Digital lab-workflows with OpenBIS

Kilian Koch

Empa, Überlandstrasse 129, 8600 Dübendorf, Switzerland
kilian.koch@empa.ch

In recent years, digitalization of scientific recording has grown in importance. Especially to comply with the FAIR principles (findable, accessible, identifiable, and reusable) for open data, electronic laboratory notebooks and other tools are necessary considering the increasing amount of data collected.
In this work, we use the tool openBIS developed by the ETH Zurich to implement digital lab-workflows. These workflows include data wrangling, data pre-processing and data analysis. Implementation was done using additional open-source python-based tools such as pandas, FastAPI, pybis, and matplotlib. An execution plan for workflow digitalization is proposed which includes the following main steps: (i) identification of needs, (ii) fit-gap analysis, (iii) testing-phase, (iv) implementation and (v) management. The developed plan will be used to digitize various lab-workflows with openBIS and adapted if necessary. In a later stage, implementation of a version-control system Renku to manage methods and data processing as well as automation of the scientific recording will be in focus.

[1] C. Barillari, D.S. Ottoz, J.M. Fuentes-Serna, C. Ramakrishnan, B. Rinn, F. Rudolf, *Bioinformatics* **2016**, 32(4), 638-40.