

h5web: a web-based viewer of HDF5 files

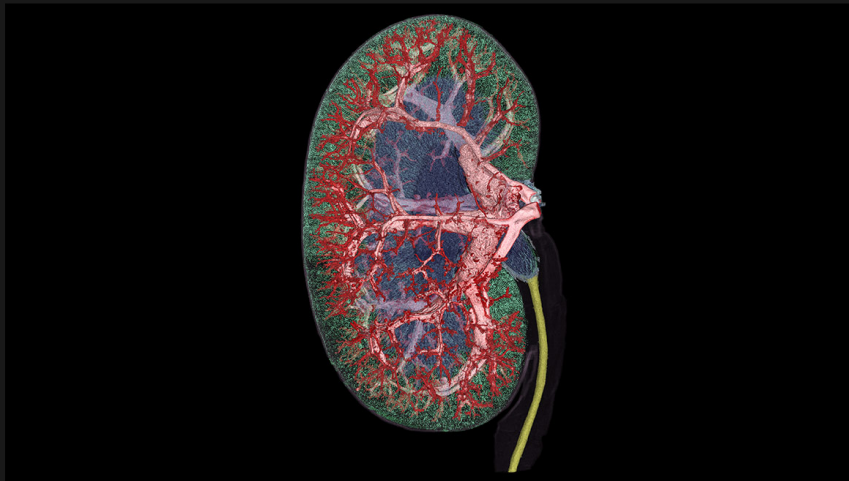
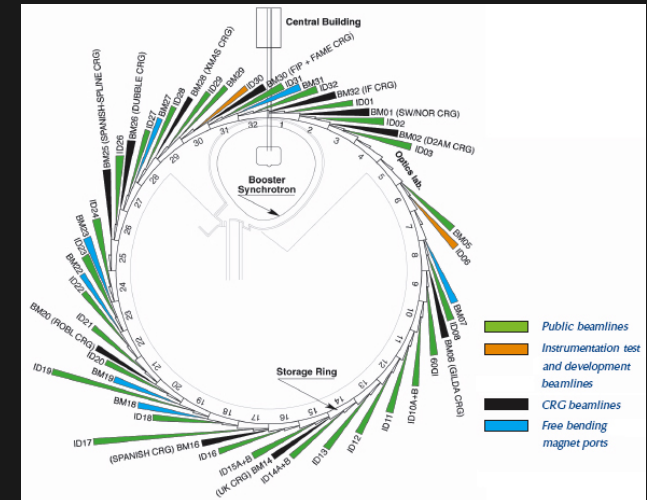
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A FEW WORDS ABOUT ESRF

International synchrotron (driven by 13 member states and 9 associate states)



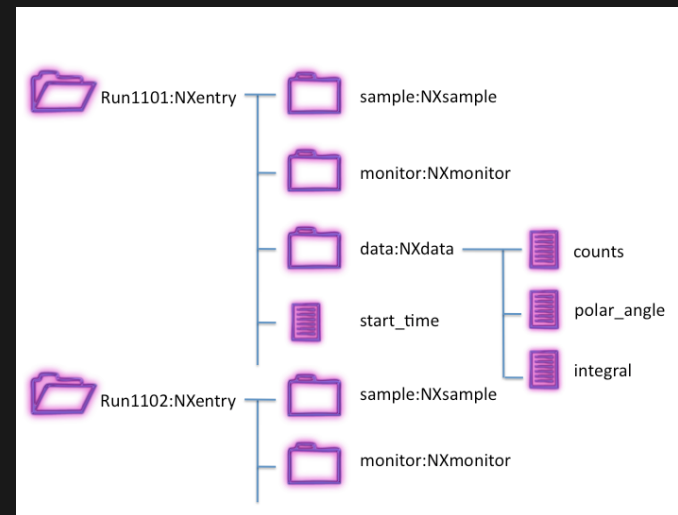
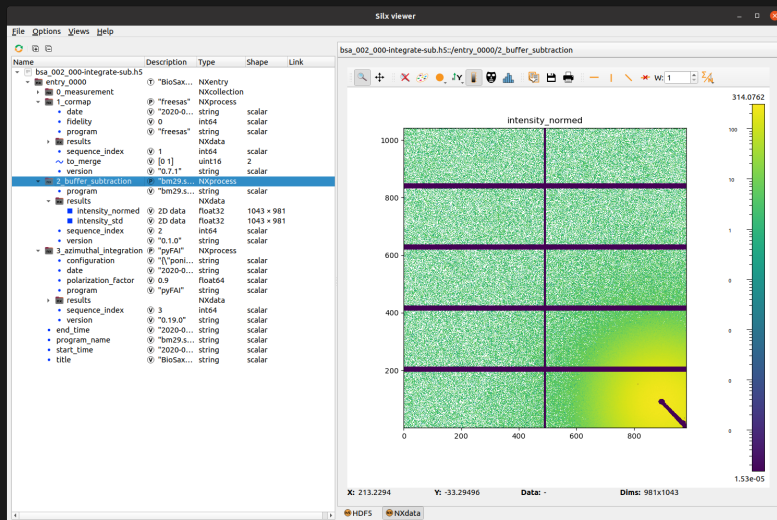
Provides X-rays for many scientific applications

- Cultural heritage
- Biology
- Nanotechnologies
- ...

*Zdora M.-C. et al. (2020) highlighted in [ESRF's Spotlight on Science](#)
18/09/2020*

HDF5 IS NOW THE STANDARD FORMAT FOR DATA ACQUIRED AT ESRF

The HDF5 files follow **NeXus specifications**, a standard for HDF5 file structure at neutron/X-ray facilities.



Example of NeXus hierarchy

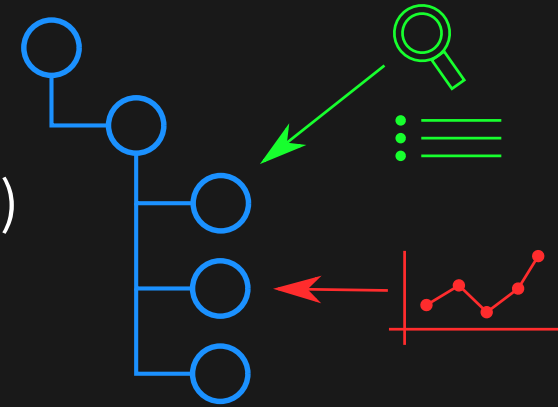
SWITCHING TO HDF5/NEXUS CAN BE DIFFICULT FOR USERS

(while practical for many other reasons...)

- **It can be hard to retrieve/browse data** as NeXus adds several levels of hierarchy.
 - **Data analysis/acquisition tools need to be adapted** to this new format.
- **Need for a software (GUI) to easily visualise and browse HDF5 file contents**

THE SOFTWARE SHOULD ALLOW

- **Browsing** the hierarchy of a HDF5 file
- **Inspecting** the HDF5 entities (links, attributes...)
- **Displaying** the HDF5 datasets



IT SHOULD ALSO BE

- **Flexible** to be deployed in other applications
- **Performant** with fast visualisations

PRESENTING H5WEB



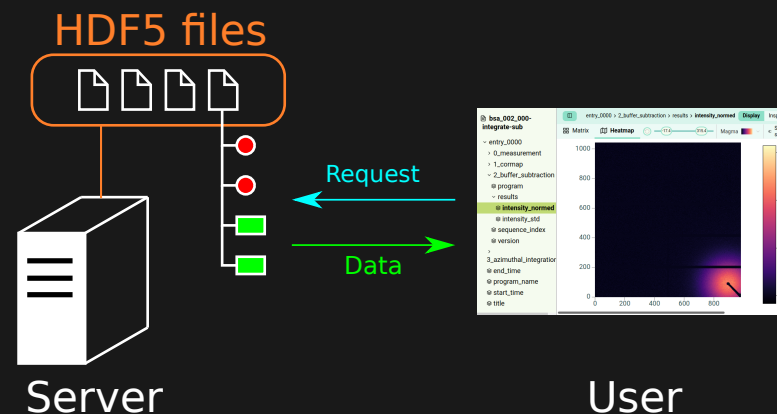
A web application written in React, a component-based front-end framework

Development started in February 2020 in the [PaNOSC project](#)



Open-source: <https://github.com/silx-kit/h5web>

Requests HDF5 metadata/data to a server-side provider (such as HSDS)



DEMO: [HTTPS://H5WEB.PANOSC.EU/](https://h5web.panosc.eu/)

TAKE-HOME FROM THE DEMO

- ✓ Browsing and inspecting
- ✓ Displaying n-dimensional datasets with **Lines** and **Heatmaps** (WebGL-based visualisations with [React-three-fiber](#) and [visx](#))
- ✓ Basic tools for UI: pan/zoom, colormap changes, scale type selection...
- ✓ Visualisation components available as [npm packages](#)

NEXT STEPS

Using the WebGL-based visualisation components
outside the app:

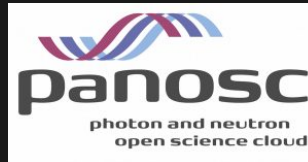
Other web apps at ESRF, in a JupyterLab extension

NeXus support: default plots, axis labels

THANK YOU !

Some links:

- Source: <https://github.com/silx-kit/h5web>
- Demo: <https://h5web.panosc.eu/>
- Component docs: <https://h5web-docs.panosc.eu/>
- npm packages: <https://www.npmjs.com/package/@h5web/lib> and <https://www.npmjs.com/package/@h5web/app>



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