



Overview of GerBI RDM projects: why & how?

Supporting and financing RDM projects within GerBI

Stefanie Weidtkamp-Peters, Josh Moore, Christian Schmidt, Roland Nitschke,
Susanne Kunis, Thomas Zobel

04.03.2024

Why?

The scientific motivation:

- FAIR data: research data management, especially for image data is challenging due to the complexity of the data type; tools, standards, infrastructure have to be developed
- however, RDM is crucial for the application of AI, for data integration, for economic (re-)use of data, for increasing the releability of data, for sustainability...

The community motivation:

- RDM is requested by imaging core facility users, by research institutions, funders and journals
- German OMERO user group was founded back in 2017, today known as the RDM4mic group, which is open to all
- In 2018, DFG launched the National Research Data Infrastructure (NFDI), **GerBI-GMB was invited (by DFG) to participate.**

The motivation for GerBI as a scientific society:

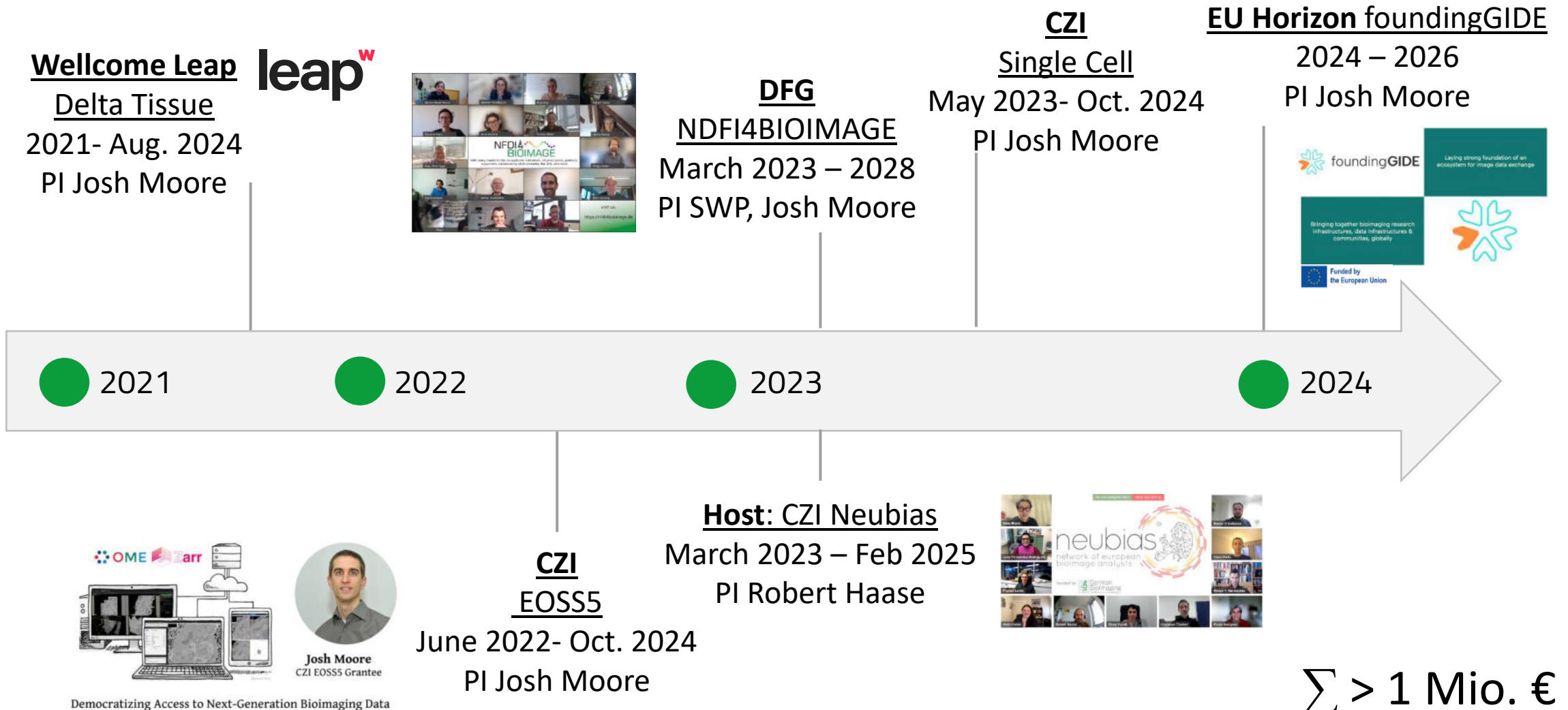
- RDM projects are usually designed beyond the boundaries of a single institute
 - they should be aligned with international communities and projects
 - RDM projects often require research software development, these positions are outside the public sector pay scale, e.g. subcontracting is a usual mode of operation
- GerBI as a scientific society provides well established, but flexible infrastructures, based on a solid community of experts in the field, embedded in the international community
- benefits for GerBI are:
- a significant contribution to the sustainability of the society by the third party funding
 - active role in shaping the emerging RDM landscape (tools, standards, infrastructure)

Why: Josh and the **N**ext **G**eneration **F**ile **F**ormat



Images: “Adam uploads” & “Navid zooms” by [Henning Falk](#), ©2022 NumFOCUS, is used under a CC BY 4.0 license

GerBI RDM Projects w/ funding – an overview



GerBI 3rd party funding infrastructure

- Wellcome Leap DeltaTissue:
 - MARFA - Master Research Funding Agreement - between WL and GerBI, supported by FieldFisher lawyer team
 - Third Party Funding Bank Account at VR Bank Konstanz
- DFG NFDI4BIOIMAGE:
 - GerBI membership of the NFDI society (NFDI Verein)
 - GerBI Guideline for the use of project overheads („Leitlinie zur Verwendung der Programmpauschale“)
- CZI Single Cell:
 - GerBI template for Agreement on the forwarding of a grant („Muster für Mittelweiterleitungsvertrag“), supported by FieldFisher
- EU Horizon FoundingGIDE:
 - GerBI Gender Equality Plan (GEP)

GerBI's road to NFDI

- **May 2018:** DFG launches the National Research Data Infrastructure, **GerBI-GMB is invited (by DFG) to participate.**
- **June 2019:** GerBI-GMB votes for submission of a Letter of Intent for a **consortium for bioimage data management** within the NFDI at the 4th General Assembly in Brno, ELMI meeting
- **August 2019:** internal call for interested partners both for NFDI and for a smaller DFG proposal in the alternative funding line „Information Infrastructures for Research Data“
- **July 2020:** Submission of updated Lol to 2nd NFDI Call in 2020
- **October 2020:** Submission of DFG proposal „I3D:bio. Information Infrastructure for BioImage Data“ Applicants: Konstanz, Osnabrück, Düsseldorf, Freiburg. 34 Letters of Support from: RDM4mic and GerBI-GMB members, Leibniz “Health Alliance”, NFDI consortia, companies.
- **November 2020:** Uni Konstanz provides a position for an NFDI coordinator (→ Christian Schmidt)

GerBI's road to NFDI

- **December 2020:** internal call for interested partners for NFDI
- **July 2021:** DFG approval of „I3D:bio. Information Infrastructure for BioImage Data“ project
- **July 2021:** Binding Letter of Intent for a **consortium for bioimage data management within NFDI**
- **November 2021:** NFDI4BIOIMAGE proposal submission for the 3rd round of NFDI consortia
- **January 2022:** Start of I3D:bio project
- **February 2022:** Online assessment of the 3rd round NFDI consortia
- **June 2022:** Funding recommendation for NFDI4BIOIMAGE (7/16 proposals recommended)
- **November 2022:** Funding approval for NFDI4BIOIMAGE by BMBF
- **March 2023:** Start of NFDI4BIOIMAGE and I3D:bio RDM team at TiM2023

I3D:bio RDM team at TiM 2023



I3D:bio at the TiM 2023 The Data Stewardship Team

Team Heinrich-Heine-University Düsseldorf



Steffi
Center for Advanced Imaging (Head)
Chair of GerBI-GMB
Spokesperson of NFDI4BIOIMAGE
Role / Topics:
Metadata, FRET, FLIM, imaging modalities, community-building



Tom
Center for Advanced Imaging
Role / Topics:
OMERO admin, metadata, file transfer, image analysis, data collection, training material



Team University of Osnabrück



Susanne
IBiOs Facility at CellNanOs
Co-Spokesperson of NFDI4BIOIMAGE
Role / Topics:
Metadata, developer, file formats, storage concepts, OMERO



Julia
IBiOs Facility at CellNanOs
Role / Topics:
Data collection, metadata, ELNs



Team German Cancer Research Center



Elisa
Chief Enabling Technology Officer
Vice Chair of GerBI-GMB
Co-Spokesperson of NFDI4BIOIMAGE
Role / Topics:
Use case documentation, coordination, community-building



Christian
Enabling Technology Department
Project Coordinator I3D:bio & NFDI4BIOIMAGE
Role / Topics:
Data collection, metadata, use case documentation, training material



Team University of Freiburg



Roland
Life Imaging Center (Head)
QUAREP-LiMi
Role / Topics:
Metrology (meta)data, quality control, community-building



Tobias
Life Imaging Center
Role / Topics:
Data collection, metadata, metrology (meta)data, instrument surveillance



Project Partners and Supporters



Josh
Senior Research Data Management Officer
OME-Team
Co-Spokesperson of NFDI4BIOIMAGE
Role / Topics:
File formats, metadata, OMERO, developer, community-building



Thomas
Münster Imaging Network
Co-Spokesperson of NFDI4BIOIMAGE
Role / Topics:
OMERO, metadata, image analysis



- The I3D:bio project aims to improve FAIR image data management: tools, metadata standards, training....
- The project is focusing on OMERO as a image data base which is widely spread in the community

Let's setup a TiM2023-OMERO and make all TiM image data FAIR

FAIR: Findable – Accessible – Interoperable – Reusable

NFDI4BIOIMAGE Core mission & objectives

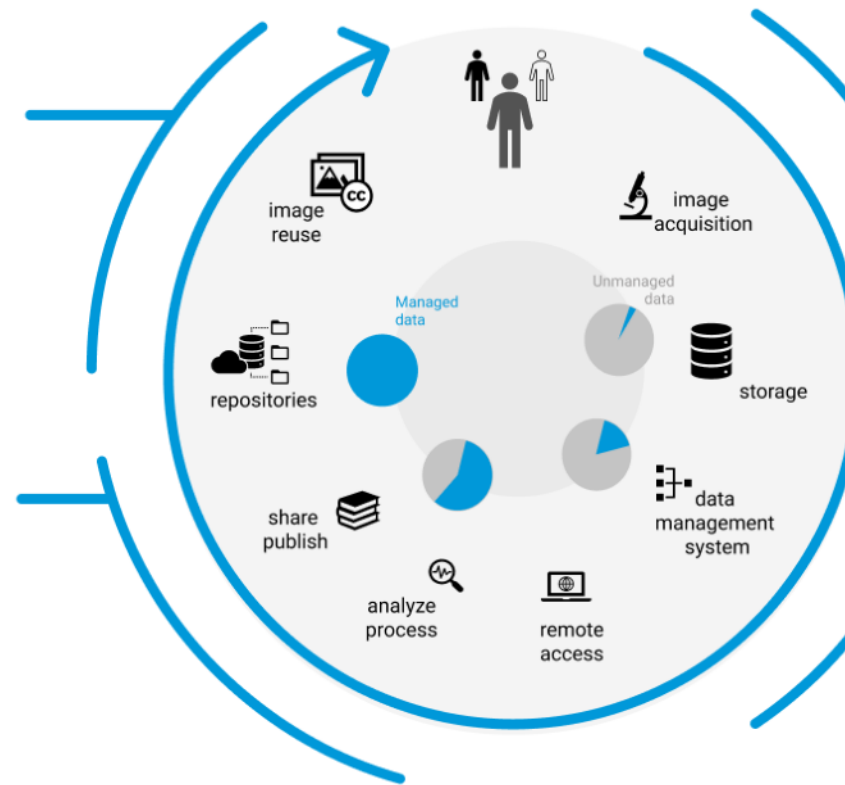


NFDI4
BIOIMAGE

Enable FAIR bioimage data management for German researchers, across disciplines and embedded in the international framework.

Objective 4
Capacitate researchers
for FAIR image data
management

Objective 3
Maximize the reach
of **reproducible** image
analysis workflows
in the community



Objective 1
Champion the
standardization
of the „bioimage
data“ type

Objective 2
Provide scalable
infrastructure
for FAIR image data

<https://nfdi4bioimage.de/home/>

NFDI4BIOIMAGE – 11 co-applicant institutions



NFDI4
BIOIMAGE



NFDI4
BIOIMAGE

hhu
Heinrich Heine
Universität
Düsseldorf

dkfz.
DEUTSCHES
KREBSFORSCHUNGSZENTRUM
IN DER HELMHOLTZ-GEMEINSCHAFT

EMBL 

 WWU
MÜNSTER

Universität
Konstanz 

LEIBNIZ
IZ:HKI

 TECHNISCHE
UNIVERSITÄT
DRESDEN



UNIVERSITÄT  OSNABRÜCK

 LIN
LEIBNIZ-INSTITUT
FÜR NEUROBIOLOGIE
MAGDEBURG

 German
Biolmaging
Gesellschaft für Mikroskopie und Bildanalyse

Task Area Team of NFDI4BIOIMAGE



TA 1



Susanne Kunis



Josh Moore

employed
by GerBI

Image (meta)data formats and standardization

TA 4



Anna Kreshuk



Thilo Figge



Christian Tischer

Bioimage informatics and analysis

...and data stewards, research software engineers,
coordinators...

Technical infrastructure and cloud resources

TA 3



Phillipp Mallm



Werner Zuschratter



Torsten Stöter

Multimodal data linking and integration

Training and community integration

TA 6



Elisa May



Stefanie
Weidtkamp-Peters



Christian Schmidt



Kathy Schmitz

Coordination, governance and networking & office

Josh Moore, Senior RDM Officer
German Biolmaging, e.V. / Open Microscopy Environment

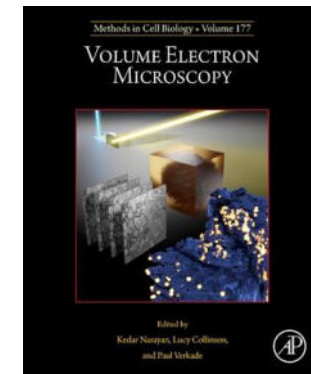


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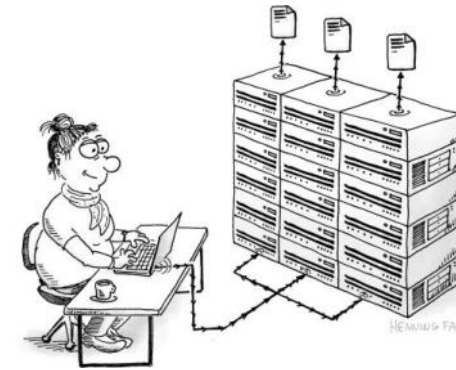
Technology Development



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<https://github.com/zarr-developers/zarr-illustrations-falk-2022#clara-shares>



Technology Development / History



"Bea computes" by Henning Falk.
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<https://github.com/zarr-developers/zarr-illustrations-falk-2022#bea-computes>



- OMEFILES
- BIO-FORMATS
- OMERO

Technology Development / Goal

Center of Excellence



Package your data
for sharing
(with permission)

★



including descriptive
labels

★★



that are machine
readable

★★★



in consistent
containers

★★★★

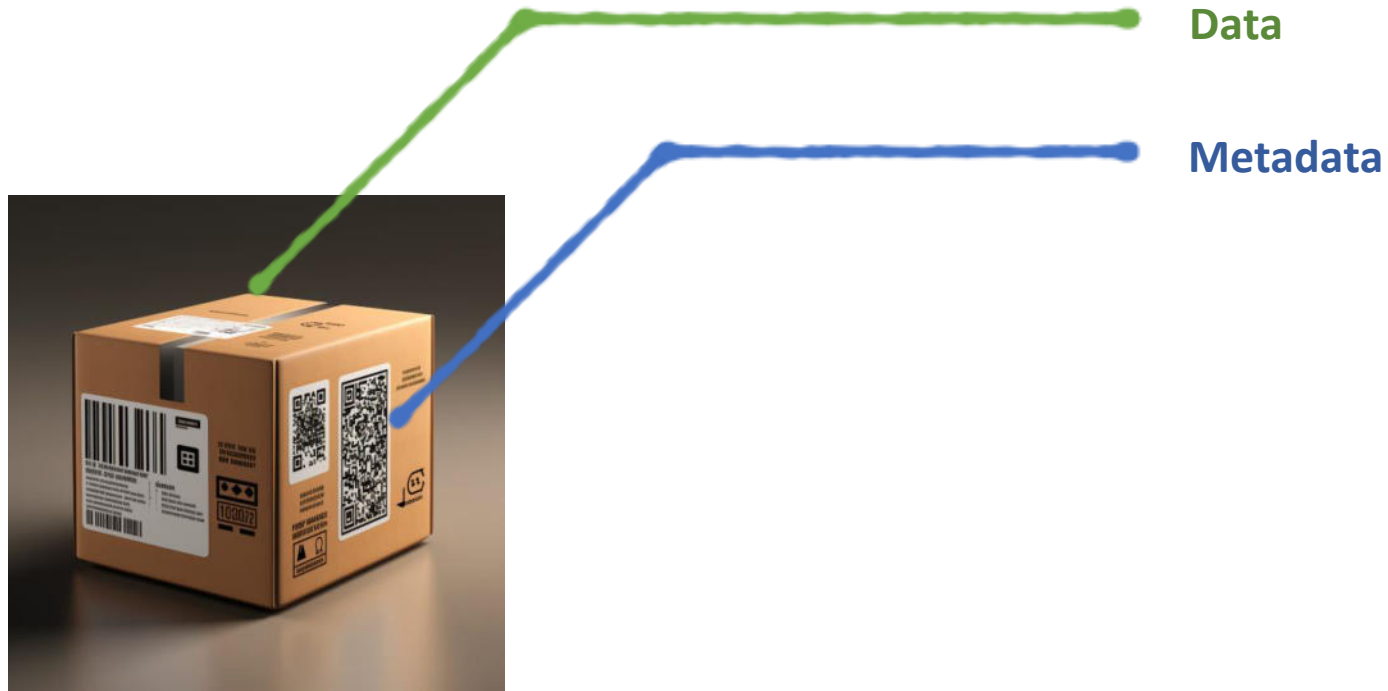


to enable science.

★★★★★

Images generated by Andra Waagmeester & Josh Moore through AI generation using Midjourney (Sep. 2023)

Technology Development / **Goal**



Technology Development / NGFF



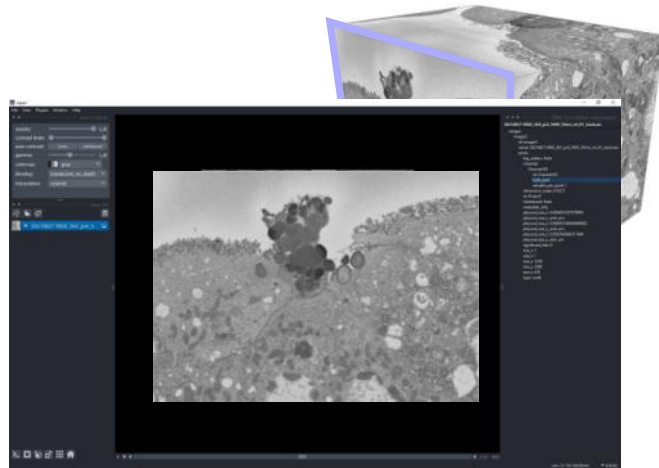
that are machine readable

★★★★

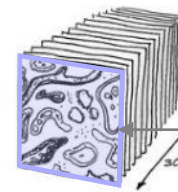


CHAN
ZUCKERBERG
INITIATIVE

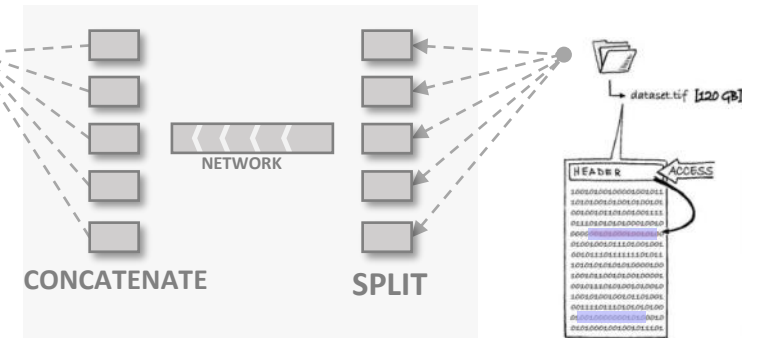
2022-2024 Open Science



Monolithic file format



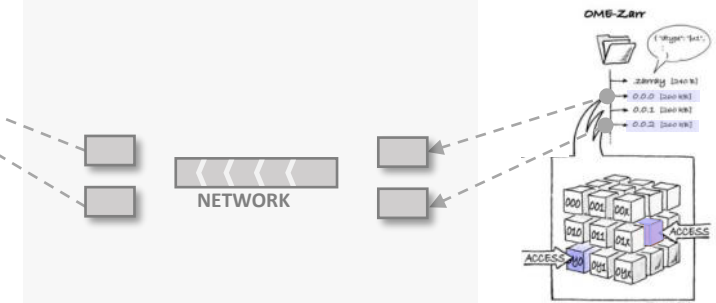
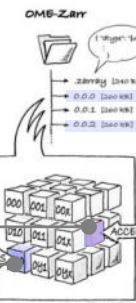
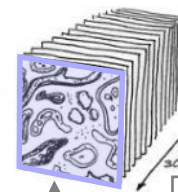
Local computer



Access via network

External data storage

Chunkable file format



Susanne Kunis

Technology Development / SpatialData

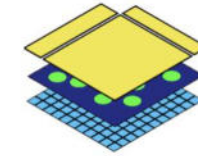
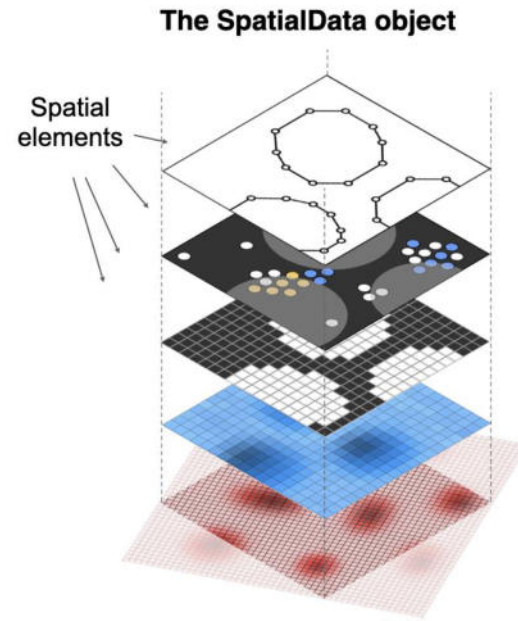


that are machine readable

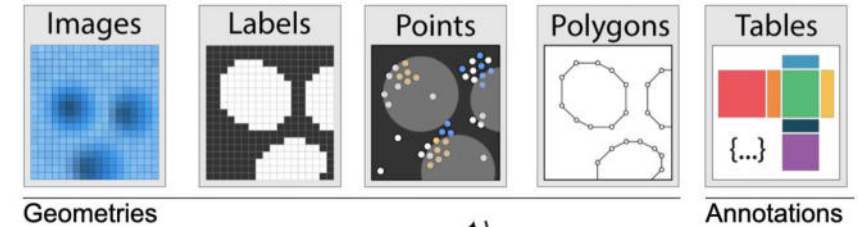
★★★★



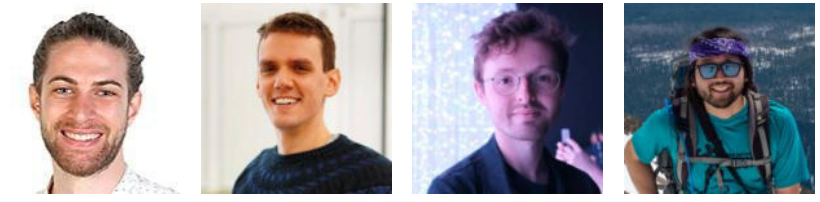
**CHAN
ZUCKERBERG
INITIATIVE**
2023-2025 Single Cell



Spatial elements



Disk/cloud storage



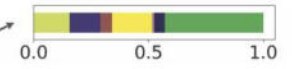
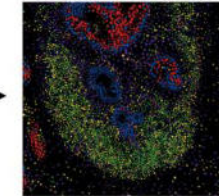
Luca Marconato Giovanni Palla Isaac Virshup Kevin A. Yamauchi

Manually annotated ROI



aggregate across

Xenium cell types



- Cell types
- B-cells
 - CAFs
 - Cancer Epithelial
 - Endothelial
 - Myeloid
 - T-cells
 - Normal Epithelial
 - PVL
 - Plasmablasts

Technology Development / **Linked Data**



leap^w
2021-2024

that are machine
readable

★★★



Andra Waagmeester



A \$55M PROGRAM

Delta Tissue

INTEGRATED PLATFORMS FOR
PREDICTING CHANGES IN TISSUE STATE

<https://wellcomeleap.org/delta-tissue/>



leap^w
2021-2024

that are machine
readable

★★★

“

A new platform – a ‘tissue time machine’ – that can profile tissue states and predict transitions between states (‘Delta Tissue’ or ‘ ΔT ’). The platform would provide quantitative, multi-scale, multi-modal information sufficient to build integrated prediction models of key cell and tissue states and transitions.

Adrie JC Steyn, [Africa Health Research Institute](#)
Assaf Zaritsky, [Ben-Gurion University of the Negev](#)
Gunnar Carlsson, [BlueLightAI, Inc.](#)
Michael Roukes, [California Institute of Technology](#)
Chris Sander, [Harvard Medical School](#)
Fabian Theis, [Helmholtz Zentrum München](#)
Maddy Parsons, [King’s College London](#)
Simon Fredriksson, [Pixelgen Technologies](#)
Shankar Subramaniam, [University of California San Diego](#)
Greg Hannon, [University of Cambridge](#)
Virginie Rozot, [University of Cape Town](#)
Denise Kirschner, [University of Michigan Medical School](#)
Hagan Bayley, [University of Oxford](#)
Omer Bayraktar, [Wellcome Sanger Institute](#)
Stéphane Pagès, [Wyss Center for Bio and Neuroengineering](#)
Joerg Bewersdorf, [Yale University](#)



Andra Waagmeester

Technology Development / **GIDE**

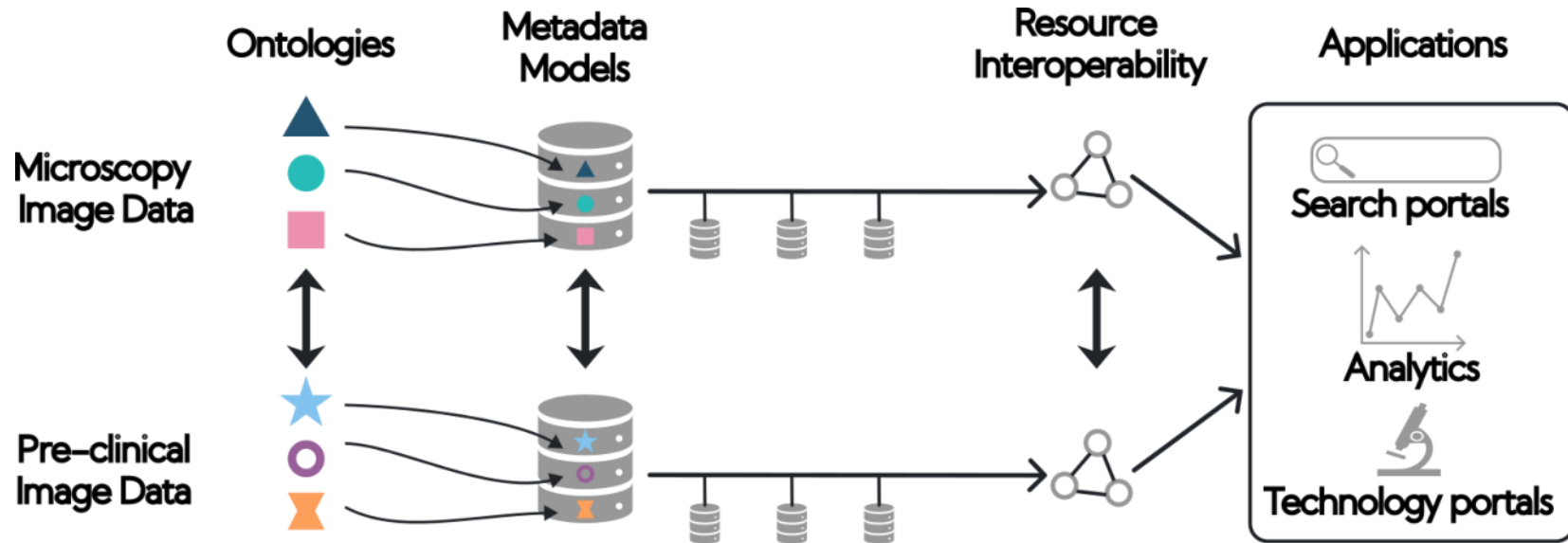


in consistent
containers

★★★★



founding **GIDE** (Global Image Data Ecosystem)
2024-2026



Matthew Hartley



Shuichi Onami

Technology Development / FAIR-IO



in consistent
containers

★★★★

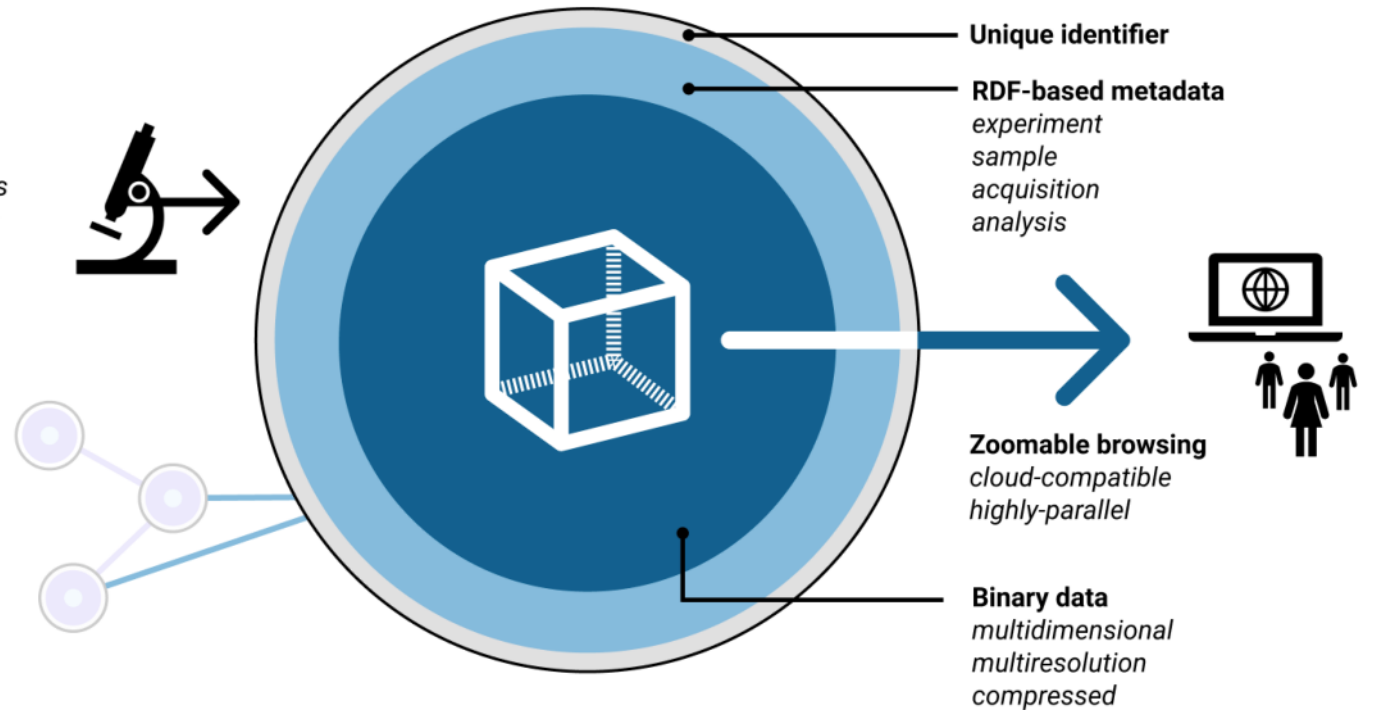


NFDI4
BIOIMAGE
2023-2028

FAIR Image Objects (FAIR-IO), an FDO-subtype for bioimaging

Convert from
proprietary file formats
or export from servers
(e.g. OMERO)

Metadata linked to
FDOs from other
domains



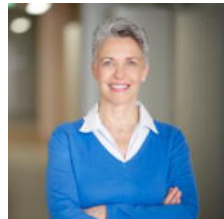
<https://doi.org/10.5281/zenodo.7394675>



Susanne Kunis



Stefanie Weidtkamp-Peters



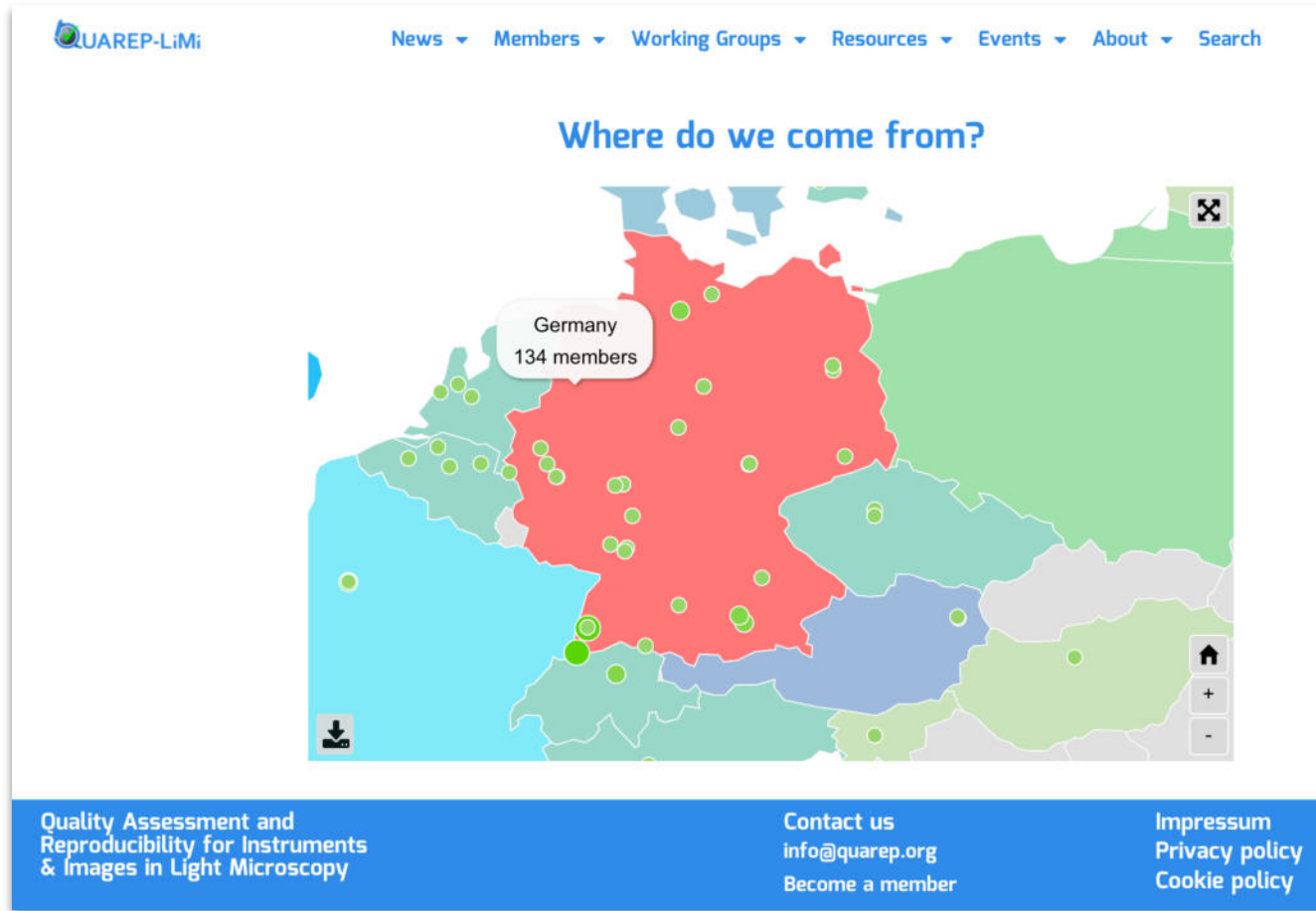
Elisa May

Technology Development / **Beyond**



to enable science.

★★★★★



Roland Nitschke



Caterina
Strambio De Castillia

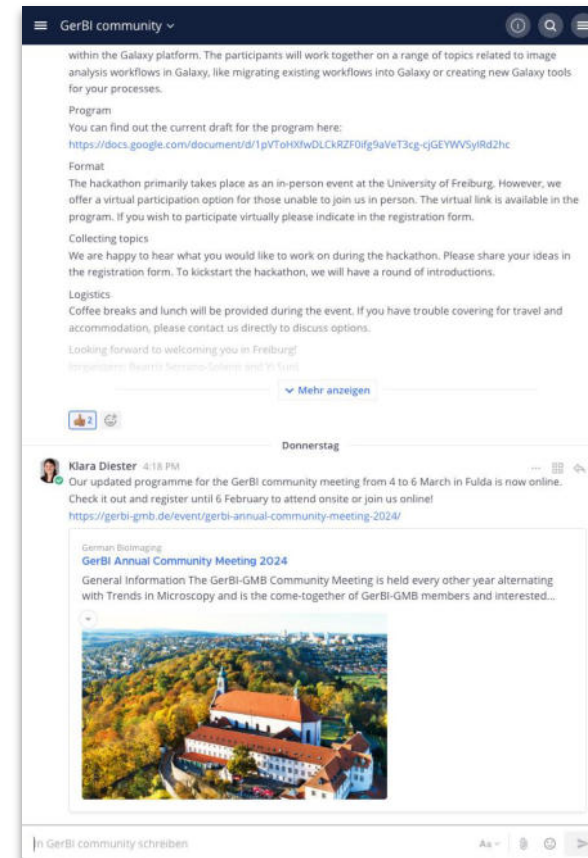
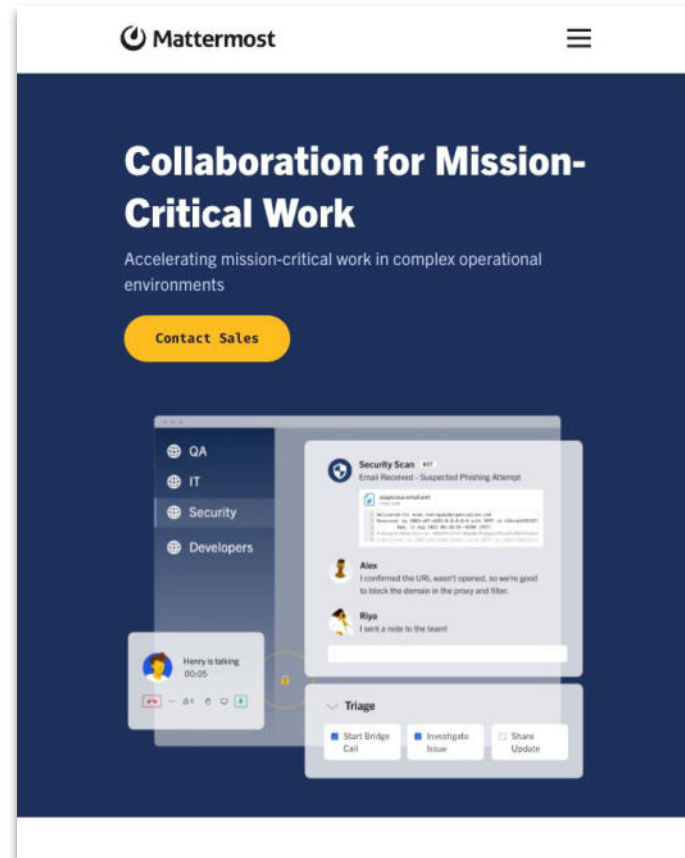
Tech Development / Getting involved

The screenshot shows the 'Image data Analysis & Management' page. At the top, there is a navigation bar with 'News', 'Society', 'Teams', 'Activities', 'Resources', 'Publications', and 'CONTACT US'. Below the navigation is a large image of a group of people in a meeting, with the title 'Image data Analysis & Management' overlaid. The main content area is divided into sections: 'Mission' with a magnifying glass icon and a paragraph about the working group's goals; 'Activities' with two sub-sections: 'Image Analysis' and 'Image Data Management', each with a short paragraph of text.

The screenshot shows the 'Who we are' page. It features a navigation bar at the top. The main content is divided into two columns: 'Team Speakers' and 'Team Members'. Under 'Team Speakers', there are two portraits: Susanne Kunis (Speaker) and Thomas Zobel (Co-Speaker), each with their name and role below. Under 'Team Members', there is a list of names in two columns: Stefan Helfrich, Felix Bestvater, Robert Haase, Christian Hoischen, Gabor Horvath, Anna Klernm, Oliver Kobler, Kota Miura, Josh Moore, Jan Peychl, Laure Plantard, Olaf Seichow, Anje Sporbert, Nadine Utz, Antonio Virgilio Failla, Ulrike Boehm, Thomas Zobel, and Gebhard Stopper. At the bottom, there is a 'Get involved' section with a 'Contact us' link and a short paragraph of text.

<https://gerbi-gmb.de/teams/image-data-analysis-management/>

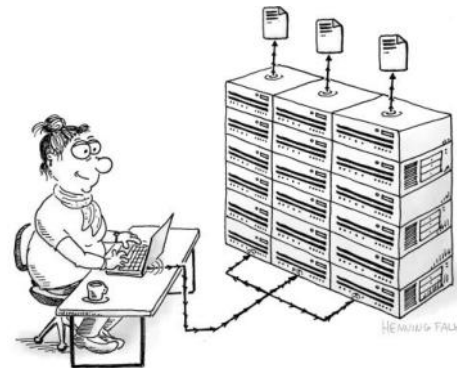
Tech Development / Getting involved



<https://mattermost.gerbi-gmb.de/gerbi/channels/gerbi-community>



Your
input, data, etc.!



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<https://github.com/zarr-developers/zarr-illustrations-falk-2022#bea-computes>

Christian Schmidt

Scientific Project Manager

Project Coordinator of I3D:bio

Networking and Outreach Coordinator of NFDI4BIOIMAGE

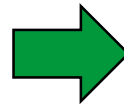
GerBI member since 2022

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From RDM4mic to I3D:bio

Center for Advanced imaging (CAi) at the HHU
CECAD Cologne
iBiOs at CellNanOs Uni Osnabrück

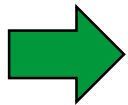


Exchange about the
experience with OMERO



initiated the **RDM4mic** group → „powerful subunit“...

...integrated into **GerBI-GMB** work group 6
„Image analysis and management“



Identification of common issues and challenges,
but: *No dedicated resources* to overcome these challenges

2019: First NFDI conference

→ Decision: Apply as a consortium in Call #3, 2021

2020: Write a small-scale grant

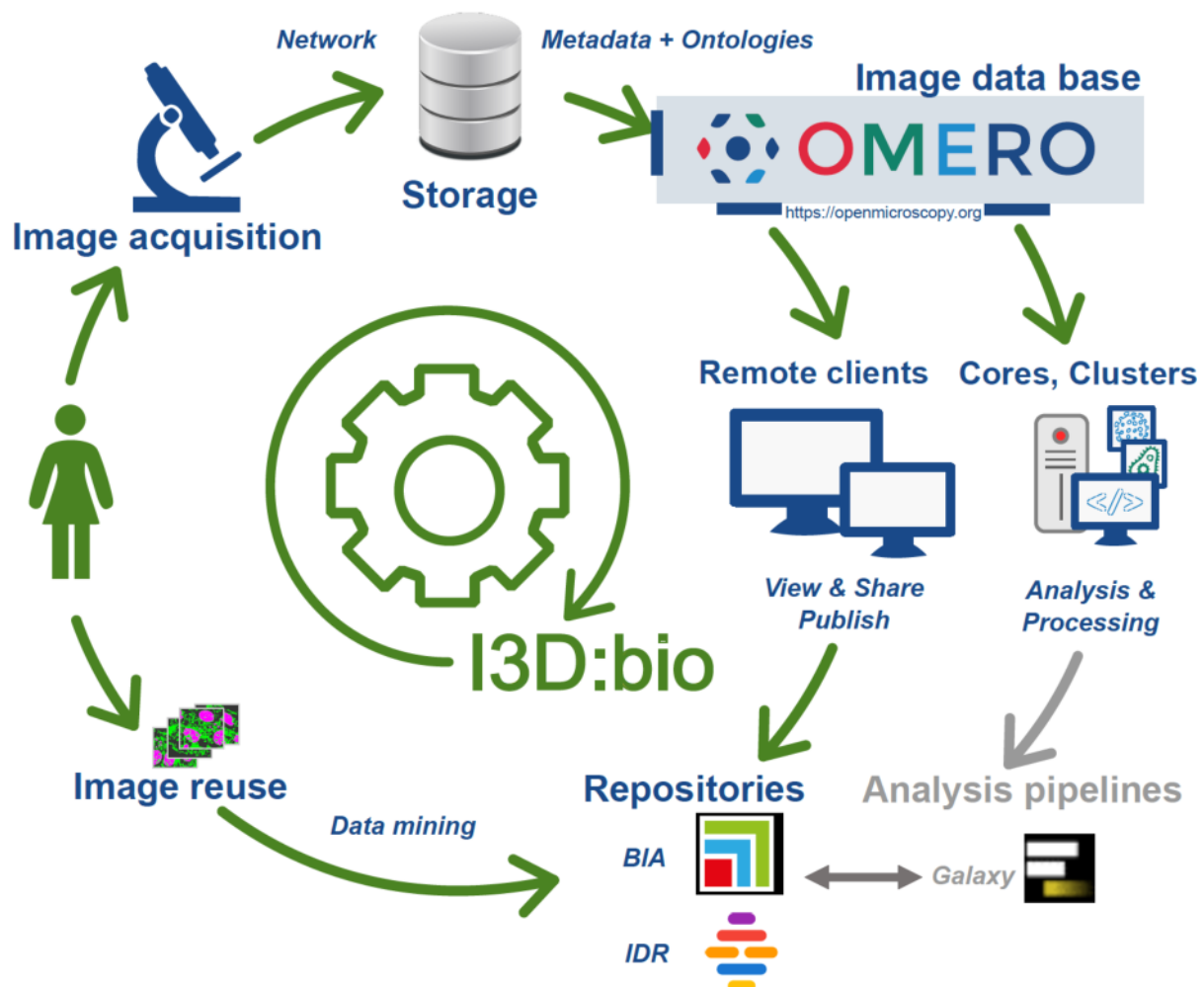
→ **I3D:bio** (approved in 2021, started in 2022)



Information Infrastructure
for **BioImage** Data

www.i3dbio.de

I3D:bio's focus on OMERO



Why OMERO?

OMERO is the most widely used & best known RDM system

→ *Explore capabilities & limitations*

use of platforms (+/- 12 months)

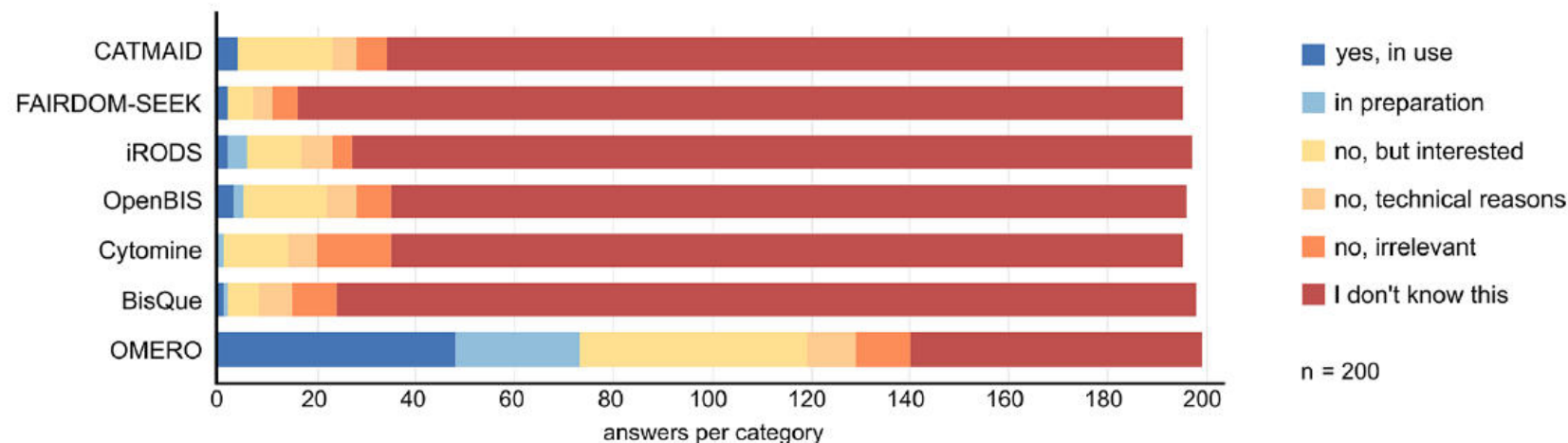


Figure 4. Data management platform knowledge and use by participants.

Schmidt C, Hanne J, Moore J et al. Research data management for bioimaging: the 2021 NFDI4BIOIMAGE community survey [version 2; peer review: 2 approved]. F1000Research 2022, 11:638 (<https://doi.org/10.12688/f1000research.121714.2>)
PMID: [36405555](https://pubmed.ncbi.nlm.nih.gov/36405555/), CC-BY 4.0 (<http://creativecommons.org/licenses/by/4.0/>)

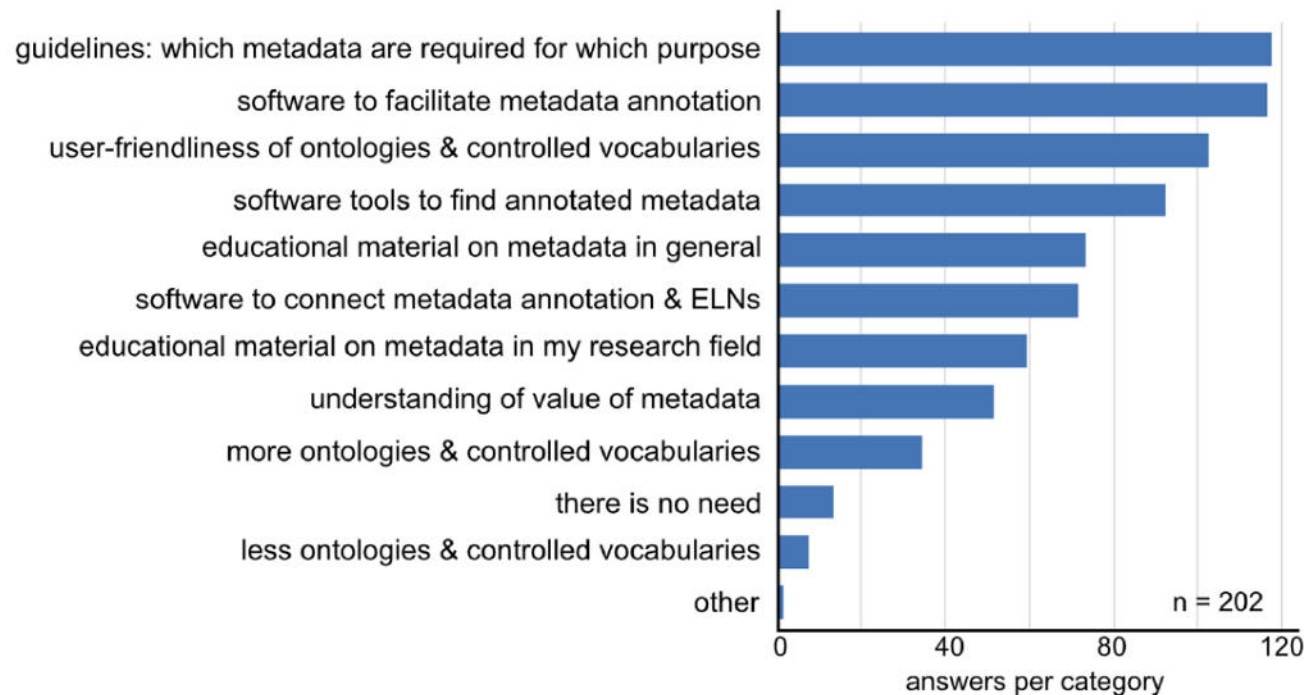
- Open-source
- Long history of experience
- Global community of supporters & developers
- The original developer works for GerBI (Josh)

Why metadata?

Metadata guidelines and tools are requested

→ *Explore user tools, how to change habits, and the needs to make metadata FAIR*

b) needs to improve metadata handling & annotation



- Expertise - MDEmic (Susanne)
- Quarep-LiMi (Roland and many GerBI members)
- GerBI contributed to REMBI (Nadine)
- Metadata is essential for FAIR bioimaging data

Figure 5. The role of metadata for research data management and the needs for metadata annotation.

Schmidt C, Hanne J, Moore J et al. Research data management for bioimaging: the 2021 NFDI4BIOIMAGE community survey [version 2; peer review: 2 approved]. F1000Research 2022, 11:638 (<https://doi.org/10.12688/f1000research.121714.2>)
PMID: [36405555](https://pubmed.ncbi.nlm.nih.gov/36405555/), CC-BY 4.0 (<http://creativecommons.org/licenses/by/4.0/>)

Tangible results from I3D:bio for the community



I3D:bio – Information Infrastructure for BioImage Data

A Microscopy Research Data Management Resource

ABOUT I3D:bio ▾

About Bioimaging Data ▾

Teaching Material & Events ▾

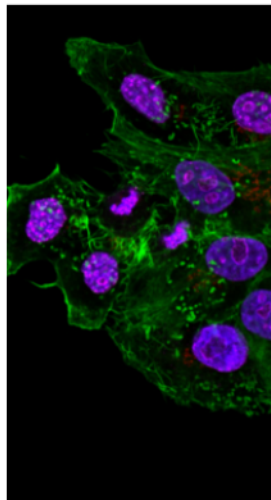
Guides & Resources ▾

Help Desk & Contact

Welcome to I3D:bio

Data Life Cycle

Management resource for bioimaging with a focus on light microscopy



Microscopy File Formats

resource to aid with...

Bioimaging Metadata

and teaching about microscopy research data management?

Data Management Platforms

ing your microscopy research data?

Image Data Repositories

sharing and archiving your images?

Bioimage Analysis

our image data with experimental protocols and analysis results?

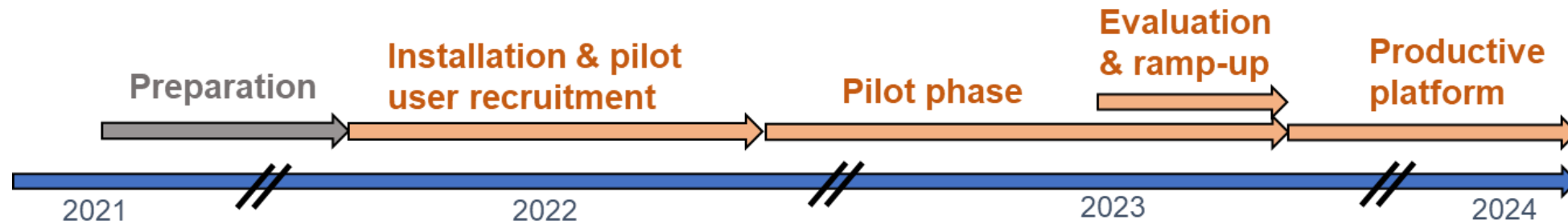
up microscopy research data management at your institute or facility?

Use I3D:bio project pages and contact us for questions and support.

Knowledge Hub

www.i3dbio.de

Use Case DKFZ Heidelberg



The screenshot displays the OMERO website interface. The main content area features an 'Overview' section with the text: 'As of November 2023, OMERO is running a productive bioimaging data management service at the DKFZ, and the platform is open to all DKFZ researchers. OMERO is an open-source software produced by the Open Microscopy Environment Consortium (OME). It is installed centrally on ITCF servers and is hosted by the DKFZ.' Below this, there are sections for 'What is OMERO?' and 'How can DKFZ researchers use OMERO?'. The 'What is OMERO?' section includes a video player titled 'Research Data Management for Bioimage Data at the DKFZ' with the subtitle 'What is the image data management platform OMERO?'. The 'How can DKFZ researchers use OMERO?' section includes a video player titled 'OMERO explained' with the subtitle 'OMERO explained: How does the platform work in more detail?'. The 'How can DKFZ researchers use OMERO?' section also includes a video player titled 'User Rights and User Groups in OMERO' with the subtitle 'What are user groups and permission levels in OMERO?'. The website also features a search bar and a navigation menu on the left.

Reusable training material requested by the RDM4mic group (2022)

Tangible results from I3D:bio for the community



Search records...



Communities

My dashboard

Log in

Sign up

Published November 13, 2023 | Version v1

I3D:bio's OMERO training material: Re-usable, adjustable, multi-purpose slide 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^{6,9} ; Kunis, Susanne⁷ ; Zobel, Thomas¹⁰ ; Weidtkamp-Peters, Stefanie^{4,5} ;
Ferrando-May, Elisa^{1,2}

The open-source software OME Remote Objects (OMERO) is a data management software that allows storing, organizing, and annotating bioimaging data. OMERO has become one of the best-known systems for bioimage data management in the bioimaging community. The Information Infrastructure for Bioimaging (I3D:bio) project facilitates the uptake of OMERO into research data management (RDM) practices at universities and research institutions in Germany. Since the uptake of OMERO into researchers' daily routines requires intensive training, a broad portfolio of training resources for OMERO is an asset. On top of using the OMERO Open Microscopy Environment Consortium (OME) team, imaging core facility staff at institutions where OMERO is used often prepare additional material applicable for their own OMERO instances. Based on experience gathered in the Research Data Management for Microscopy group (RDM4mic) in Germany, cases in the I3D:bio project, we created a set of reusable, adjustable, openly available slide decks to serve as the basis for tailored training lectures, video guided instruction manuals directed at beginners in using OMERO. The material is published as an open educational resource complementing the existing OMERO contributed by the community.

Notes

Funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation), project I3D:bio, grant number 462231789

Notes

Supported by German Biolmaging - Society for Microscopy and Image Analysis (GerBI-GMB)

Files

2023_Schmidt_etal_I3Dbio_OMERO_Training_Material_10.5281_zenodo.8323588.pdf

Project

Content outline

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

Christian Schmidt^{1,2} ; Michele Bortolomeazzi^{1,3} ; Tom Boissonnet^{4,5} ; Carsten Fortmann-Grote⁶ ; Julia Dohle⁷ ; Peter Zentis^{8,9} ; Niraj Kandpal^{6,9} ; Susanne Kunis⁷ ; Thomas Zobel¹⁰ ; Stefanie Weidtkamp-Peters^{4,5} ; Elisa Ferrando-May^{1,2}

DOI: 10.5281/zenodo.8323588

I3D:bio's OMERO Training Videos 2023: Research Data Management

RDM4mic

14 Videos 742 Aufrufe Zuletzt am 07.12.2023...

Alle ansehen Zufallsmix

The DFG-funded project Information Infrastructure for Bioimage Data (I3D:bio) works on the implementation of research data management practices for microscopy and bioimaging. A focus of the project is leveraging the open-source software OMERO (Open Microscopy Environment Remote Objects) that was developed by the OME team at the University of Dundee, UK. Based on the project partner's experience with OMERO we created short video tutorials on the first steps in using OMERO. The underlying slideshows are openly available at <https://doi.org/10.5281/zenodo.8323588> and can be reused for local OMERO training (license: CC-BY 4.0)

I3D:bio website: <https://www.i3dbio.de>

Citation:
I3D:bio's OMERO Training Videos 2023, https://www.youtube.com/playlist?list=PL2k-LzWPoR7SHjG1HhD1wLZj0M_stIU, based on:

I3D:bio's OMERO Training Videos: 00 - Outline
RDM4mic • 151 Aufrufe • vor 3 Monaten

I3D:bio's OMERO Training Videos: 01 - What is OMERO?
RDM4mic • 115 Aufrufe • vor 3 Monaten

I3D:bio's OMERO Training Videos: 02 - Connecting to OMERO
RDM4mic • 74 Aufrufe • vor 3 Monaten

I3D:bio's OMERO Training Videos: 03 - OMERO software explained (optional chapter)
RDM4mic • 68 Aufrufe • vor 3 Monaten

I3D:bio's OMERO Training Videos: 04 - User groups in OMERO
RDM4mic • 54 Aufrufe • vor 3 Monaten

I3D:bio's OMERO Training Videos: 05 - Uploading data to OMERO
RDM4mic • 71 Aufrufe • vor 3 Monaten

I3D:bio's OMERO Training Videos: 06.0 - Data organization in OMERO
RDM4mic • 73 Aufrufe • vor 3 Monaten

I3D:bio's OMERO Training Videos: 06.1 - Searching data in OMERO
RDM4mic • 56 Aufrufe • vor 3 Monaten

I3D:bio's OMERO Training Videos: 07.0 - Metadata (in OMERO)
RDM4mic • 53 Aufrufe • vor 3 Monaten

Video tutorials
on YouTube



Tangible results from I3D:bio for the community

Providing OMERO at a core facility

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

Tom Boissonnet (HHL)
Heinrich Heine Universität Düsseldorf

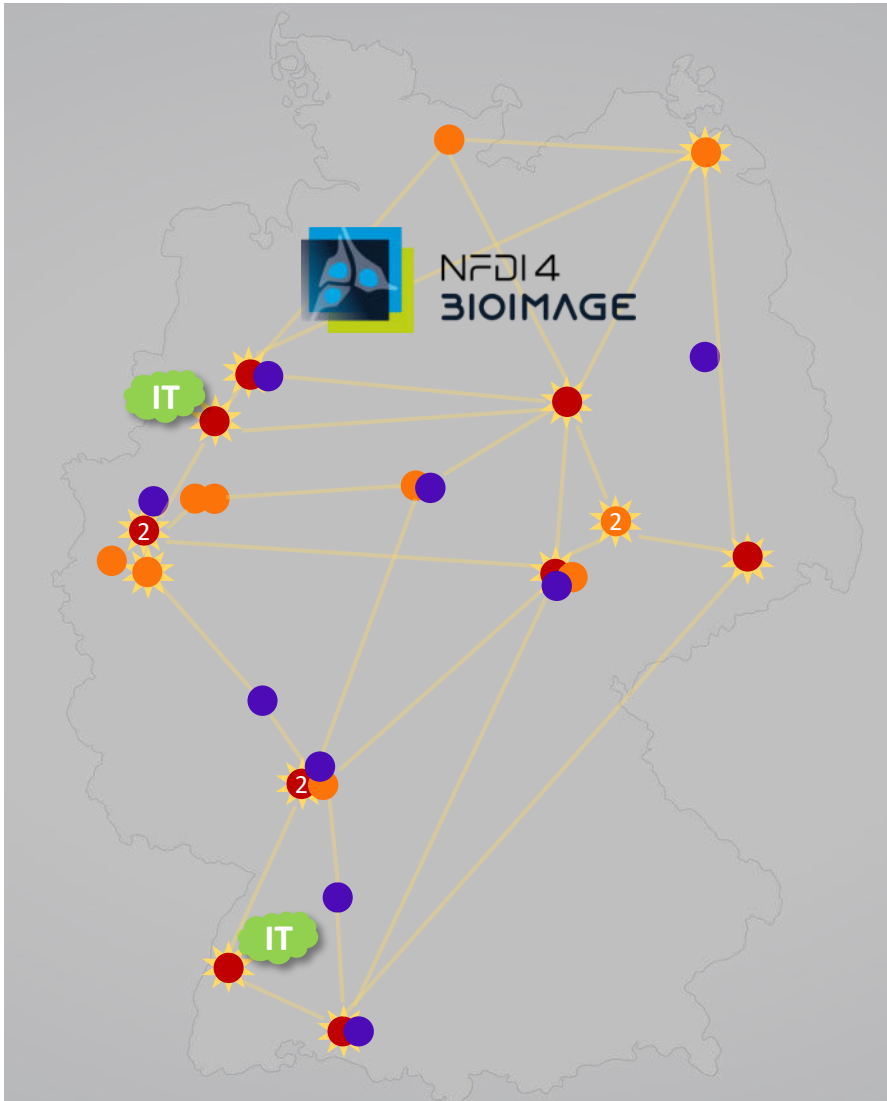
19:41 / 1:11:37

https://www.youtube.com/watch?v=BNZKMiuK7kg&list=PL2k-L-zWPoR7SHjG1HhDIwLZj0MB_stlU&index=14

- Optimized annotation strategies for image analysis (Tom)
- Contributions to the software source code and best practices for OMERO integration with Fiji (Tom & Michele)
- Improving OMERO.web & OMERO.figure (Tom)

- AxioScan was purchased. Concept: start using OMERO with the new system
 - How and where to start?
- Steps:
 - Discussing system requirements and examples of installations (T. Zobel, S. Kunis)
 - The request to install OMERO on the TU Dresden Medical Faculty IT servers was granted in May 2022
 - Training: OMERO server and command line usage for CF staff (Tom Boissonnet, June 2022)
 - Testing of OMERO at CFCI (pilot phase with slidescanner and EM data)
 - Discussing special data types and research use cases: How to handle data organization and annotation in OMERO? (TiM 2023)
 - Preparing data for analysis and publication (August 2023, I3D:bio and NFDI4BIOIMAGE)
 - First research paper published with REMBI-annotated bioimages in the public group of OMERO at TU Dresden Medical Faculty CFCI
 - Jannasch et al. (2024), APL Mater, <https://doi.org/10.1063/5.0182672>
- Next steps:
 - Rolling out to more users, enabling seamless data analysis in connection with OMERO

NFDI4BIOIMAGE Data Stewardship Team



- co-applicant institutions (Task Area Leaders)
 - IT IT infrastructure (*storage & playground: @WWU & @ALU-FR*)
But not: a central data archive for all bioimaging data
 - participating institutions
 - ★ data stewards (DaSts)
 - community use cases
-
- 20+ FTE to work on practical RDM solutions and training
 - help desk for emerging RDM issues
 - close collaboration with other NFDI consortia
 - Collaborate with Industry (via Quarep-LiMi & others)

Modified after: Stefanie Weidtkamp-Peters. (2023, Juni 22). NFDI4BIOIMAGE - National Research Data Infrastructure for Microscopy and BioImage Analysis - Online Kick-Off 2023. Zenodo. <https://doi.org/10.5281/zenodo.8070038>

NFDI4BIOIMAGE Data Stewardship Team

Startseite > About us > Data Stewardship Team

Goals and Task Areas	+
Consortium members	+
Project Office	
Data Stewardship Team	-
Mohsen Ahmadi	
Vanessa Fuchs	
Riccardo Massei	
Maximilian Müller	
Jens Wendt	
Cornelia Wetzker	
Partners	

The NFDI4BIOIMAGE Data Stewardship Team

Get to know our task force for community support!

Our consortium offers support for bioimaging data management within the scientific community. No matter what your field of research is, we're here to support handling data acquired with microscopes. To do so, NFDI4BIOIMAGE has formed a Data Stewardship Team addressing your needs - from the community for the community.

To contact our Data Stewards Team for support in bioimaging data management, please use the Help Desk.

Who are the Data Stewards (DaSts)?

All NFDI4BIOIMAGE Data Stewards are scientists from different research fields with a focus on bioimaging. Within NFDI4BIOIMAGE, they work in different Task Areas and bundle their knowledge and expertise as the DaSt team. Thus, the DaSt team can offer community support for a wide range of cases. If required, our DaSt team will help finding additional contact partners (e.g., in other NFDI consortia). Here, we introduce the team:

THE DATA STEWARDS TEAM OF NFDI4BIOIMAGE

Mohsen Ahmadi

Background: Biochemistry & Microscopy
Affiliation: INP Greifswald

Vanessa Fuchs

Background: Plant Sciences
Affiliation: Heinrich-Heine University
Düsseldorf

Riccardo Massei

Background: Environmental Sciences and
Toxicology
Affiliation: Helmholtz Center f. Env. Res.
(UFZ), Leipzig

Maximilian Müller

Background: Ecotoxicology
Affiliation: University of Konstanz

Jens Wendt

Background: Electrical Eng./Information
Tech. & Biomedical Eng.
Affiliation: University of Münster

Cornelia Wetzker

Background: Molecular Biology,
Immunology, Zoology
Affiliation: Dresden Technical University

The NFDI4BIOIMAGE Community Help Desk

Receive support from our Data Stewardship Team

The NFDI4BIOIMAGE Help Desk is the point of contact for researchers and research-associated staff working with bioimaging data to request for support with bioimaging data management. Our team of **Data Stewards** will review your request and contact you within a couple of days. We will discuss with you and our network which could be the optimal way to support you.

Help Desk support can mean supporting you in several ways:

- Pointing to relevant resources and solutions you might not have been aware of yet
- Helping to moderate help requests within the broader community (e.g., image.sc)
- Discussing and supporting a local solution for your case
- Integrating you as a **Community Use Case** partner within NFDI4BIOIMAGE's work.

Here, you can read more about the Help Desk Concept.

Use the form below to contact us! We are looking forward to your message.

NFDI4BIOIMAGE Help Desk

HELP REQUEST FORM

Your name*

Your e-mail address*

Kontakt

The NFDI4BIOIMAGE Data Stewardship Team is headed by:

Dr. Vanessa Fuchs
Heinrich-Heine University Düsseldorf

Dr. Maximilian Müller
University of Konstanz

For support requests, please use the Help Desk entry mask.
If you wish to establish a non-support request contact with the team, please reach out via email.

E-Mail schreiben ✉

<https://nfdi4bioimage.de>

Meet us at our poster!

<https://zenodo.org/doi/10.5281/zenodo.10805203>

Christian Schmidt
Scientific Project Manager
 Project Coordinator of I3D:bio
 Networking and Outreach
 Coordinator of NFDI4BIOIMAGE
 GerBI member since 2022

The Information Infrastructure for Biolmage Data (I3D:bio) project to advance FAIR microscopy data management for the community

Christina Schmidt¹, Michèle Borriomeazzzi², Tom Boissonneaux³, Julia Dohle⁴, Tobias Wemmer⁵, Janina Hanne⁶, Roland Nitschke⁷, Susanne Kunis⁸, Karen Bernhardt⁹, Stefanie Weltkamp-Peters¹⁰, Elisa Ferrando-May¹¹

¹German Cancer Research Center (DKFZ), Heidelberg (e-mail to christina.schmidt@dkfz-heidelberg.de); ²Heinrich-Heine-University Düsseldorf; ³University of Osnabrück; ⁴Albert-Ludwigs-University of Freiburg; ⁵German Biolmaging - Society for Microscopy and Image Analysis e.V.

Research data management (RDM) in microscopy and image analysis is a challenging task. Large files in proprietary formats, complex N-dimensional array structures, and various metadata models and formats can make image data handling inconvenient and difficult. For data organization, annotation, and sharing, researchers need solutions that fit everyday practice and comply with the FAIR (Findable, Accessible, Interoperable, Reusable) principles. International community-based efforts have begun creating open data models (OME), an open file format and translation library (OME-TIFF, Bio-Formats), data management software platforms, and microscopy metadata recommendations and annotation tools. Bringing these developments into practice requires support and training. Iterative feedback and tool improvement is needed to foster practical adoption by the scientific community. The *Information Infrastructure for Biolmage Data (I3D:bio)* project works on guidelines, training resources, and practical assistance for FAIR microscopy RDM adoption with a focus on the management platform OMERO and metadata annotations.

What is I3D:bio?
 Project goals and support offers:
 I3D:bio recommendations & guidelines for Institutional OMERO installations
 Training material & workshops for the biomaging community
 Testing and refining metadata annotation tools (in particular MDEng)
 A reference database for microscopy metrology data based on OMERO
 A web resource as an easy entry-point for biomaging RDM with OMERO

(Inter-national collaboration to align standards and recommendations:
 Germany: German Biolmaging, Nationale Forschungsdateninfrastruktur (NFDI)
 Europe & beyond: Euro-Biolmaging, Global Biolmaging, GloBIAS, BINA, etc.

Use Case collaboration for biomaging RDM at applicants' & partner's sites
 Primary case: TU Dresden Medical Faculty Core Facility Cellular Imaging and BioPolis Dresden

Timeline:
 2022: Kick-off & needs analysis, Internal use cases, External partner use cases, Website launched & HelpDesk available
 2023: RDM concept for TIMCC2, Training material published, Follow-up & assessment, Use Case evaluation & guidelines, Metrology DB & Metadata tools
 2024: Image reuse, Case solving, Repositories, Analysis pipelines

Benefits for Imaging Core Facilities

Support for implementing OMERO
 Many facilities do not use a microscopy RDM platform yet

Training material & videos
 Reusable slides and tutorials about OMERO and its use

Advancing structured metadata annotations for bioimage data usage
 Getting more out of pixels
 key-value pairs (RDM4I style)

Structuring of data and metadata in biomaging
 Video available!

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