



# OSCARS

Open Science Clusters' Action  
for Research & Society

## Funded Project

# SHARE : Synchrotron x-ray analysis of Heritage Accessible to and Reusable by Everyone

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Implemented by



école  
normale  
supérieure  
paris-saclay

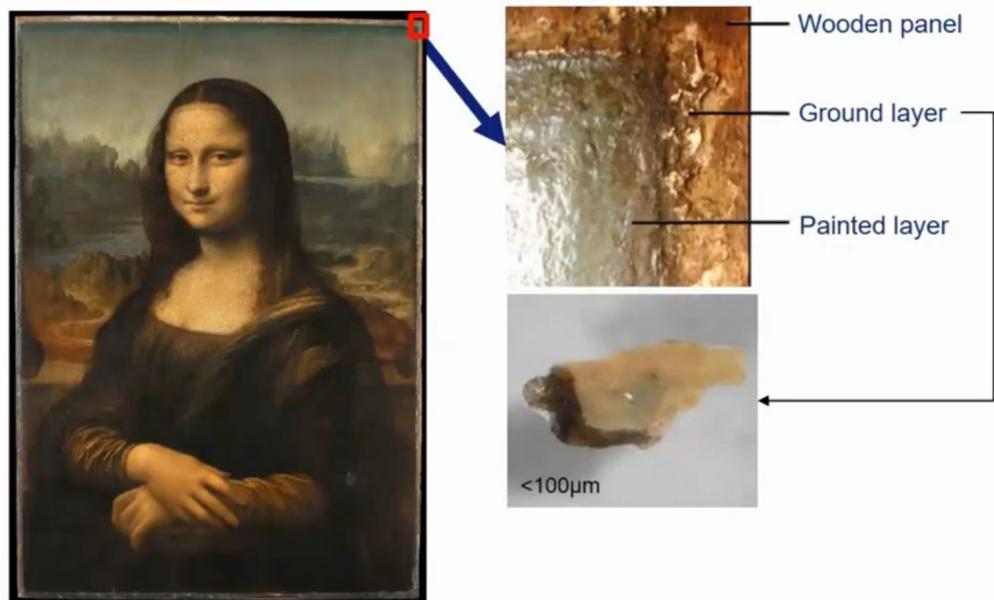


RIJKS MUSEUM

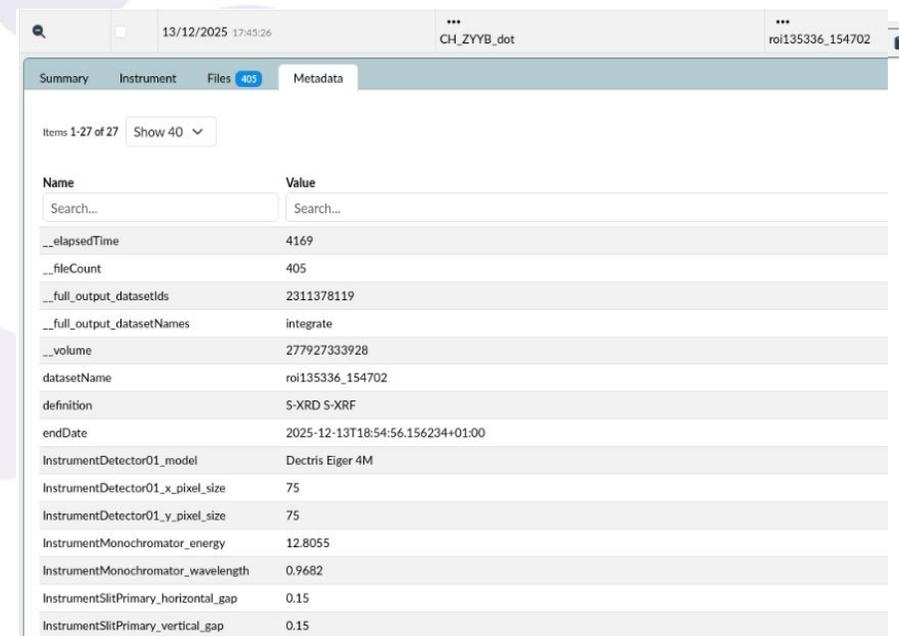


Funded by  
the European Union

- **Cultural Heritage** at the European Synchrotron Radiation Facility (ESRF): understanding the **manufacturing processes** and the **conservation state of art objects**



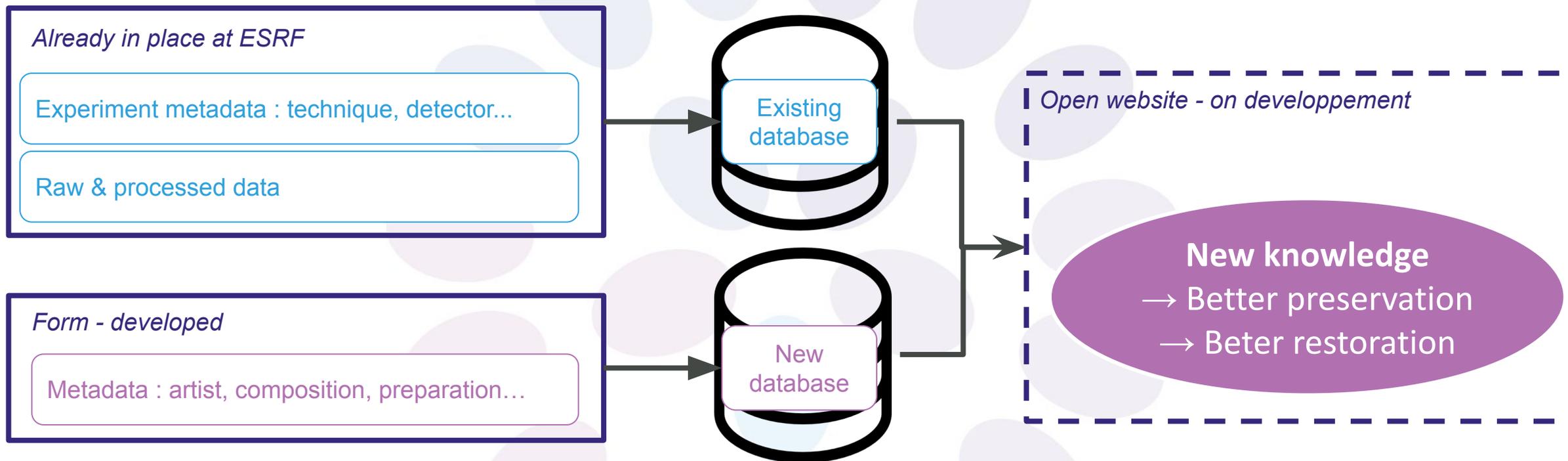
- When data becomes public
  - **No metadata associated** (only instrument information)
  - **No easy entry point** for non-ESRF users→ **To be usable**, an external user needs contextual explanations from the author



The screenshot shows a data management interface with a table of metadata. The table has two columns: **Name** and **Value**. The data is as follows:

Name	Value
Search...	Search...
__elapsedTime	4169
__fileCount	405
__full_output_datasetIds	2311378119
__full_output_datasetNames	integrate
__volume	277927333928
datasetName	roi135336_154702
definition	S-XRD S-XRF
endDate	2025-12-13T18:54:56.156234+01:00
InstrumentDetector01_model	Dectris Eiger 4M
InstrumentDetector01_x_pixel_size	75
InstrumentDetector01_y_pixel_size	75
InstrumentMonochromator_energy	12.8055
InstrumentMonochromator_wavelength	0.9682
InstrumentSlitPrimary_horizontal_gap	0.15
InstrumentSlitPrimary_vertical_gap	0.15

- Develop a **metadata database**
  - Filled by users using a protected form
  - Accessible from a public website (after an embargo period)



# RESULTS: An accessible website with all data files and their metadata



The screenshot shows the ESRF Data Portal interface. On the left, there is a table titled "HG-237 sample list" with columns for Name, Description, Sample Type, Author, and Actions. The table lists various calibration reference materials. On the right, there is a form titled "Declare a new sample and its metadata" with fields for Sample Name, Link to sample in the A-Form, Sample Type, Description of your sample, and Brief description of the main objectives of the analysis. There are also sections for DOIs to relevant publications and Keywords.



After the embargo period  
→ Accessible to everyone

The screenshot shows the Cultural Heritage database interface. It features a section for "Paint fragment in Mona Lisa ground layer" with a description of the sample and its analysis. Below this, there is a table with metadata such as Users, Technique, Instrument, and Citation. A "Download files with Globus" button is visible, along with a list of download links for various regions of interest. A small image of the paint fragment is also shown.



## Before the experiment

- Only for participants of the experiment
- Already developed: ~ 200 samples and >2,000 metadata registered

- All **tools** and **software** designed are **public**
    - Developed to be configurable
    - Extension of the form to **other beamlines**
    - Future: **sample PID** to allow **external referencing**
  - All websites are and will be **hosted** by the ESRF
    - (Very) low risk of a service shutdown
    - Serve as a showcase for the ESRF
  - Study and preservation of **unique** and **precious cultural treasures**
    - Some metadata linked to external database → **interoperability**
    - FAIR data will lead to **more analysis**
    - **Increase trust** between scientists and objects-sharing institutions
-

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**Simon Delcamp (Myself)**



*Picture of the ESRF and surrounding (Grenoble, France)*