

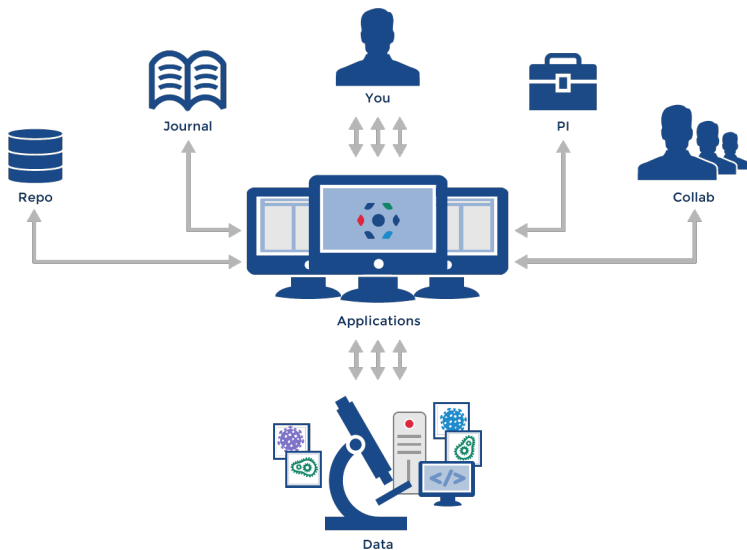


OMERO: why should I bother?

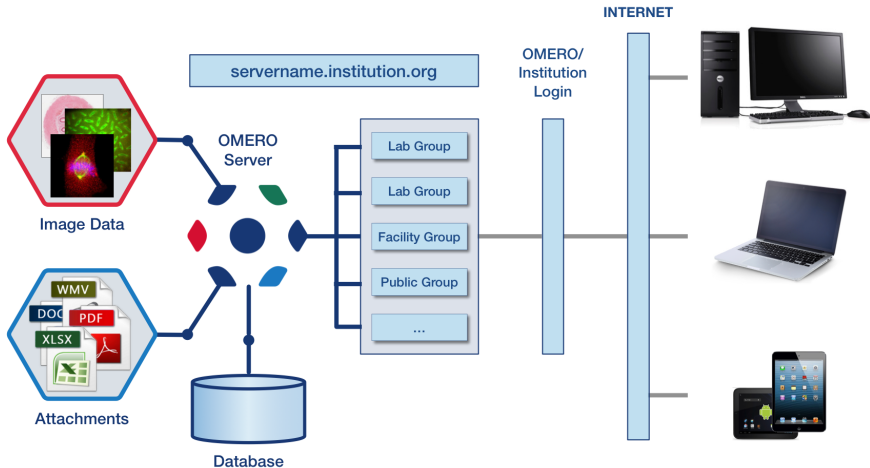
Erick Martins Ratamero

WARWICK

The Data Paradigm



The OMERO model



OMERO.insight: desktop client

The screenshot displays the OMERO.insight desktop client interface. The main window is titled "Workspace: 23 of 23 images".

Projects Panel (Left):

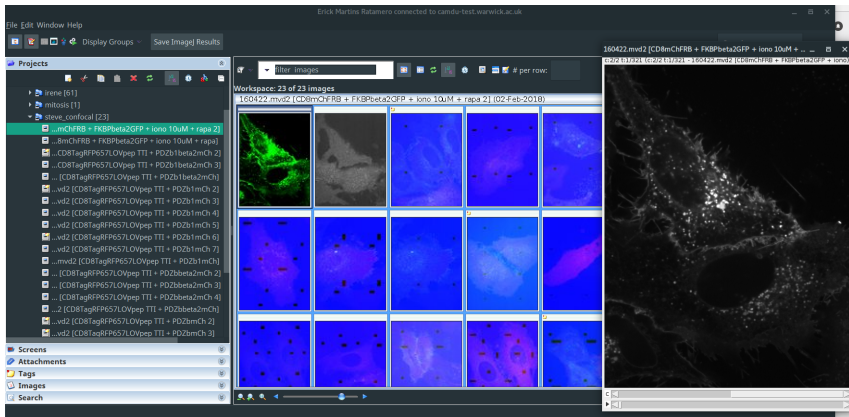
- default [1]
- Erick Martins Ratamero
 - testproj [5]
 - irene [61]
 - mitosis [1]
 - steve_confocal [23]
 - ...mChFRB + FKBPbeta2GFP + Iono 10uM + rapa [2]
 - ...8mChFRB + FKBPbeta2GFP + Iono 10uM + rapa]
 - ...CD8TagRFP657LOVpep TTI + PDZb1beta2mCh [2]
 - ...CD8TagRFP657LOVpep TTI + PDZb1beta2mCh [3]
 - ...[CD8TagRFP657LOVpep TTI + PDZb1beta2mCh]
 - ..._vd2 [CD8TagRFP657LOVpep TTI + PDZb1mCh 2]
 - ..._vd2 [CD8TagRFP657LOVpep TTI + PDZb1mCh 3]
 - ..._vd2 [CD8TagRFP657LOVpep TTI + PDZb1mCh 4]
 - ..._vd2 [CD8TagRFP657LOVpep TTI + PDZb1mCh 5]
 - ..._vd2 [CD8TagRFP657LOVpep TTI + PDZb1mCh 6]
 - ..._vd2 [CD8TagRFP657LOVpep TTI + PDZb1mCh 7]
 - ..._mvd2 [CD8TagRFP657LOVpep TTI + PDZb1mCh]
 - ...[CD8TagRFP657LOVpep TTI + PDZbbeta2mCh 2]
 - ...[CD8TagRFP657LOVpep TTI + PDZbbeta2mCh 3]
 - ...[CD8TagRFP657LOVpep TTI + PDZbbeta2mCh 4]
 - ..._2 [CD8TagRFP657LOVpep TTI + PDZbbeta2mCh]
 - ..._vd2 [CD8TagRFP657LOVpep TTI + PDZbmCh 2]
 - ..._vd2 [CD8TagRFP657LOVpep TTI + PDZbmCh 3]
 - ..._mvd2 [CD8TagRFP657LOVpep TTI + PDZbmCh]

Workspace (Center): A grid of 23 microscopy images. The first image shows a green channel (mChFRB). The second image shows a grayscale channel (FKBPbeta2GFP). The remaining images show a merged view of the green channel with a blue channel (DAPI) and a magenta channel (CD8TagRFP657LOVpep). Small colored arrows (red, green, yellow) are overlaid on the images, likely indicating specific features or cells.

Metadata Panel (Right):

- General Acquisition Preview
- Full Viewer
- steve_confocal
- Dataset ID: 255
- Owner: Erick Martins Ratamero
- Dataset Details
 - Add Description
- Creation Date: 2018-02-01 10:22
- Tags (0)
- Key-Value Pairs (0)
- Attachments (0)
- Ratings (0)
- Comments (0)
- Located in

Fiji plugin: for when OMERO.web is not enough



MATLAB, Python, Java... interfaces

```
from omero.gateway import BlitzGateway
# Connect to OMERO
conn = BlitzGateway("username", "password", host="omeroserver.org")
conn.connect()

# Load a Dataset
dataset = conn.getObject("Dataset", 123)    # DatasetWrapper
print dataset.getName()
# To get the wrapped omero.model.DatasetI...
print dataset._obj

# Object Wrappers have their own 'conn' - can load data on the fly
for image in dataset.listChildren():
    print image                # ImageWrapper id=152
    print image.getPrimaryPixels().getPlane(0, 0, 0)    # numpy 2D array
```



Cool OMERO features

- ▶ iViewer: advanced viewer inside your browser
- ▶ FPBio: 3D visualisation of Z-stacks from the web interface
- ▶ OMERO.scripts: running scripts remotely over whole datasets without transferring data
- ▶ Figure: Publication-grade figures generated directly from the raw data



Group/user system

- ▶ per lab/PI (plus public)
- ▶ Security/permissions: pros and cons of making groups completely private
- ▶ Sharing is possible inside and outside groups



Publishing

- ▶ Making images public is trivial
- ▶ allows thumbnails that redirect to full viewer (w/ channels, z-slices, etc.)
- ▶ Full datasets can be made public at one click, for open access
- ▶ great for openness, reproducibility, etc. etc.



Roll-out plan

- ▶ Already available for everyone



Summary

Single interface for:

- ▶ Storage: one platform for multiple mount points
- ▶ Viewing: all file types supported
- ▶ Organisation: permissions, users, groups, projects, datasets...
- ▶ Analysis: server-side scripts, integration with tools and programming languages, results directly attached to images
- ▶ Sharing: inside and across groups
- ▶ Publication: data is public after one click, figures can be done efficiently on the server