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NXtomomill: more than just a data conversion tool

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The ESRF is rebuilding its acquisition and processing workflows from scratch, with unified solutions whenever possible, to deliver both a homogeneous experience across all its beamlines, and robust high-performance processing software. However, due to the specificity of the different beamlines and techniques: (a) the acquisition data format might still differ; (b) the data itself might require specific pre-processing, before reconstruction. We are solving points (a) and (b) with a common data format and versatile conversion software for all X-ray tomography techniques and beamlines. NXtomo (from the NeXus international standard) is our choice for a common tomographic data format. NXtomomill is an open source software package, developed at the ESRF, for the transformation of all the required raw tomographic data into NXtomo compliant form.

NXtomomill supports rearranging several input data formats for full-field tomography: This includes traditional ESRF's EDF full-field datasets, and APS'DataExchange. In the future, it will support advanced phase retrieval methods (e.g. for holotomography), through a plug-in that will use specialized software. Similarly, NXtomomill is now also receiving the support for azimuthal integration of XRD-CT scans, and elemental fitting of XRF-CT scans.

NXtomomill guarantees an identical output data format for each ingested raw data format and data type. It decouples data handling from data reconstruction, resulting in uniform user experience, easier development, reduced maintenance costs, and greater robustness of the tomography processing pipeline. This also supports easier data and soft-ware exchanges with other synchrotron radiation facilities.

Email address of presenting author

nicola.vigano@esrf.fr

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Authors: Dr NEMOZ, Christian (ESRF - The European Synchrotron); PAYNO, Henri (ESRF - The European Synchrotron); Dr PALEO, Pierre (ESRF - The European Synchrotron)

Co-authors: Dr RACK, Alexander (ESRF - The European Synchrotron); Dr DI MICHIEL, Marco (ESRF - The European Synchrotron); VIGANÒ, Nicola (ESRF - The European Synchrotron); Dr TAFFOREAU, Paul (ESRF - The European Synchrotron); Dr CLOETENS, Peter (ESRF - The European Synchrotron); Dr SOLÉ, Vicente Armando (ESRF - The European Synchrotron)

Presenter: VIGANÒ, Nicola (ESRF - The European Synchrotron)

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