



## Early Adoption of an Electronic Laboratory Notebook at TU Ilmenau

In many scientific disciplines a lionshare of the research activity is conducted in laboratories. While working in a laboratory, researchers document the planning, execution and analysis of their experiments in so-called laboratory notebooks in order to make their research transparent and reproducible, document good scientific practice and, in case of doubt (or when registering a patent or invention), as proof of their work. Traditionally, this was done in the form of hand-written paper notebooks.

Throughout the last two decades, more and more researchers have swapped the hand-written notebooks for so-called electronic laboratory notebooks due to the availability of mobile devices and the progressive digitization of research equipment. An electronic laboratory notebook (or ELN for short) is a software which aims to replace hand-written or printed-out paper laboratory notebooks. Just like their analogue predecessors, electronic laboratory notebooks are used to document the planning, execution and analysis of scientific experiments. However, compared to paper versions, ELNs offer advantages such as better searchability, tracking changes via time-stamping and easier sharing of data with colleagues.

At TU Ilmenau two software products, the open source software *eLABFTW* and the commercial product *labfolder* were tested by researchers from many different disciplines in November of 2019, with the aim of collecting feedback with regards to making an electronic notebook software centrally available to all researchers.

## Early Adopter at TU Ilmenau—an interview with Jonas Kluitmann

One of the first researchers to adopt an electronic laboratory notebook software at TU Ilmenau is Jonas Kluitmann (depicted on the right) from the research group Physical Chemistry/Microreaction Technology. I spoke to him about advantages and limitations of electronic laboratory notebooks.



The idea to use an electronic laboratory notebook was born relatively quickly after he started working with the group that had been using paper notebooks up to that point. One major reason for this decision was apparently the issue of deciphering one's own handwriting which had proven difficult in the past. Finding particular previous experiments or information is also much more time-consuming in a paper notebook than in the electronic version. All of these issues were making the free flow of knowledge within the group needlessly complicated.

After some research and product testing in March 2018, Jonas Kluitmann decided to use *eLabFTW* and has been working with the software ever since.

Nach den Vorteilen der Nutzung eines elektronischen Laborbuchs befragt, nennt er die bessere Auffindbarkeit von Informationen durch die Suchfunktion, was zu einer besseren Nachvollziehbarkeit seiner For-

Best Practice:

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Asked to name a few advantages of working with an electronic laboratory notebook, he names better findability of information through the search function which leads to improved traceability and reproducibility as well as an enhanced usability. The notebook does not need to be carried from the office to the lab anymore, but can be used from either site via an app. Experiments can be planned on the desktop computer and then executed and documented in the lab on a mobile device. Another issue to be considered is, that some labs do not allow the use of a paper notebook due to contamination protection regulations whereas using the digital version is not usually an issue.

Naturally, there are also a few downsides to using an electronic notebook. If the information is hosted with an external provider, this might lead to issues in industry cooperation projects which oftentimes need to comply with secrecy agreements. Moreover, the backup strategy for such a software has to be sophisticated enough to avoid data loss in case of technical failure or human error. And last but not least, it is not always easy to find a suitable product for all users in a research group.

Despite these potential issues, the advantages presented here outweigh the potential problems by far, as early adopters at TU Ilmenau and many researchers worldwide can confirm. Or to say it in Mr. Kluitmann's words: „I couldn't imagine doing it differently ever again.“

If you have any questions regarding Electronic Laboratory Notebooks, please contact Jessica Rex, Research Data Management Contact Point at TU Ilmenau ([fdm@tu-ilmenau.de](mailto:fdm@tu-ilmenau.de)).



Do you have any questions about this Best Practice or would you like to suggest another one?

Please contact us: [info@forschungsdaten-thueringen.de](mailto:info@forschungsdaten-thueringen.de)