FOXTROT: A JAVA-BASED APPLICATION TO REDUCE AND ANALYSE SAXS AND WAXS PILES OF 2D DATA AT SYNCHROTRON SOLEIL

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Foxtrot is a Java based application used on beamline SWING to compute Small and Wide Angle X-ray Scattering data, continuously enhanced with new capabilities, through permanent interactions with the users [1]. Amongst a variety of functions and tools, the user can load files automatically, design/modify a mask for 2D images, perform sector/radial/azimuthal integration, normalize 1D data by transmitted/incoming intensity, convert intensity in absolute unit (e.g. by normalization to water scattering), average/subtract/merge/scale 1D data, perform fits on a series of 1D data, display fitting results as a function of the image number, save results in reloadable NeXus files and export results as ASCII files. Diffraction images can also be converted into polar coordinates. A simple Macro language is proposed to automate the 2D-to-1D conversion workflow from a pile of images. Foxtrot application can operate on different data formats thanks to the CommonDataModelAccess (CDMA) software layer it is based upon. The CDMA library gives access to data through so called engines (in charge of handling physical data container: HDF5, Nexus, EDF …) and plugins (managing data organization inside the container) [2]. Using an innovative dictionary "mapping" mechanism between scientific data item definitions (*e.g.* sets of keywords defined by scientists for a given experimental technique) and physical data organization in files, the CDMA framework allows Foxtrot to be used on data produced in different facilities.

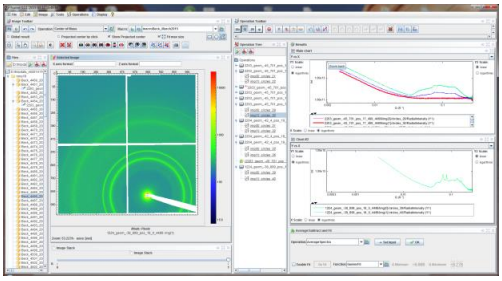

Figure 1: A typical snapshot of the main Foxtrot screen.

[1] Foxtrot is at: http://www.synchrotron-soleil.fr/Recherche/LignesLumiere/SWING.
[2] Poirier *et al*, JACow, Proceedings of ICALEPCS(2011) 1220-1223.