**Demoing workflow of OMERO**:

Data are pre-imported to OMERO. The import workflow for more involved (longer) workshops can be inserted in front of this workflow (typically via OMERO.insight). The workflow below starts in OMERO.web:

1. **Left Hand Side Panel:**
   1. Show Tree Structure : Group/User/Data
2. **First viewing of data, basic overview (Projects /Datasets/Screens/, thumbnails, metadata, rendering settings)** 
   1. Expand a project with Datasets containing images
   2. Expand Datasets containing Big images, clinical images (whole organ scans, available from Dicom website), confocal and wide-field microscopy images (Highlight different modalities/data formats : datasets organized by Image types, mention the versatility provided by Bio-formats)
   3. Click on one of the images from confocal microscopy
   4. Move to Acquisition pane: Show Acquisition metadata.
   5. Explain about Metadata (original Metadata -> fields corresponding to model are shown in the metadata panel in more readable form, e.g. Pinhole size, Exposure time).
   6. Click on one of the images from wide-field microscopy images. Prefered are multi-channel images (3-4 channels), where all the images are of the same size and have the same number of channels.
   7. Show thumbnail images. (Center Panel, make the thumbnails bigger using the slider at the bottom of Center Panel)
   8. Filter Images using name, and rating
   9. Briefly show who is the Owner of the image in the top-right-corner of the UI, explain that all objects in OMERO are owned by somebody
   10. Move to Preview pane (the rightmost tab in the right-hand pane) : Show changes to rendering settings, including Histogram, LUTs and Reverse intensity
   11. Explain the use case: “Staining for protein Z was done in 2nd (green) channel. The scientist needs to compare the controls (should not be stained) and experimental staining in a rapid manner. “
   12. Switch off all the channels except channel 2 and make sure you the Rnd settings on Channel 2 are optimal (you can use Histogram on a non-control image for that purpose).
   13. Click “Save to All” button and explain that the Rnd settings will be applied on all the images in the dataset
   14. In the central pane, some images will have green features, some will be black
   15. Explain that the black images are the controls.
   16. You can filter in the central pane for “control” (supposing the string “control” is a part of the name of control images) and emphasize all the filtered images are black. Explain that in this way the scientist gets a quick information that the staining worked.
   17. Edit Channel names of an image in this dataset (right-hand pane, General tab), giving the channels more intelligible names than the wavelength numbers which were there originally. Click “Apply to all”. Preferably, this is a dataset from which you will select images for OMERO.figure later in the demonstration. Emphasize the batch nature of the action.
   18. Touch upon rendering settings from others
3. **(Screen/Plate/Field – only show this workflow if audience is using high-content screening data)**
   1. Show fields in each well in the lower central pane.
   2. Show Spatial view (spatial field distribution) in the lower left-hand pane.
   3. Explain the difference between Wells and Fields, explain that you can annotate and search for wells.
4. **Map-Annotations and other annotations:** 
   1. Select several images
   2. Add tag to them, explain about Tag view and the “virtual levels of hierarchy” achieved by tags, mention Tag Search and Auto Tag applications for OMERO.web
   3. Expand Key-Value Pairs, show existing annotations, show editing
   4. Explain that the Key-Value Pairs can be used as a short version of Lab book by scientists and that they are searchable
   5. Expand other annotations : file attachments, and comments.
5. **Search:** 
   1. (quick-)Search for some Key (e.g “secondary-antibody”) – show the Search UI and explain the features briefly (self-explaining, just point to the left-hand-panel).
   2. Search for Key-Value Pair with the “:” syntax, e.g. “secondary-antibody:rabbit” will give you only objects which are annotated by Key-Value Pairs which contain Key: “secondary-antibody” and corresponding Value is : “rabbit”. This will filter your previous search for “secondary-antibody” and remove all the objects which have somewhere “secondary-antibody” but do not have the Key-Value pair “secondary-antibody:rabbit”
   3. Search for term : ***metaphase.*** Show the results of search contain the tag, name or other fields: Metaphase. Add the following comment on 3 randomly selected images
      1. ***Metaphase images for Figure1***
      2. Search for the term within quotes : “***Metaphase images for Figure1***”
      3. Highlight the search results: Just 3 images will be returned which contain the comment.
6. **Downloads**
   1. Explain that OMERO stores the original files which can be downloaded in original format
   2. Show the download menu (top of the right-hand pane)
   3. Run Split-view figure script or Batch-download script.
7. **OMERO.iviewer**
   1. Using Open With feature (selecting an image in the tree, right-click and select Open With), open small multi-z, multi-t image, show that you can scroll through z planes and t-points. Show the thumbs of images from the dataset in the left-hand column, explain that you can load more by clicking on arrows at the bottom of the column. Also explain that the Rnd settings can be adjusted, as well as ROIs can be drawn. Show Histogram and LUTs as well as Reverse intensity. Draw couple of ROIs and save them.
   2. Open a big image, zoom in and out, draw couple of ROIs being zoomed in, then show how the viewer is “jumping” to the area of the ROI which you select in the table.
8. **FPBioimage (3D viewer from Cambridge implemented as an app for OMERO.web)**
   1. Open an image which is suitable for 3D viewing, e.g. a whole organ scan (available from Dicom website) or a good cellular structure z-stack.
   2. Be ready that the loading of the z-planes into FPBioimage takes some tens of seconds, best to have an image open in another tab of your browser already.
9. **OMERO.figure**
   1. Open two multi-z, 2-channel fluorescence microscopy images using Open With.
   2. Arrange the images on page, into a grid (using tools in icons in top-right corner)
   3. Copy the images two times, getting 2 rows and 3 columns
   4. Select first column, switch the green channel off and the red on
   5. Select second column, switch the red channel off and green on
   6. Select third column, switch both channels on
   7. Select all images, adjust rendering settings and z plane, explain that Figure has still access to all planes in OMERO
   8. Add labels to the top, using the “Channels” feature, where the channel names from OMERO become labels
   9. Add scalebar.
   10. Add labels (left vertical) denoting first row as “control”, second row as “experiment-1”
   11. Show how to make Crop and do it
   12. Export as pdf and show links (provenance, on the second page of the pdf)
   13. Open pdf in photoshop/illustrator and show that it is modular, you can still move around the labels or change font etc.