

German Bioimaging OMERO @ TiM

Tom Boissonnet

2024-30-05



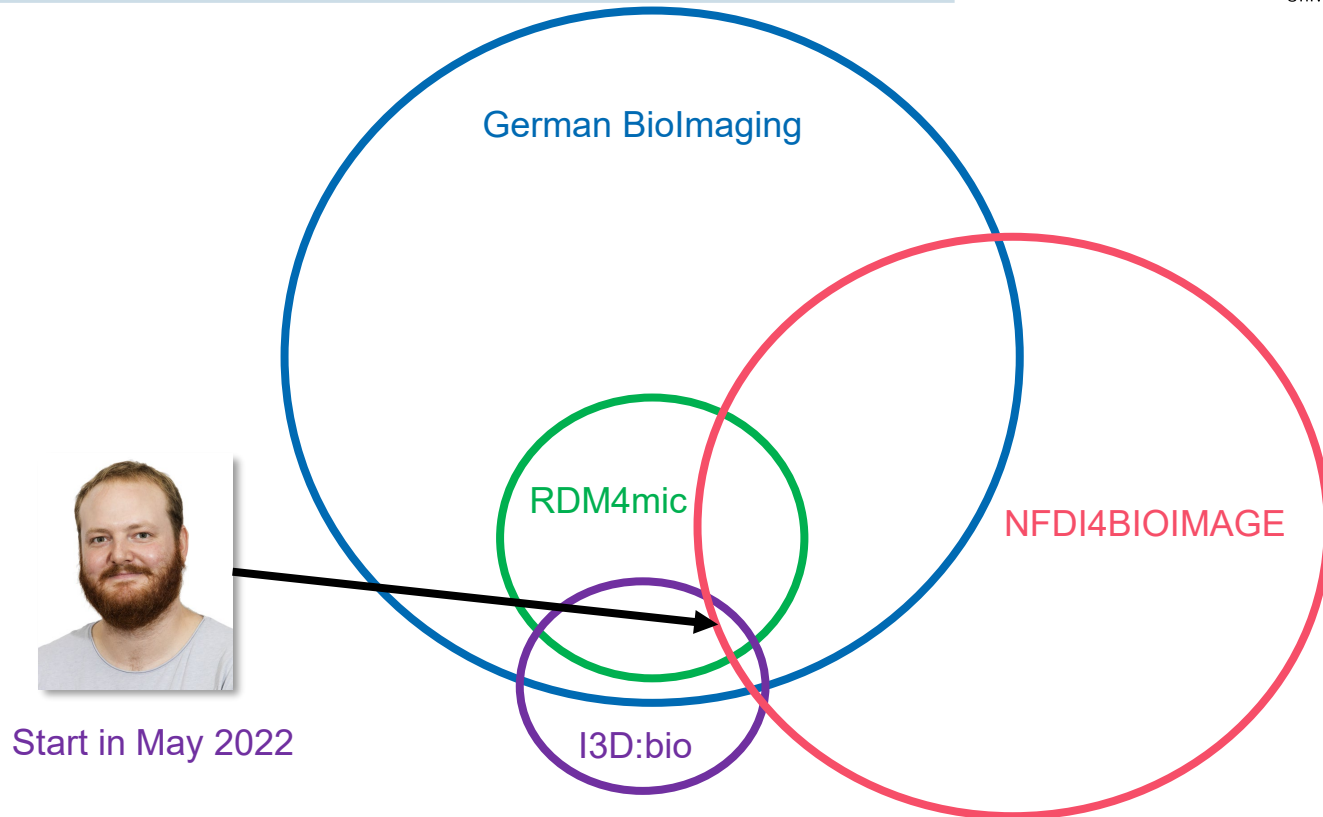
NFDI 4
BIOIMAGE



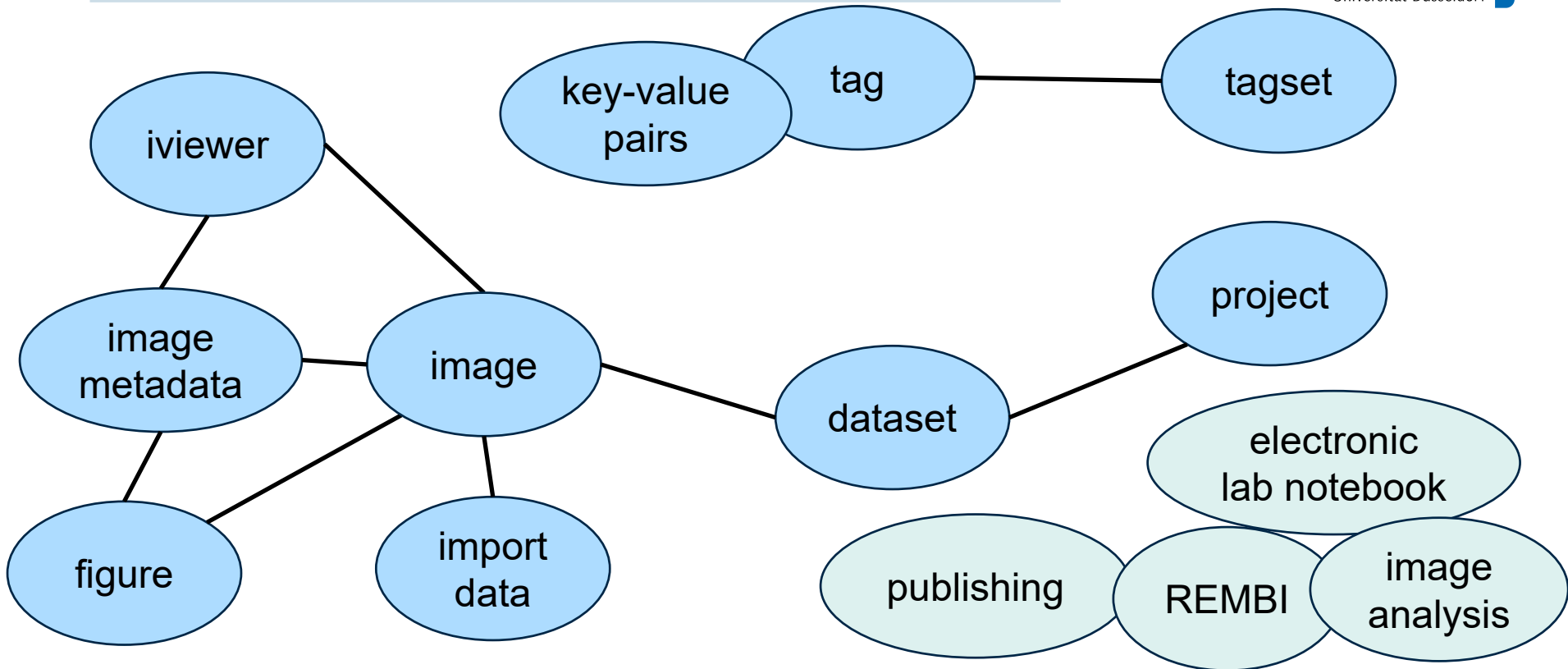
DFG Deutsche
Forschungsgemeinschaft

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Some context



Getting started with OMERO



Introducing OMERO at the CAi

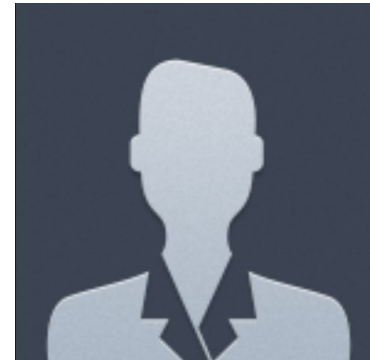
OMERO has only a two level hierarchy. But you can use tags

Tags: just like hashtags in Twitter or Instagram

metadata?

I'll think about how to organize my data later

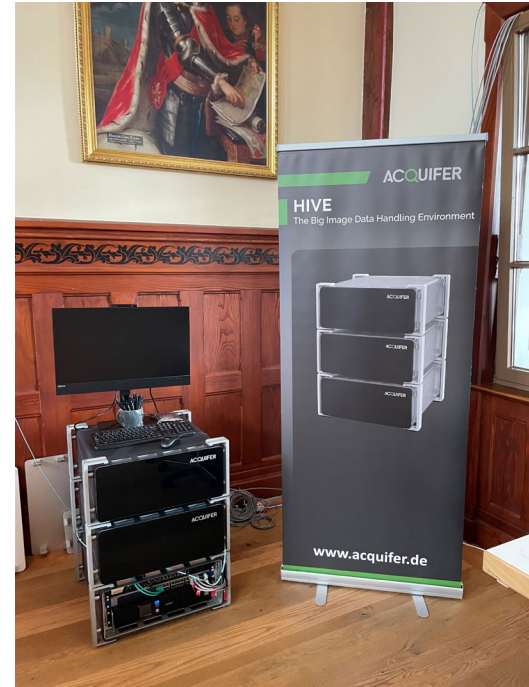
You can use annotations to add metadata



- TiM: Trends in Microscopy
 - 5 days of workshop (3 x 3 hours workshop per day) in March 2023
 - ~200 participants
- September / October 2022: project to have an OMERO server @ TiM
 - deploy my first OMERO
 - deploy OMERO on a HIVE (CentOS 7 VM in Windows Hyper-V)
- It works! (with the help of Petr and his ansible playbooks)
 - installation of the OME training server (same data and database, plugins)

Our IT infrastructure:

- Olaf Selchow designed and installed the TiM IT infrastructure
- powerful TiM2023 network with 3 Acquirer HIVE's for data storage and management
- ...between all instruments in all buildings
- Tom Boissonnet installed *for the first time* OMERO on a HIVE



Thanks a lot to Acquirer for supporting and sponsoring the TiM IT infrastructure!

TiM2023 OMERO is ready to take your data!

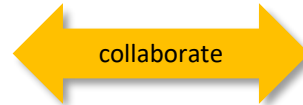
The screenshot shows a web browser window with the following content:

- Browser tab: OMERO.web - Login
- Address bar: <https://omero-tim2023.de/webclient/login?url=%2Fwebclient%2F>
- Logos: Trends in Microscopy 2023, I3D:bio Information Infrastructure for BioImage Data, and OMERO.web
- Login form:
 - Dropdown menu: omero:4064
 - Username field: tomb
 - Password field: masked with asterisks
 - Link: Forgot your password?
 - Button: Login
 - Link: Log in as public user
- Footer:
 - OMERO.web 5.15.0.
 - © 2007-2022 University of Dundee & Open Microscopy Environment
 - OMERO is distributed under the terms of the GNU GPL. For more information, visit openmicroscopy.org
 - Download OMERO insight for [Mac OS X](#), [Windows](#), [Linux](#)
 - OME logo

How to: 3 roles



- workshop provider:
 - acquiring data sets
 - upload of data to HIVE
 - structuring and naming of folder



- participant:
 - have a look to OMERO
 - browse the image data
 - participate in data management



- I3D:bio data steward team:
 - collect metadata information
 - import of data to OMERO
 - annotate according to information from WS providers

The I3D:bio team is here to help you!

I3D:bio corner



Introducing OMERO at the CAi

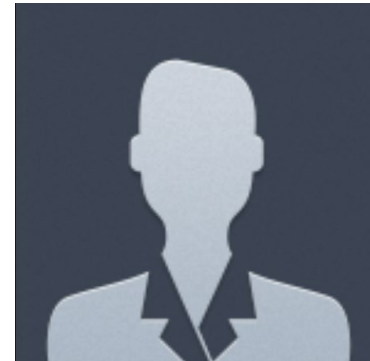
OMERO has only a two level hierarchy. But you can use tags

Tags: just like hashtags in Twitter or Instagram

You can use annotations to add metadata

metadata?

I'll think about how to organize my data later



Why I stop saying that: <https://youtu.be/BNZKMiuK7kg?feature=shared>

TiM2023 OMERO is ready to take your data!

The screenshot displays the OMERO webclient interface. The browser address bar shows the URL `https://omero-tim2023.de/webclient/userdata/?experimenter=-1`. The interface includes a top navigation bar with menus for Data, History, Help, Figure, Tag Search, Genes, Key-Value, and Micro-Meta-App. A search bar and the user name 'Tom Boissonnet' are also visible. The main content area is divided into two panels. The left panel, titled 'Explore', shows a file tree under 'All Members' with various workshop folders, including 'WS_03_INFRA-FLUCS_Rapp_Schroth-Diez'. The right panel, titled 'General', displays details for the selected project: 'WS_03_INFRA-FLUCS_Rapp_Schroth-Diez'. It lists the Project ID as 2704 and the Owner as Gert Rapp. Below this, there is a section for 'Project Details' and a description of the FLUCS (Focused Light-Induced Cytoplasmic Streaming) method, which is used for non-invasive induction of intracellular flow to investigate physical principles of cell organization. The description includes a paragraph about the biological context and a paragraph detailing the FLUCS technique and its features.

TiM2023 OMERO is ready to take metadata!

The screenshot displays the OMERO webclient interface. On the left, a tree view under 'All Members' lists various acquisition parameters and samples. A black box highlights a portion of this tree, and a line connects it to a larger, magnified view of the 'Sample 9' folder. In this magnified view, the 'Arabidopsis' folder is selected and highlighted. To the right of the tree, a detailed metadata panel for the selected 'Arabidopsis' specimen is shown. This panel includes fields for 'Tag ID', 'Owner', 'Creation Date', and 'Image Count', along with a link to the specimen's taxonomic information.

All Members

- Acquisition Mode 14
- Company 25
- Configuration 2
- Custom Tags
- Detector 4
- Fluorophore/Dye 13
- Microscope 8
- Sample 9
 - Arabidopsis**
 - C. elegans
 - Dirt
 - E. coli
 - Human
 - Medaka
 - Mouse
 - Tobacco
 - Zebrafish
- Technique 5
- Workshop 45
- WS Category 12

Arabidopsis

Tag ID: 153637
Owner: Tom Boissonnet

Arabidopsis thaliana
http://purl.obolibrary.org/obo/NCBITaxon_3702

Owner: Tom Boissonnet
Creation Date: 2023-03-08 15:04:17
Image Count:

Annotating datasets with REMBI

The screenshot displays the OMERO web interface. On the left, the 'Explore' panel shows a tree view of datasets under 'PUBLIC USER', including 'WS_04_LEARN-CAM_Holst_Beer 3', 'WS_05_LS-FLAMIN_Huisken_Weber 9', and several sessions of starfish and zebrafish imaging. The main area shows a grid of image thumbnails, with one image highlighted in blue. The right panel shows the 'General' tab with metadata for the selected image, including 'Added on Project WS_05_LS-FLAMIN_Huisken_Weber' and 'Added on Dataset Session1_1_Starfish_OME'. The metadata includes study type, description, authors, and various accession numbers and source references.

Added on Project WS_05_LS-FLAMIN_Huisken_Weber

Study type	SPIM imaging of starfish larvae and zebrafish embryos
Study ontology	
Study description	Demonstration of whole embryo light-sheet fluorescence microscopy using a T-SPIM Flamingo light-sheet microscopy
Authors	Michael Weber, Jan Huisken, NN
License	
Copyright owner	

Added on Dataset Session1_1_Starfish_OME

study component description	T-SPIM configuration Flamingo light-sheet microscopy using Topicalca lasers (max 4 lines) to image a fixed sample starfish larvae
biological entity	larval
biological entity term accession number	http://purl.obolibrary.org/obo/PATO_0001185
biological entity term accession number source REF	Phenotype And Trait Ontology
organism	starfish
organism term accession number	http://snomed.info/id/39557006
organism term accession number source REF	SNOMED CT (International Edition)
genotype	WT
imaging method name	light-sheet illumination
imaging method term accession number	http://purl.obolibrary.org/obo/FBbi_00000364
imaging method term accession number source REF	Biological Imaging Methods Ontology

OMERO success at the TiM2023

- 14 of 32 workshops provided data sets
- 50 datasets; 29 with REMBI metadata
- 71 people accessed OMER0

- Integrated in some workshops
 - High content screening data analysis with CellProfiler (with Jupyter notebook)
 - Brain slice registration workshop, BIOP ABBA
 - OMER0 workshop of Petr on that server

- Testing data from new equipments

<https://omero-tim.gerbi-gmb.de/webclient/>

- Too restrictive permission on HIVE's fileshares (for in-place imports)
 - difficulties to connect to the HIVE
 - authorized persons (workshop providers) different from those who login (company staff)
 - Names of folders "to_import" and "imported" is confusing
- Misconfiguration of the server
 - File descriptor limit too low (rapidly corrected with help of Petr & Josh)
 - 50 GB of space in the VM
- Under advertised data management experience
 - addition to the TiM, instead of being an integral part of it

Access to OME training server

- ELMI in June 2023: workshop on REMBI annotation in OMERO
- I2K in October 2023: OMERO.figure workshop
- Collaboration with Petr to access the OME training server
 - server with pre-installed plugins and data
 - accounts for the workshop participants

Training server of German BioImaging









- Deployed end of April, planned usage by the NFDI data stewards:
 - 29th - 30th April Online
 - 13th - 14th May Heidelberg
 - 28th of May Dresden
 - 31st of May Leipzig
 - 5th of June Liverpool
 - 27th - 28th of June Münster
- Learning activity: Treasure hunt
 - OMERO group where trainees must find a hidden treasure.
 - Following clues hidden in annotation, they have a goal to explore OMERO.web interface
 - ratings, comments, key-value pairs, tags, descriptions, ROIs, plates, tagsearch

<https://omero-training.gerbi-gmb.de>

participant-a

dresden_ws-2024

I3D:bio's OMERO training material: Re-usable, adjustable, multi-purpose slides for local user training

Schmidt, Christian^{1,2} ; Bortolomeazzi, Michele^{1,3} ; Boissonnet, Tom^{4,5} ;
Fortmann-Grote, Carsten⁶ ; Dohle, Julia⁷; Zentis, Peter^{8,9} ; Kandpal, Niraj^{8,9} ;
Kunis, Susanne⁷ ; Zobel, Thomas¹⁰ ; Weidtkamp-Peters, Stefanie^{4,5} ;
Ferrando-May, Elisa^{1,2} 



Content outline

I3D:bio's OMERO training material: Re-usable, adjustable, multi-purpose slides for local user training

Christien Schmeier, Michele Bortolomeazzi, Tom Boissonnet, Carsten Fortmann-Grote, Niraj Kandpal, Peter Zentis, Julia Dohle, Thomas Zobel, Susanne Kunis, Stefanie Weidtkamp-Peters, Elisa Ferrando-May

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I3D:bio's OMERO Training Videos 2023: Research Data Managem...

RDM4mic

14 vidéos 1172 vues Dernière modification le 7 déc....

-  **I3D:bio's OMERO Training Videos: 00 - Outline**
RDM4mic • 192 vues • il y a 6 mois
-  **I3D:bio's OMERO Training Videos: 01 - What is OMERO?**
RDM4mic • 180 vues • il y a 6 mois
-  **I3D:bio's OMERO Training Videos: 02 - Connect to OMERO**
RDM4mic • 122 vues • il y a 6 mois

Thank you for your attention

■ Center for Advanced imaging

- Stefanie Weidtkamp-Peters
- Susanne Klichowski
- Sebastian Hänsch
- Miriam Bäumers
- Anna Hamacher
- Jessica Hausmann
- Steffen Köhler
- Sarah Loeck
- Manuel Anlauf
- Vanessa Fuchs
- Ksenia Krooß
- Katharina Schmitz
- Tehmina Enayat
- Fiona Heimes

■ I3D:bio

- Christian Schmidt
- Susanne Kunis
- Julia Dohle
- Elisa Ferrando-May
- Roland Nitschke
- Tobias Wernet

■ Many more

- German BioImaging
- NFDI4BIOIMAGE
- OME team