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## **Integrated data acquisition and processing pipelines for users at Elettra 2.0: a case study at SYRMEP, the $\mu$ CT beamline**

*Tuesday 23 September 2025 16:00 (1h 30m)*

Elettra, the Italian Synchrotron in Trieste, is about to undergo a major upgrade of the facility. To effectively exploit such improvement, data acquisition and processing are being integrated into single automated pipelines, subject to a facility-wide standard and yet flexible enough to accommodate the specific usage at each beamline.

The entire procedure of data acquisition and processing spans a vast ecosystem of different structures and frameworks, which are being standardized across the whole facility: the GeCo control system, handling the safety and the operation of the beamlines; the TANGO Controls framework, that allows distributed control of the data acquisition process; the architecture of data storage and processing, whose accessibility is mediated by VUO, the Elettra unified portal; a modular adaptive processing infrastructure (MAPI) for analysis workflows; and an overview of the data lake data@Elettra. The intertwining of all these components results in the integrated pipeline experienced by the users.

The acquisition/processing sequence presently in place at SYRMEP, the microtomography beamline, is presented as a case study of the standard structure that is being designed. Beamline and acquisition control, on-the-fly and post-acquisition processing are described in the light of the general landscape proposed for Elettra 2.0, the upgraded facility.

### **Footnotes**

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