

OMERO.web for developers

OME 2024

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Workshop outline

- Introduction of OMERO.web framework
- Goal of this workshop
- Demo / workshop:
 - Create conda env and pip install omero-py
 - Install omero-web from local git repo
 - Run local dev server (debug = True etc)
 - Start a new omero-web app with cookiecutter
- Use <https://github.com/will-moore/omero-script-ui> as example of next steps:
 - Create a UI for a script - openwith, interactive parameters etc.
 - How to integrate a JavaScript build tool and Framework (e.g. React)

OMERO.webclient, and apps (iviewer, figure)

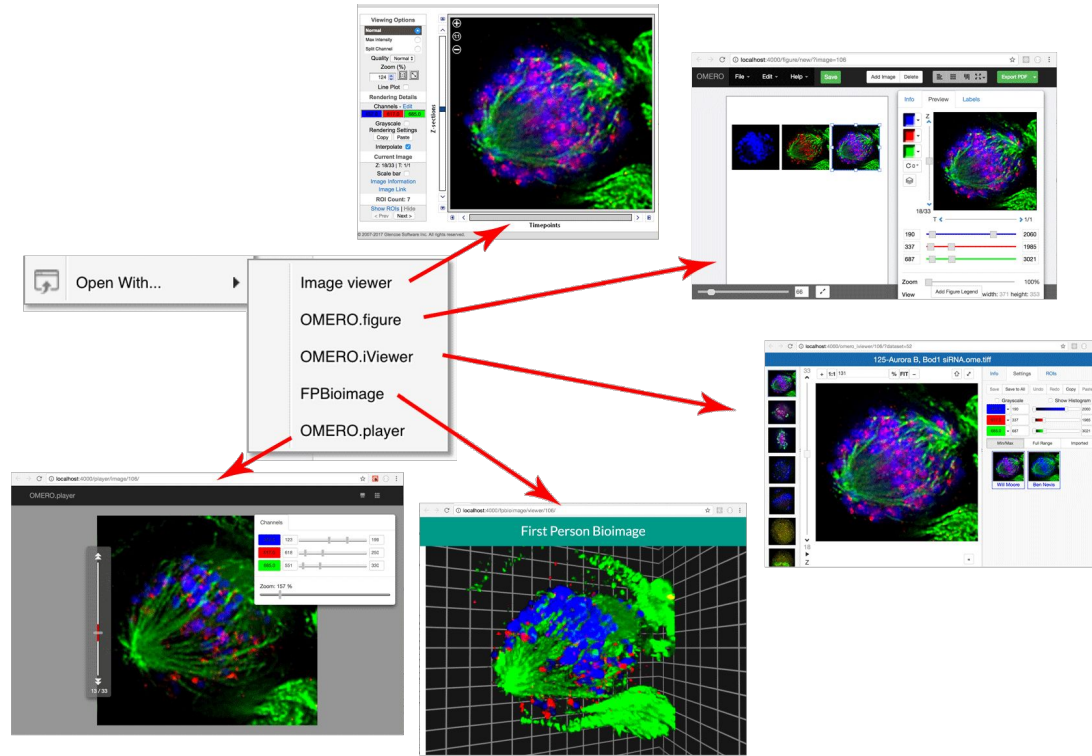
The image displays the OMERO.webclient interface, which is used for managing and viewing microscopy data. The main window shows a dataset named "siRNA-HeLa" with a grid of image thumbnails. The right-hand panel provides details for the selected dataset, including its ID (1868), owner (trainer-1), and creation date (2018-05-24 19:42:13). Below this, there are sections for tags, key-value pairs, and attachments.

Overlaid on the main interface are two specialized viewer applications:

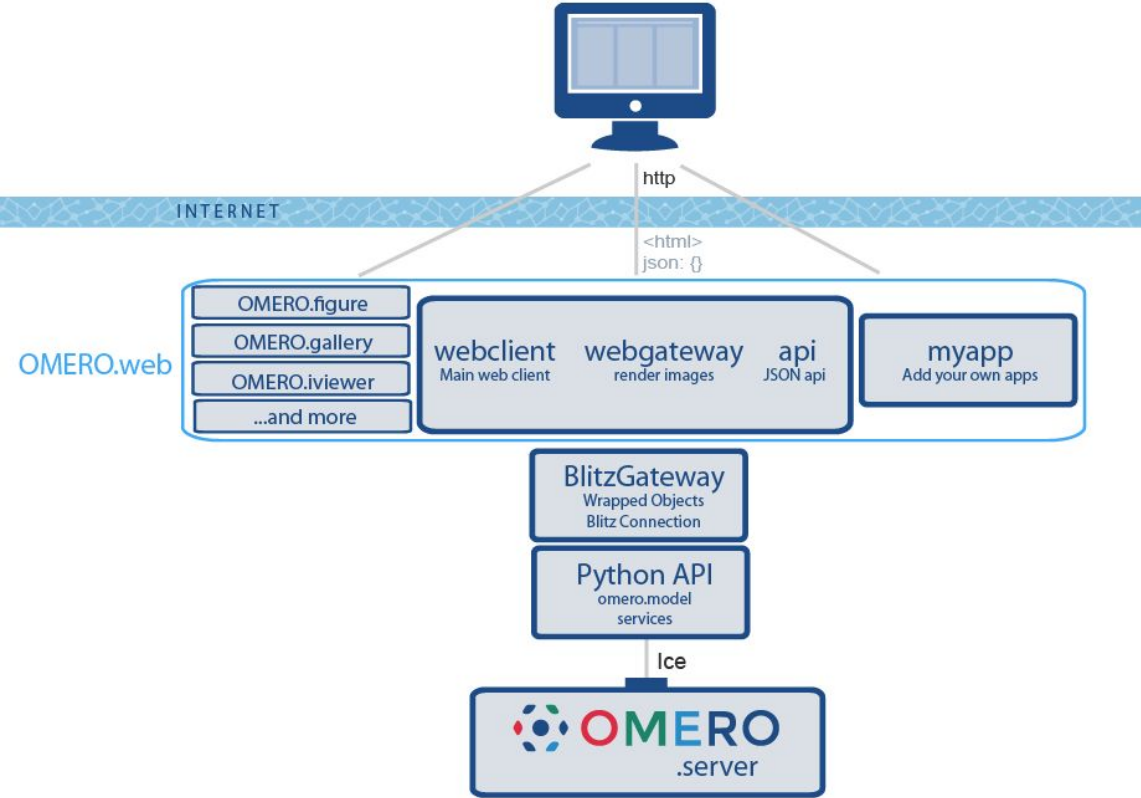
- iviewer (Aurora-B figure 2):** This application displays a time-lapse sequence of microscopy images showing the dynamics of protein localization during mitosis in dividing HeLa cells expressing RFP-H2B. The sequence includes channels for DAPI, Tubulin, and Aurora-B, with time points marked at 0, 42, 60, 71, and 82 minutes.
- figure (Aurora-B figure 2):** This application provides a detailed view of the microscopy data, including a large preview of the selected image and a histogram showing the intensity distribution. The histogram has a peak around 1000. The interface also includes a "User Settings" section with a grid of thumbnail images and a "Labels" section with a color-coded legend.

The bottom of the figure application shows a caption: "Figure 1: Dynamics of protein localisation during mitosis. Dividing HeLa cells expressing RFP-H2B were".

Open with... various omero.web apps



OMERO.web framework

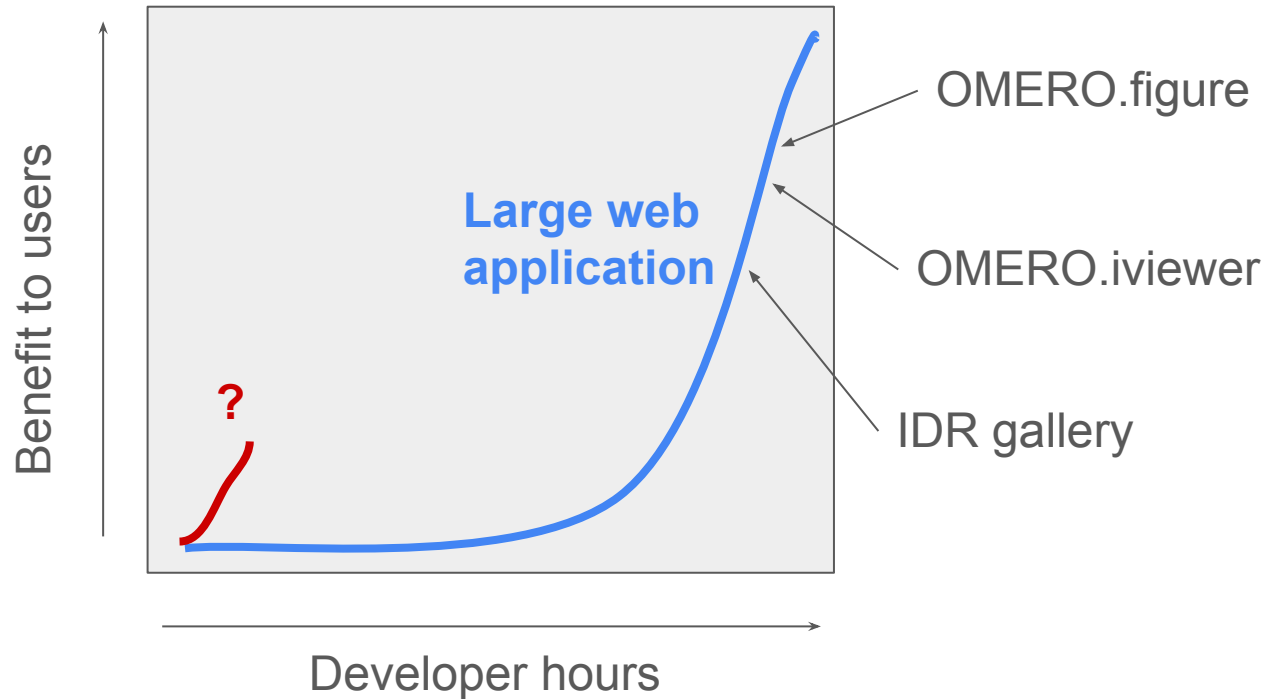


<https://omero.readthedocs.io/en/stable/developers/Web.html>

OMERO.web apps from the OME community

- <https://github.com/WU-BIMAC/MicroMetaApp-Omero> Alex Rigano
- <https://github.com/German-BioImaging/omero-autotag> and <https://github.com/German-BioImaging/omero-tagsearch> Douglas Russell, Tom Boissonnet
- <https://github.com/sukunis/OMERO.openlink> Susanne Kunis
- https://github.com/bene51/omero_3Dscript Benjamin Schmid
- <https://github.com/MontpellierRessourcesImagerie/microscopemetrics-omero> Julio Mateos Langerak
- etc...

OMERO.web development: Start with “Low Hanging Fruit”



Using OMERO.web app for a Script UI

- Many developers writing OMERO.scripts
- But, the auto-generated script dialog has limitations
- Demand for “interactive parameters” for OMERO scripts:
 - <https://forum.image.sc/t/omero-scripts-interactive-parameter-loading/>
 - <https://forum.image.sc/t/file-browser-in-omero-script-gui/>
- Workshop goal: use an OMERO.web app to enhance an OMERO.script UI

Customised UI for scripts

Import_from_csv.py <https://github.com/ome/omero-scripts/pull/216> (Tom Boissonnet)

Run Import from CSV

localhost:4080/webclient/script_ui/455663/?Experimenter=2

Import from CSV

Import key-value pairs and tags from a CSV file.

Check the guide for more information on parameters and errors:
<https://guide-kvpairs-scripts.readthedocs.io/en/latest/index.html>

Default namespace: `openmicroscopy.org/omero/client/mapAnnotation`
Authors: Christian Evenhuis, Tom Boissonnet, Jens Wendt
Contact: <https://forum.image.sc/tag/omero>
Version: 2.0.0

Data Type:

IDs:

Target Data Type:

File OR
Annotation: No file chosen

Namespace (blank for default or from csv):

Import tags:

Only use personal tags:
Allow tag creation:

Other parameters:

Exclude empty values:
CSV separator:
Split values on:

Columns to exclude: Columns to exclude from the key-value pairs.
<ID> and <NAME> correspond to the column name specified by the next two parameters.
<PARENTS> matches all (PROJECT, DATASET, SCREEN, PLATE, RUN, WELL).

Target ID colname:
Target name colname:

[View Script](#)

Original UI
(generated by the script)

localhost:4080/omero_scriptui/import_from...

Import from CSV

Script info

Annotating Datasets: **A-Fiji-dataset,**

Target Data Type:
Target Column (ID or Name)

Drag and Drop your CSV file here.
or enter File Annotation ID(s) below, contain per ID).
Otherwise, script takes the most recent CS

File Annotation:

CSV separator:

Namespace (blank for default or from csv):

Exclude empty values:

Split values on:

Import tags:

Only use personal tags:
Allow tag creation:

Other fields (should be populated automatic

PROJECT	DATASET	OBJECT_ID	OBJECT_NAME
exclude <input checked="" type="checkbox"/>	exclude <input checked="" type="checkbox"/>	exclude <input checked="" type="checkbox"/>	exclude <input checked="" type="checkbox"/>
DV images_	bar	853	P-TRE_10_R3D_D3D.dv
DV images_	bar	754	P-TRE_10_R3D_D3D.dv_offsets
DV images_	bar	854	P-TRE_11_R3D_D3D.dv
DV images_	bar	855	P-TRE_12_R3D_D3D.dv
DV images_	bar	856	P-TRE_13_R3D_D3D.dv
DV images_	bar	857	P-TRE_14_R3D_D3D.dv
DV images_	bar	858	P-TRE_21_R3D_D3D.dv
DV images_	foo	706	438CTR_01_4_R3D_D3D.dv
DV images_	foo	752	438CTR_01_4_R3D_D3D.dv_offsets
DV images_	foo	707	P-TRE_10_R3D_D3D.dv

File Annotation:

CSV separator:

Namespace (blank for default or from csv):

Exclude empty values:

Split values on:

Import tags:

[View Script](#)

UI updated to be interactive

Python env setup

- Create conda env with omero-py: <https://github.com/ome/omero-py>
 - See <https://omero.readthedocs.io/en/stable/developers/Python.html>
- Install omero-web from local git repo
 - Clone <https://github.com/ome/omero-web/>
 - Cd omero-web && pip install -e .

Run omero-web dev server

- Run local dev server:
 - export OMERODIR=\$(pwd)
 - See “Developer Installation” at <https://github.com/ome/omero-web/>

Create new app with cookiecutter

- Start a new omero-web app with cookiecutter:
<https://github.com/ome/cookiecutter-omero-webapp> (thanks to Guillaume Gay)
 - `pip install -e .`
 - Omero config append `omero.web.apps` “my_app”
 - Restart omero-web

Create a custom UI for an OMERO.script

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 - How to integrate a JavaScript build tool and Framework (e.g. React)