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Report on a pilot study to implement OMERO for managing imaging data

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The **FAIR** (Findability, Accessibility, Interoperability, Reusability) concept of data management is of relevance for all current areas of research. Moreover, a statement about the handling of scientific data of is often required when applying at national and/or international funding agencies. For imaging data obtained from both light and electron microscopy, data management is associated with a number of challenges related to the size, complexity, dimensionality, visualization and quantitative analysis of the acquired data. Quite recently, we have started to use the Python-based and open-source image data management software, OMERO. This software package has been introduced by the Open Microscopy Environment developers of the University of Dundee. OMERO is an encouraging option to manage microscopy data. It is installed on a virtual machine and connected to a central data server to manage the storage of images in a multi-user environment. In addition to long-term data storage, it provides possibilities for saving important metadata in an efficient manner, thus avoiding multiple copies of data. It can also handle open source-based processing tools for image analysis, thus allowing effective image analysis workflows. The Core Facility Cellular Imaging (CFCI) at the Faculty of Medicine Carl Gustav Carus at TU Dresden is currently running a pilot project for testing the use and handling of the OMERO software. This is done together with interested users of the imaging facility and a research group. Currently, we are pushing forward this pilot study on a small scale without any data steward. However, we cooperate with the I3D:bio-Team (Information Infrastructure for BioImage Data) in learning all necessary skills and administrative issues. Over the last months, we faced some challenges in using this professional software for data management on a daily basis. Our experiences argue for giving data management issues into the hands of dedicated personnel not fully involved in research projects. As funding agencies will ask for higher and higher standards for implementing FAIR-data principles in the future, this will be a relevant topic for the whole research community. During the conference, we thus want to introduce a convenient solution, which could be applicable for many users within the DRESDEN-concept research alliance. Our poster will demonstrate how to establish and manage OMERO. Furthermore, we will report on technical, administrative and research-specific challenges by showing examples of our first user cases. Last but not least, we will also discuss the use of OMERO for teaching students within the scope of e-learning courses.

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