

NFDI4BIOIMAGE: Perspective for a national bioimage standard

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Have questions?
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Jobs available

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Software Developers, Semantic Web Specialists, Data Stewards



Consortium for microscopy data funded **2023-2028** to:

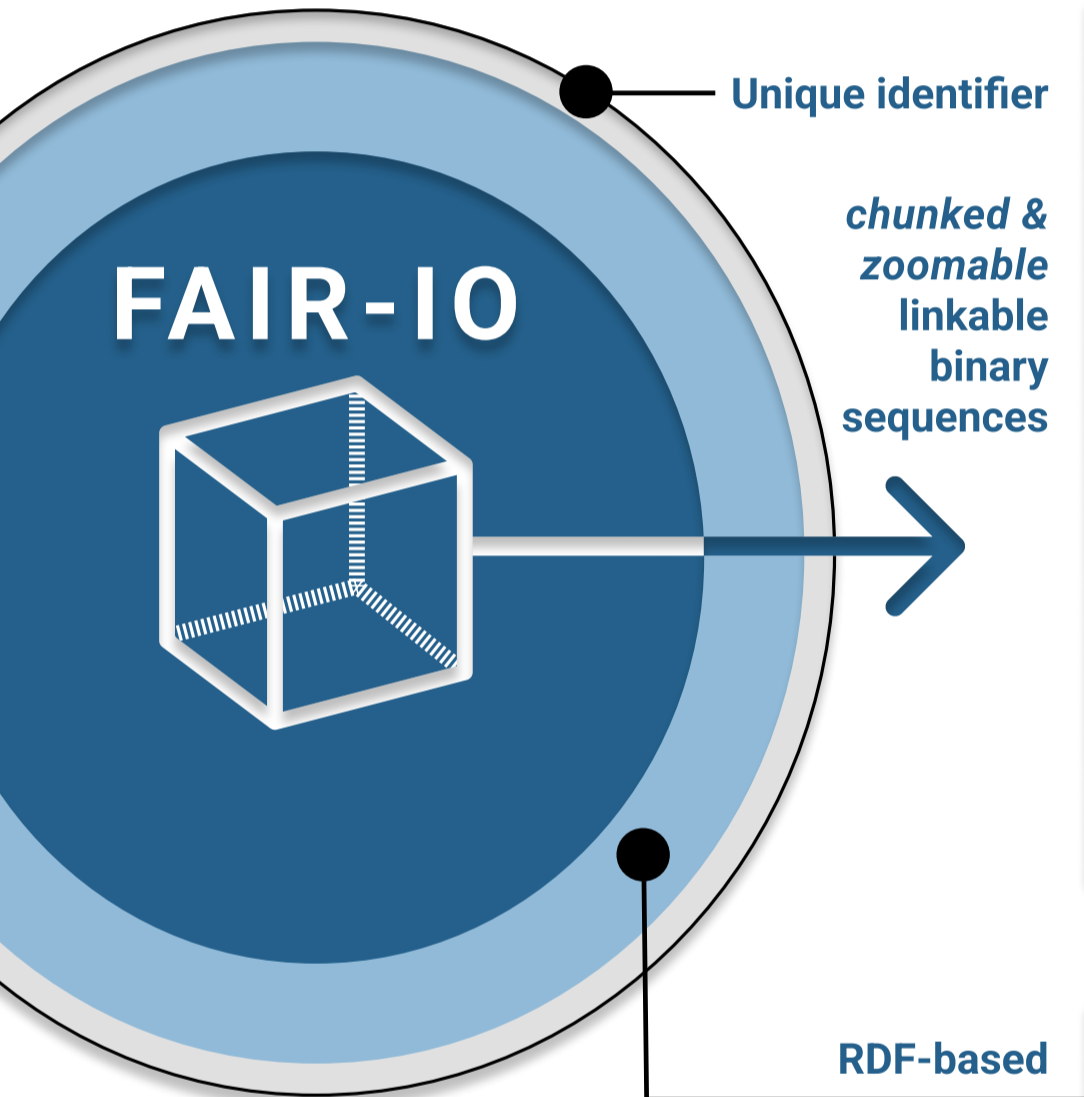
- champion standardization of a bioimage data type
- define common mechanisms for data exchange
- capacitate researchers for FAIR image data management

International Partners:



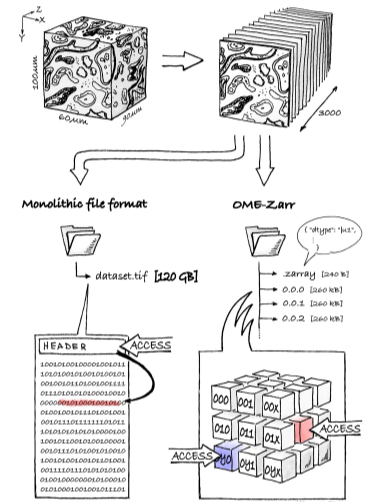
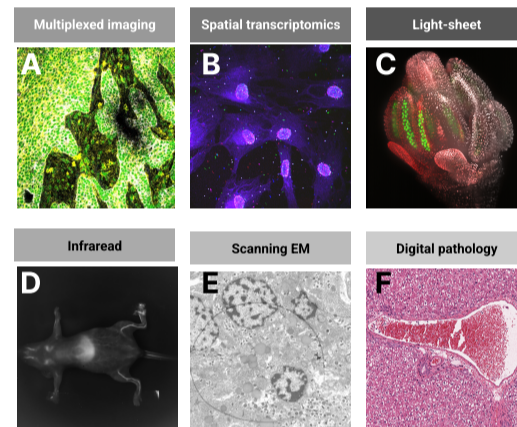
"In the National Research Data Infrastructure Germany (NFDI), valuable data from science and research are systematically accessed, networked and made usable in a sustainable and qualitative manner for the entire German science system. ... Up to 30 NFDI consortia will be selected in a science-led process managed by the German Research Foundation (DFG). This is to ensure a broad coverage of scientific disciplines within the NFDI: from cultural sciences, social sciences, humanities and engineering to life sciences and natural sciences. ... Funding for the consortia from the federal and state governments is initially planned for ten years."

<https://www.nfdi.de/?lang=en>

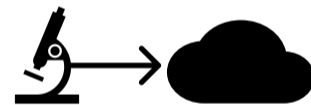


BINARY DATA

multidimensional, multiresolution, compressed



Convert diverse proprietary file formats or export from servers (e.g. OMERO)



Common cloud-optimized format based on:



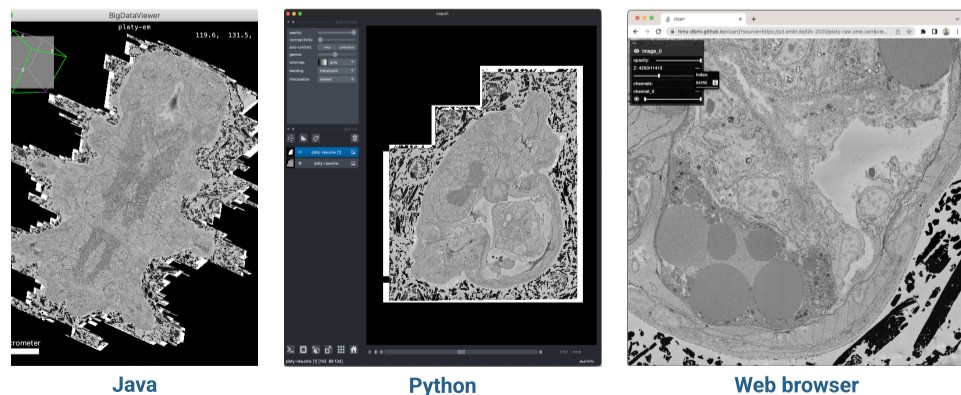
<https://zarr.dev>
"large N-dimensional typed arrays"

See QR code for demo:
<https://wklink.org/6422>



FAIR Image Objects

FDO-compatible datatype for bioimaging to ensure data is open and **web-accessible**. Terabytes of pixels as well as analytical results can be made shareable, linkable, browsable, re-usable, archivable. A **pyramidal** structure allows Google Maps-style zooming. A cloud-optimized ("chunked") format allows referencing individual regions of an image in parallel.

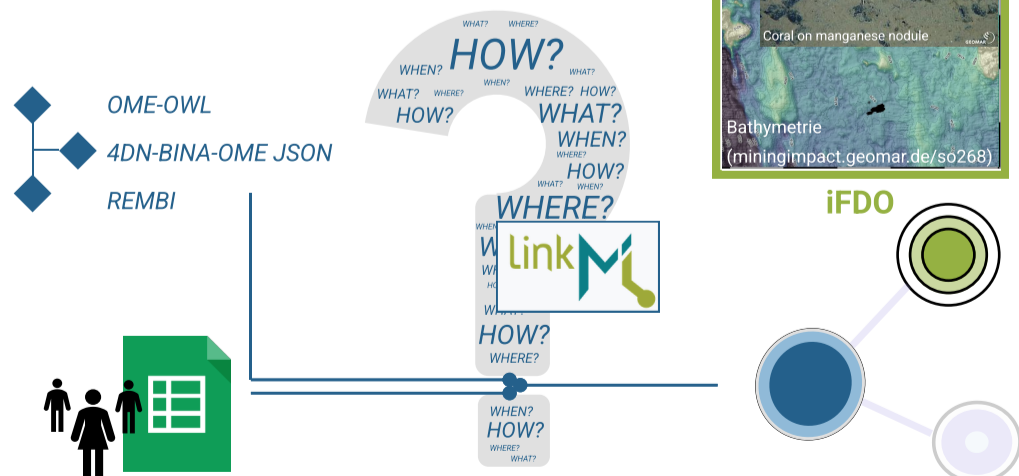


8-TB elecon microscopy volume of a 6 day old *Platynereis* larva from Vergara et al. 2020 available at: <https://s3.embl.de/i2k-2020/platy-raw.ome.zarr>

METADATA

experimental, sample, acquisition, analysis

- stored in a RDF serialization format
- investigate LinkML as platform-layer of RDF
- linked to FDO's from other domains



References:

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Vergara HM, Pape C, Meehan KI, et al (2020) Whole-body integration of gene expression and single-cell morphology. Cold Spring Harbor Laboratory 2020.02.26.961037

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