Lacks overarching project categorization
- Limited collaborative functionality in spreadsheets & databases
- Problems with linking to raw data, e.g. group folder

Responsive developer with prompt issue resolution on GitHub

► Features might get implemented

LESSONS LEARNED

▪ ongoing maintenance and user support

▪ Unresolved issue: privacy and security for healthcare data
ENHANCE RESEARCH REPRODUCIBILITY

RDM in (Bio-)Medicine: Electronic Lab Notebooks

15.11.2023
10 a.m.

online workshop

eLabFTW @ JGU

Access with ZDV-Account credentials

Registering a new group: bio-it@uni-mainz.de