

Euro BioImaging Preparatory Phase II Project

**D6.7 Web-based UI for IDR,
implemented in software and available for use in the released IDR**

Project N.	688945
Project Title	Euro-BioImaging Preparatory Phase II
Project Acronym	EuBI PPII
Associated Work Package	WP6
Associated Task	Task 6.1, 6.2 and 6.3
Lead Beneficiary (short name)	UNIVDUN, EMBL
Nature	Websites, patents filling, etc.
Dissemination Level	Public
Estimated Delivery Date (Grant Agreement, Annex I)	31/12/2017
Actual Delivery Date	19/01/2018
Task leader	Jason Swedlow
Contributors	Jason Swedlow, Aleksandra Tarkowska, Josh Moore, Gabriella Rustici (UNIVDUN) Alvis Brazma (EMBL)



Funded by the
Horizon 2020
Framework
Program of the
European Union

Abstract

Public biological data resources are the foundation of modern biological and biomedical research. Resources that archive and integrate molecular data from many different biological systems and domains are heavily used throughout the life sciences and biomedical research community. DNA, RNA and protein sequence and structure are well covered by these resources.

By contrast imaging data resources are still in their infancy. This deliverable describes the Euro-Biomaging Image Data Resource and its UI, which is now routinely publishing image datasets on-line. The IDR is available at <http://idr.openmicroscopy.org/>

Table of Contents

1. Introduction	Page 3
2. Approach	Page 3
3. Public Resource	Page 3
4. Conclusion	Page 5

1. Introduction

Since its inception, Euro-BioImaging has sought to build data resources for the European biological and biomedical imaging community. The overall goal is to achieve the levels of archiving, public availability and integration of biological and biomedical imaging data that are now routine for biomolecular data. This vision was outlined in Euro-BioImaging Preparatory Phase I Deliverables D11.2, D11.3 and D11.6 (<http://www.eurobioimaging.eu/content-page/preparatory-phase-deliverables>).

In addition, WP6 partners UNIVDUN and EMBL received funding from the UK's BBSRC to build a public resource that stores, serves and integrates imaging data from published studies

(<http://www.bbsrc.ac.uk/research/grants/grants/AwardDetails.aspx?FundingReference=BB/M018423/1>). The result was that resources to build the systems for curating, storing and publishing bioimage data were developed and moved into production. Thanks to this combination of funding, the production Image Data Resource (IDR) is publicly available and a paper describing the design and the technology was published in mid-2017 (Williams et al (2017), <https://www.nature.com/articles/nmeth.4326>; <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5536224/>).

2. Approach

The goal of this deliverable was to install the UI elements that make the IDR accessible and searchable for users. As previously noted in D6.5, we anticipated use and access of the IDR by both computational scientists and biologists, so we installed several different interfaces that would satisfy this diverse community. We built an interactive UI to enable browser and search of the IDR datasets and also added a computational resource, the Virtual Analysis Environment, using a Jupyter interface to Python notebooks.

In addition, submission of datasets directly via the IDR is now possible. A data submission workflow has been developed and is published at <http://idr.openmicroscopy.org/about/submission.html>.

3. Public Resource

The public IDR is up and available at <http://idr.openmicroscopy.org> (Fig. 1). This URL directs the user to a landing page that contains information about the IDR, information for data submitters (Fig. 2) and tools for analysis, including the Virtual Analysis Environment (VAE; <http://idr.openmicroscopy.org/jupyter>) (Fig. 3). Logging into the VAE currently requires a GitHub account but will switch to the Elixir AAI (<https://www.elixir-europe.org/services/compute/aai-overview>) mechanism once this tool is released for general use.

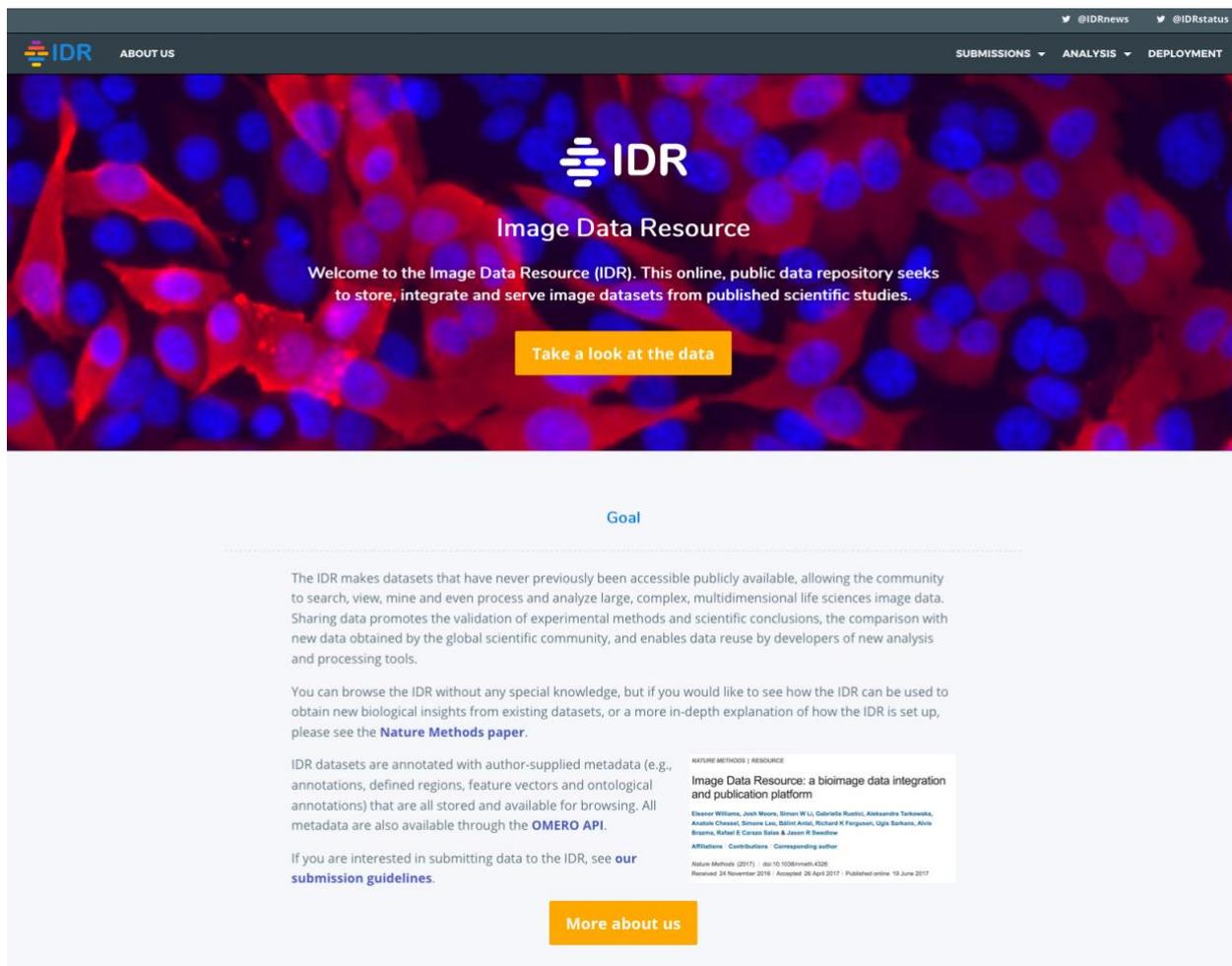


Figure 1. Landing page for IDR, <http://idr.openmicroscopy.org>

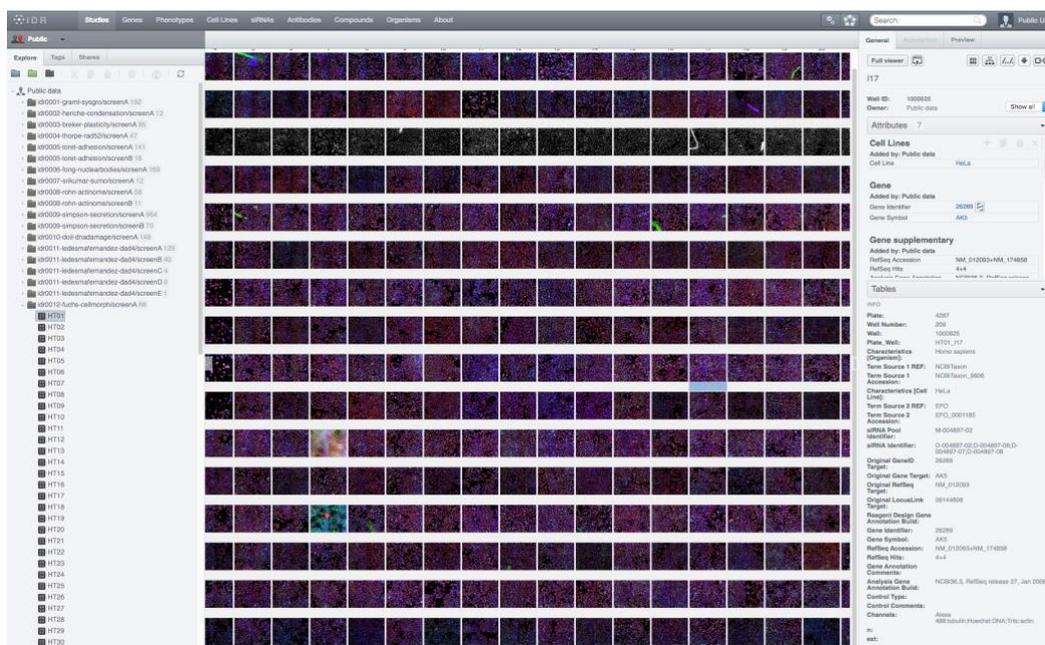


Figure 2. Browse and Search in the IDR UI. Screenshot taken from <http://idr.openmicroscopy.org/webclient/?show=well-1000625>.

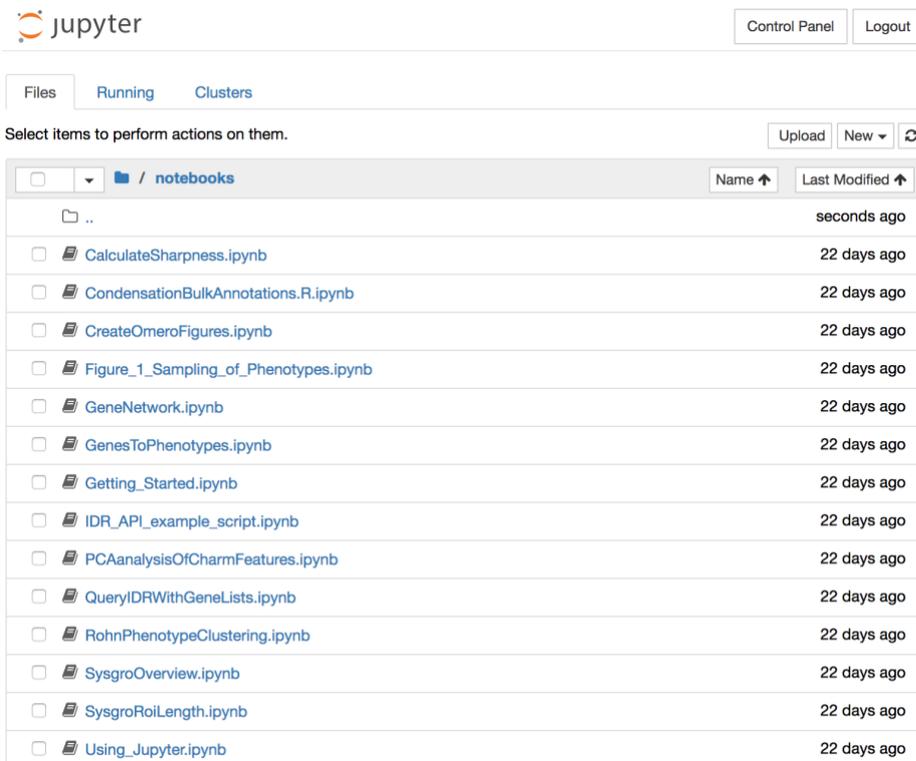


Figure 3. Jupyter UI for analysing IDR datasets on-line. <http://idr.openmicroscopy.org/jupyter>

The IDR and ITR web services contain integration points for third party applications. These have been used to make IDR data visible within Euro-Biolmaging's interim Web Access Portal (WAP) (<https://www.eurobioimaging-interim.eu/image-data-resource.html>). However, a full integration will be undertaken once the work on the final WAP and the EuBI ERIC website will be finalized.

4. Conclusion

We have built and deployed user interfaces for the IDR that target bench biologists and computational scientists. These resources have been vetted by members of the Euro-Biolmaging community, reviews of the IDR paper and now are in use by 200-400 unique users/day. The IDR is a significant step in the use of image data as a computational resource. Its value will continue to grow as more data are added and integrated.