

Who are we?

Blazej Pindelski

OME Core Software Developer

University of Dundee

Collage of Life Sciences

Working on the server code and
test infrastructure



Douglas Russell

OME Software Developer

University of Oxford

Department of Biochemistry

Embedded developer in The
Department of Biochemistry



Data in Life Sciences

Vast data amounts in *biological imaging*

University of Dundee: ~13 TiB, monthly increase: 300 GiB

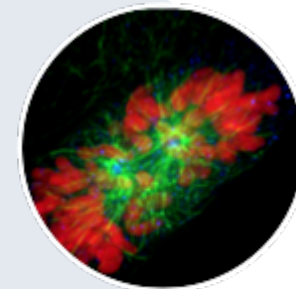
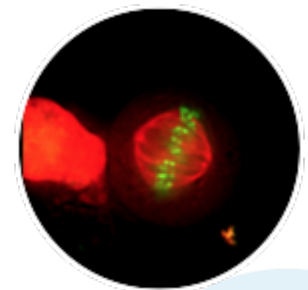
University of Oxford: ~13 TiB, monthly increase: 1 TiB

An image is a measurement

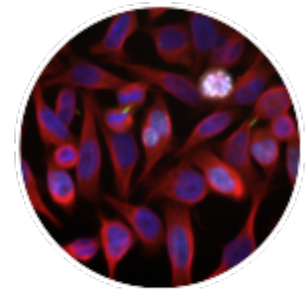
Qualitative and quantitative analysis

Drive towards *shareable* resources

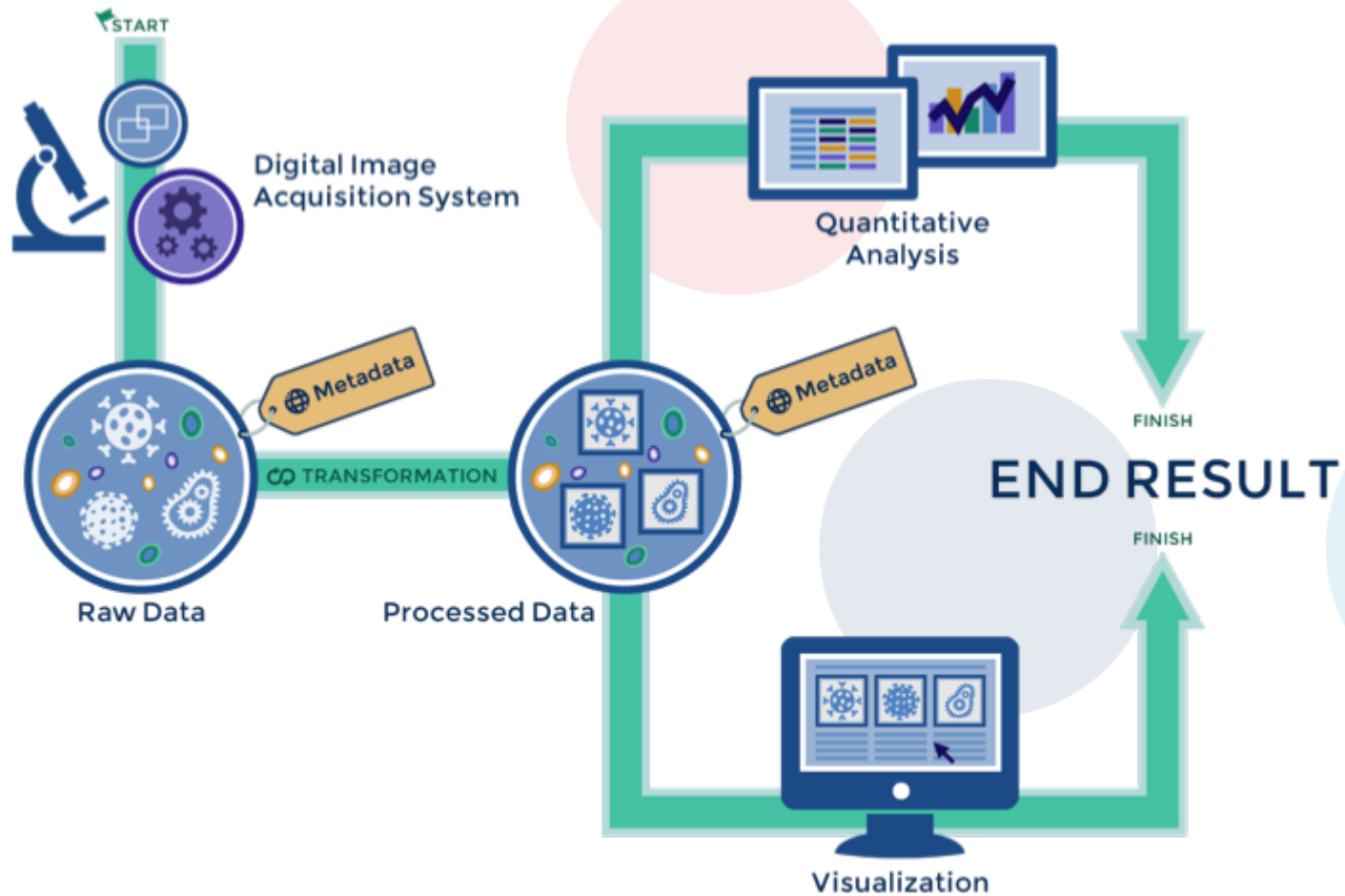
“How can I reproduce this experiment
and compare my results with the paper?”



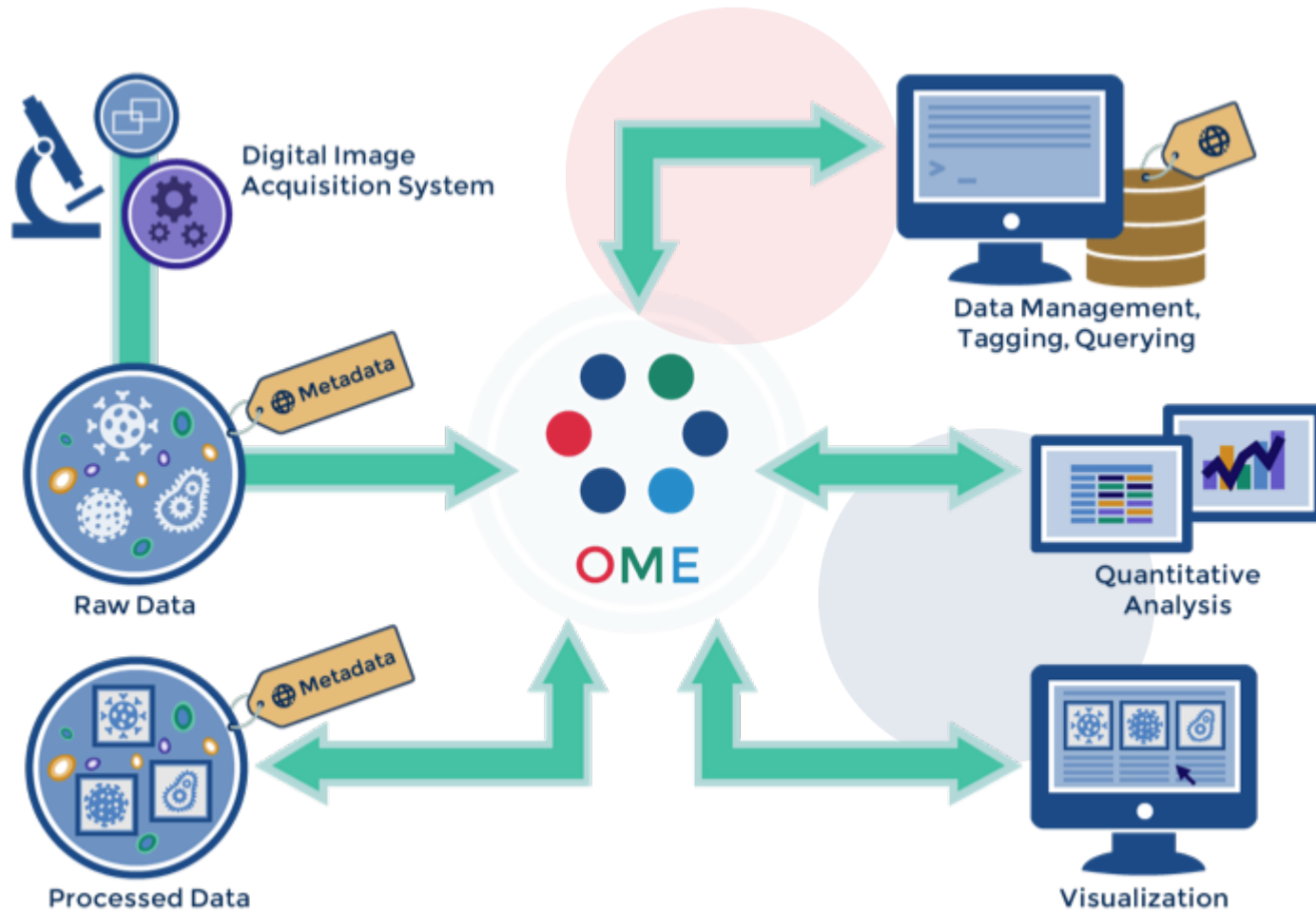
Cells



Standard workflow



What is OME?

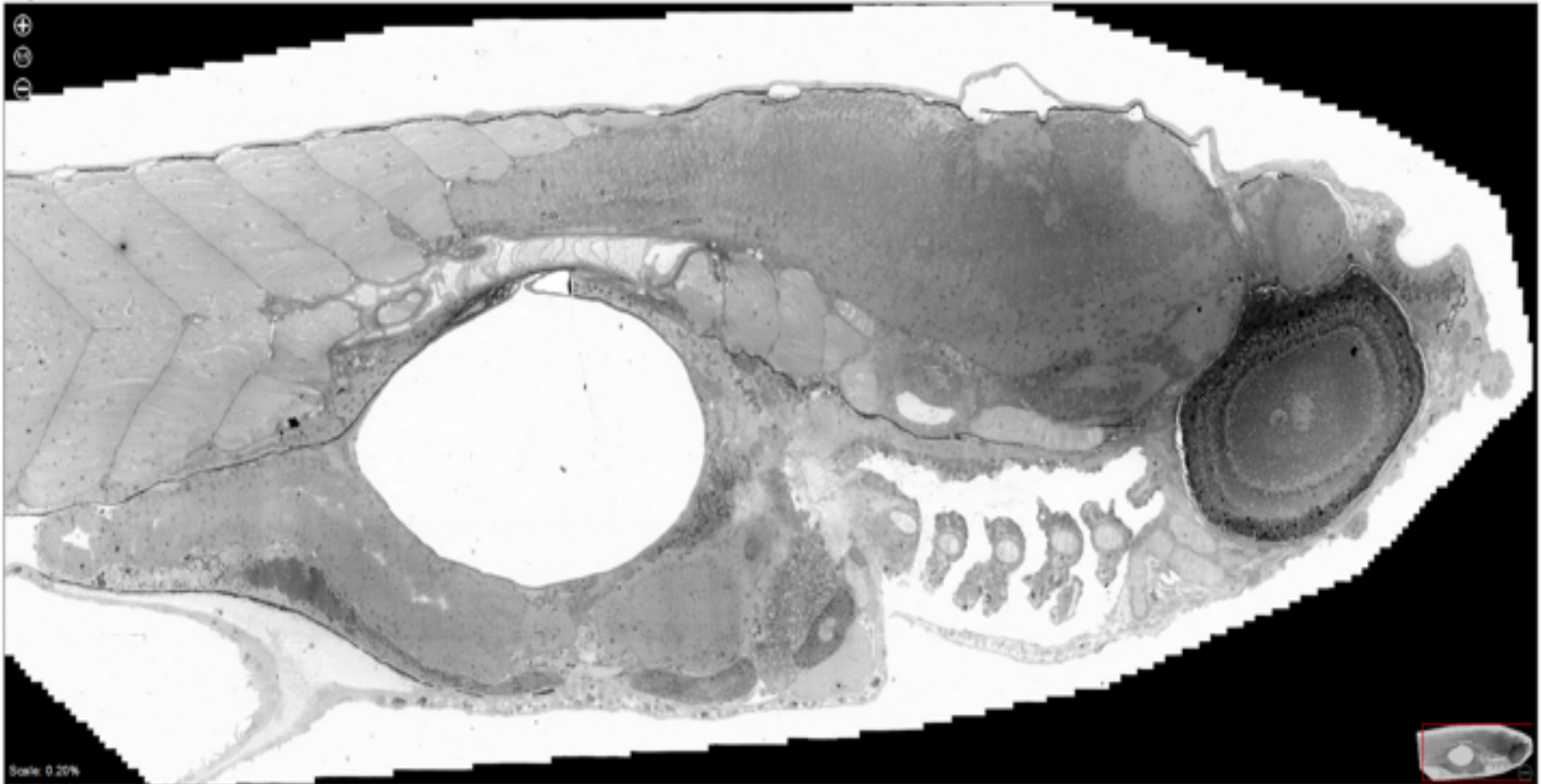


Increasing image complexity

Virtual nanoscopy: Generation of ultra-large high resolution electron microscopy maps

Frank G.A. Faas, M. Cristina Avramut, Bernard M. van den Berg, A. Mieke Mommaas, Abraham J. Koester, Ramond B.G. Ravelli

Published 28 Aug 2012
JCB vol. 199 no. 3 457-467 Article DOI: [10.1083/jcb.201201140](https://doi.org/10.1083/jcb.201201140) DataViewer DOI: [10.1083/jcb.201201140.ev](https://doi.org/10.1083/jcb.201201140.ev) [Image Information]



Increasing image complexity

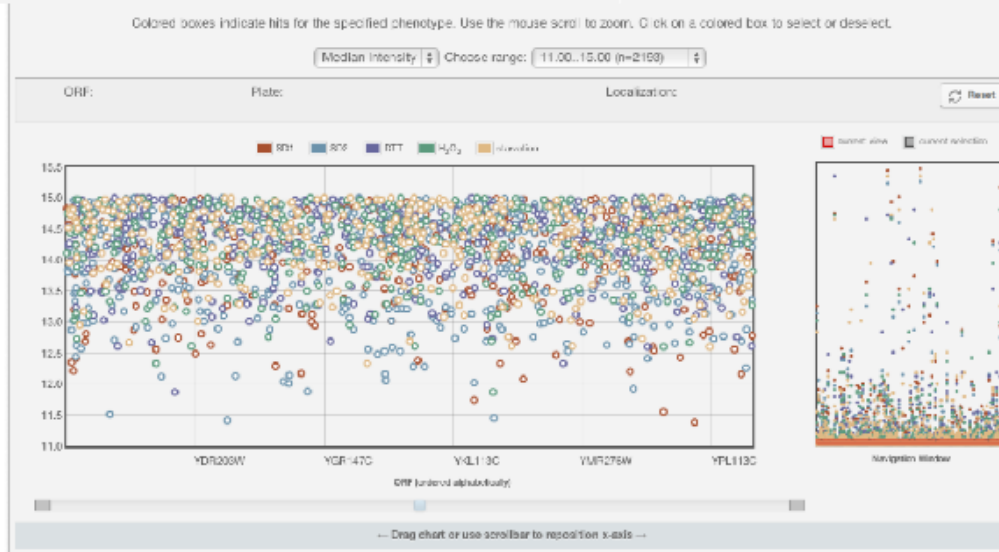


P108
Field 6

Metadata

Plate: P108
Well: D4 [open In]
Field: 6
ORF: YPL241C
Gene: CNG2
Alias: -
Author Hit: No
Description: GTPase-activating protein 241C
beta-tubulin display increased

P101
P102
P105
P106
P107
P108
P109
P110
P111
P112
P115
P117
P118
P119
P120
P121
P123
P124
P125
P126
P127
P128
P129
P130
P131
P132
P133
P134
P135

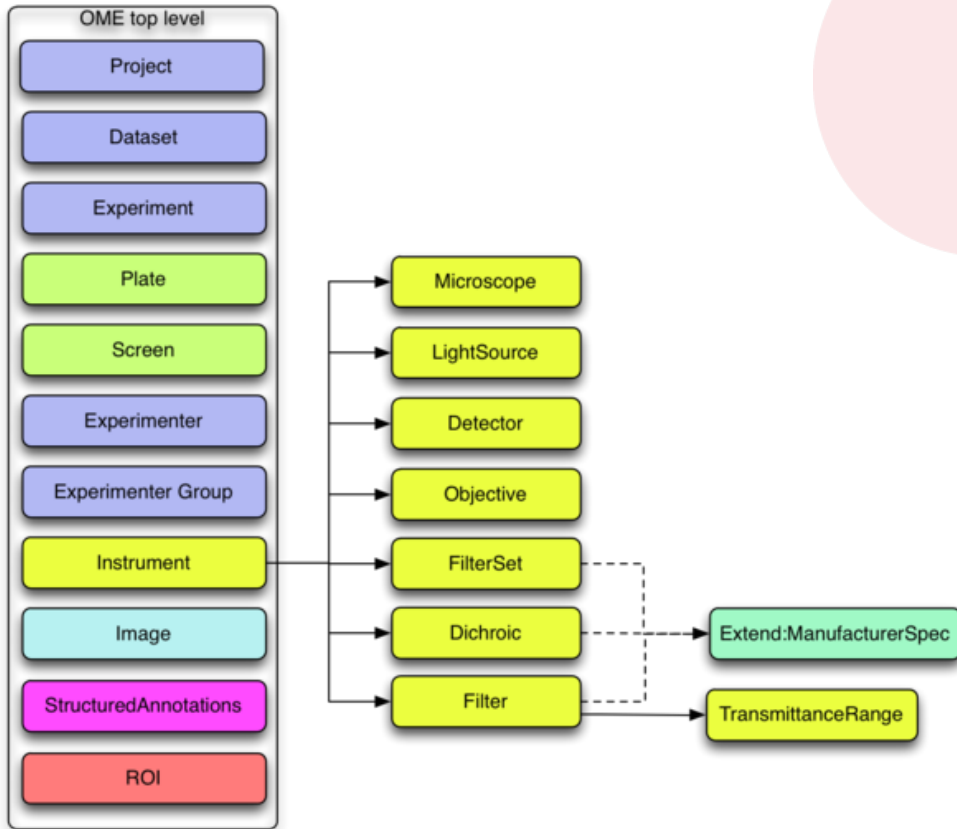


6 7 8

Non-yeast hits



Metadata exchange standard



```
<ome:FilterSet ID="FilterSet:1"  
  Manufacturer="Ink Inc."  
  Model="Mk 3" LotNumber="K753">
```

```
<ome:ExcitationFilterRef  
  ID="Filter:1"/>
```

...

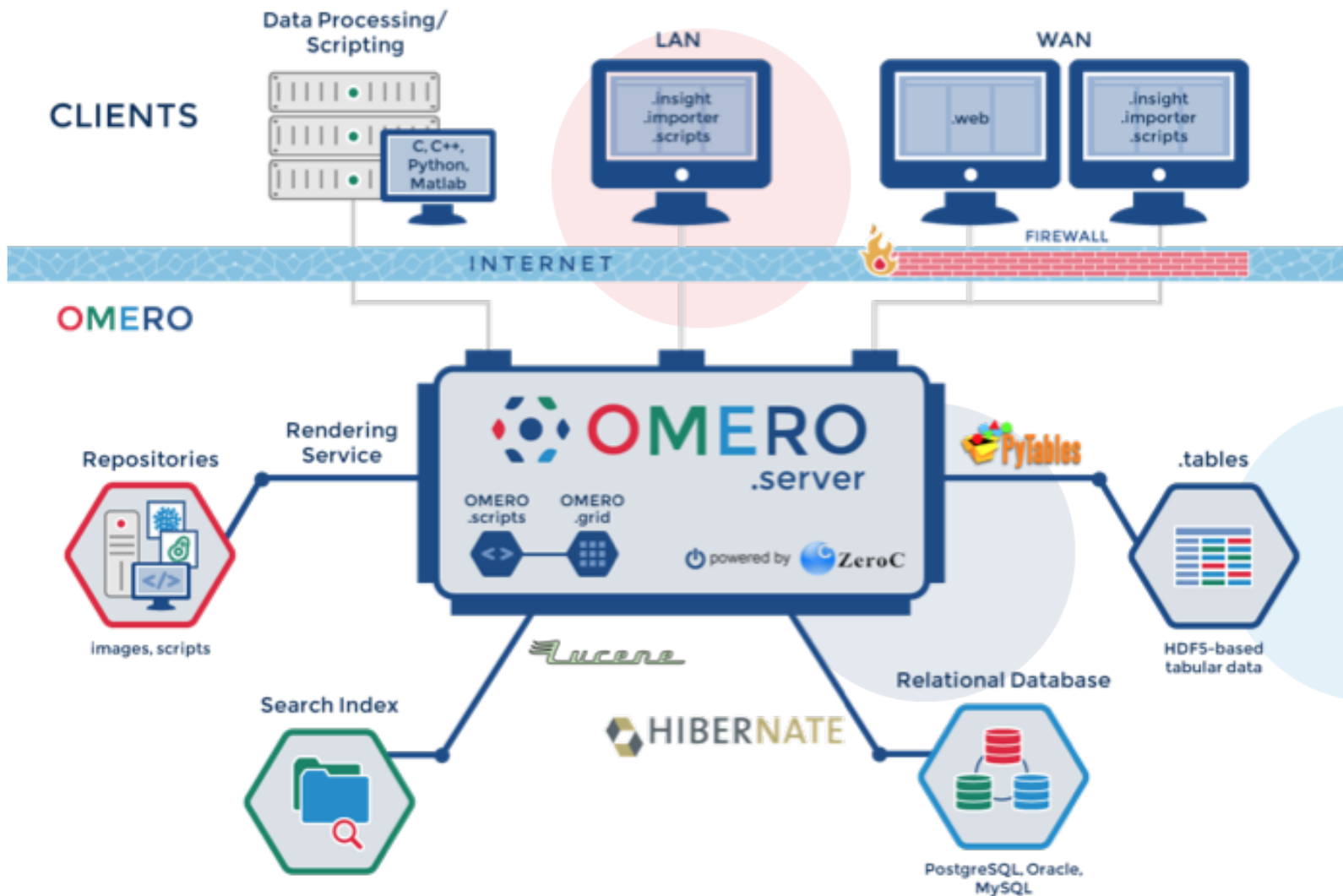
```
</ome:FilterSet>
```

```
<ome:Filter ID="Filter:1"  
  Manufacturer="Ink Inc."  
  Model="Medium 490" LotNumber="J23"  
  Type="BandPass" FilterWheel="Disk 7">
```

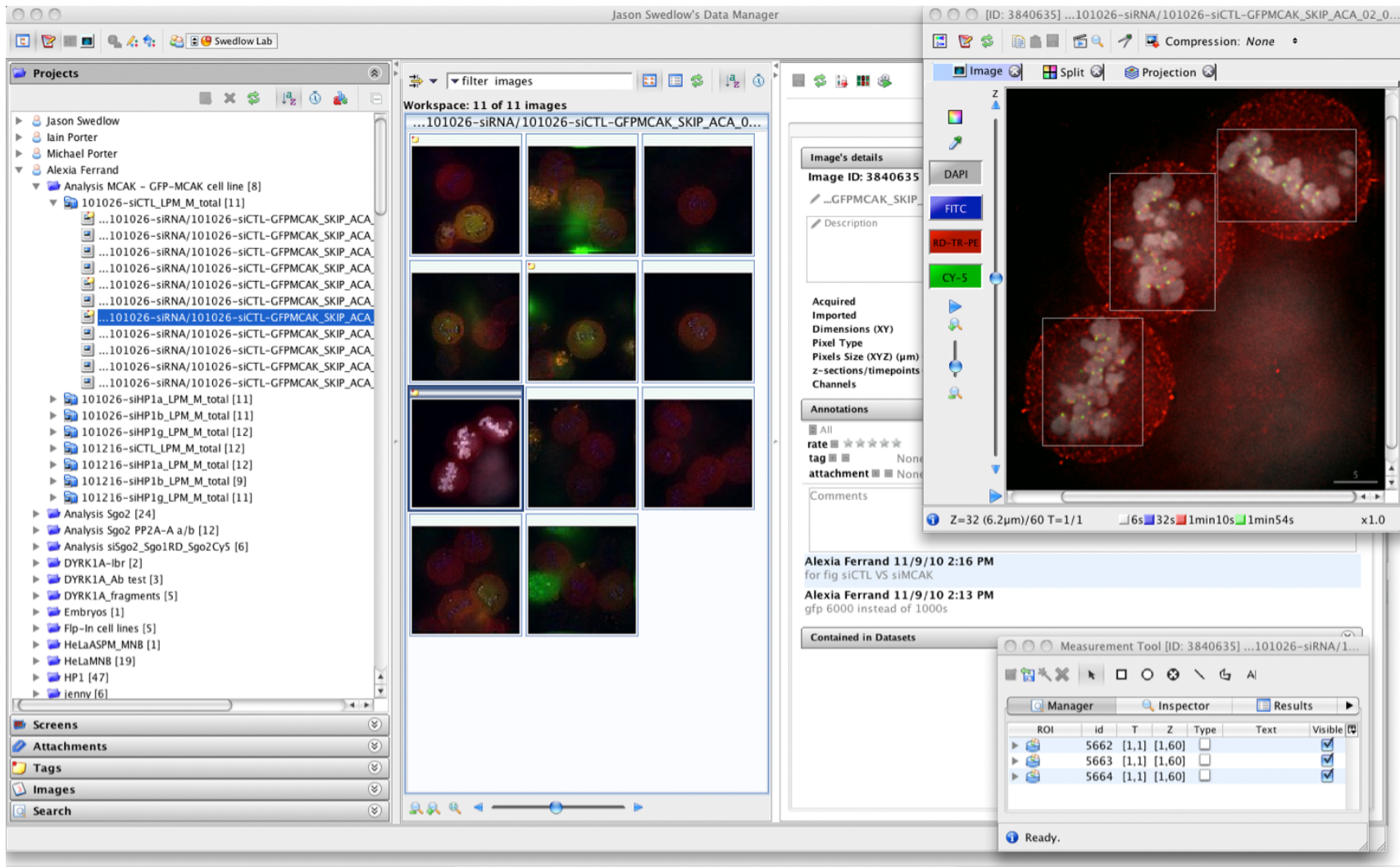
```
<ome:TransmittanceRange  
  Transmittance="0.80" CutIn="450"  
  CutOut="530"/>
```

```
</ome:Filter>
```

Open Data Management Platform



OMERO clients - desktop



OMERO clients - web

The screenshot displays the OMERO web interface. At the top, the OMERO logo and navigation tabs (Data, History) are visible. Below the navigation is a search bar and a user profile icon labeled 'Virtual Microscope'. The main area is divided into three sections:

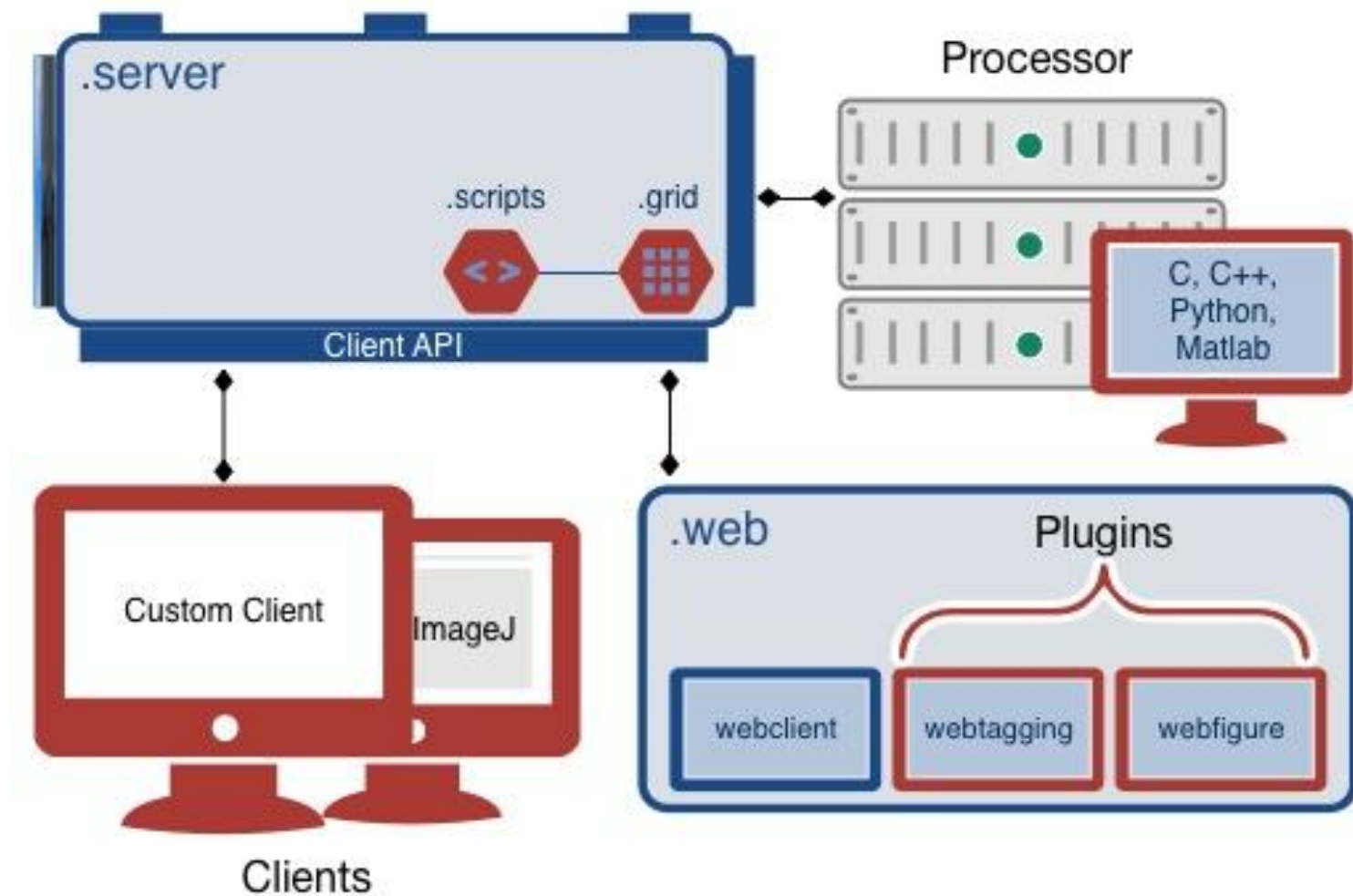
- Left Panel:** A tree view under 'Virtual Microscope' showing a hierarchy of folders and files, including 'BS21007 Introductory Anatomy 2', 'BS32001 Neuroanatomy 1', and 'Aperio image 2 159'. A list of files with IDs like '...011-08-31177971.svs [Series 1]' is shown below.
- Center Panel:** A grid of image thumbnails. A search filter 'Filter Images' is at the top. The thumbnails show various histological sections, some with labels like '16', 'VIII/5', and 'IV/10'.
- Right Panel:** A metadata panel for the selected image. It includes tabs for 'General', 'Acquisition', and 'Preview'. The 'General' tab is active, showing:
 - Path: Y:\data_repo\Scotts User Images\Aperio Scanned Images\Aperio image 2\2011-08-31\77992.svs [Series 1]
 - IMAGE ID: 395
 - Buttons: Full viewer
 - Add Description
 - Owner: Virtual Microscope
 - Acquisition Date: 2011-08-31 15:45:45
 - Imported Date: 2013-05-31 15:41:52
 - Dimensions (XY): 84514 x 36880
 - Pixels Type: uint8
 - Channels: 0, 1, 2
 - Rating: No ratings
 - Tags: +
 - Attachments: +
 - Others: +
 - Comment: +

Below the grid, a browser window shows the detailed view of the selected image. The address bar indicates the URL: `pfelts-staging.openmicroscopy.org/omero/webclient/img_detail/395/`. The image viewer includes a 'Viewing Options' panel on the left with 'Quality' set to 'Normal', 'Channels - Edit' (0, 1, 2), 'Color' checked, and 'Current Image' information (Z: 1/1 | T: 1/1, Image Information, Image Link, ROI Count: 0). The main image area shows a histological section with a 'Z-sections' vertical slider and a 'Scale: 6.25%' indicator. A small inset image is visible in the bottom right corner of the viewer.

Google “omero web plugin”



OMERO's Extensible Platform



ZeroC ICE (Internet Communications Engine)



<http://www.zeroc.com/>



Microscopy & Open Source



+ 119 Other Formats



Academia & Open Source

Not always a natural fit

Crucial to widespread adoption

Funding Dependant

Long-term sustainable solution



Consortium



Integration with popular tools

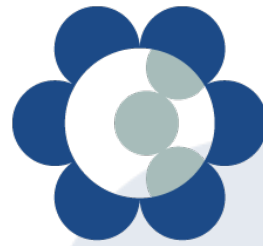
ImageJ
Image Processing and Analysis in Java



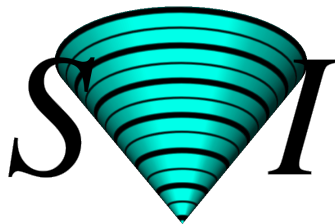
JCB Data Viewer



Commercial Partners



GLENCOE SOFTWARE



Scientific Volume Imaging



Open Microscopy Environn x

GitHub, Inc. [US] <https://github.com/openmicroscopy>

Biochemistry OMERO Dev Code Git Databases Unix Backup Filesystems & Storage Virtualization Networking dpwrussell.com Windows Cycling

Search or type a command Explore Gist Blog Help dpwrussell

Open Microscopy Environment

<http://www.openmicrosc...>

Find a repository... New repository

openmicroscopy/openmicroscopy Java ★ 54 🍴 52

OME (Open Microscopy Environment) develops open-source software and data format standards for the storage and manipulation of biological light microscopy data. A joint project between universities, research establishments and industry in Europe and the USA, OME has over 20 active researchers with strong links to the microscopy community. Funded by private and public research grants, OME has been a major force on the international microscopy stage since 2000.

Updated by sbesson about 1 hour ago

openmicroscopy/Imperial-FLIMfit Matlab ★ 4 🍴 3

Updated by seanwarren about 2 hours ago


openmicroscopy/bioformats Java ★ 50 🍴 72

Bio-Formats is a Java library for reading and writing data in life sciences image file formats. It is developed by the Open Microscopy Environment (particularly UW-Madison LOCI and Glencoe Software). Bio-Formats is released under the GNU General Public License (GPL); commercial licenses are available from Glencoe Software.

Updated by sbesson about 4 hours ago

Members

45 >



Teams

2 >

Jump to a team

devteam
42 members · 38 repositories

<http://github.com/openmicroscopy>



Acknowledgements & Questions

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Imperial – Paul French, Chris Dunsby, Ian Munro
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Pasteur – Spencer Shorte, Sebastien Simard, Julien Jourde
EBI – Gerard Kleywegt, Ardan Patwardhan, Ingvar Lagerstedt
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Carlos Neves, Liza Unson, Wilma Woudenberg Donald Macdonald



welcometrust

