DAQ system based on Sardana and PandABox for Combined SAXS, Fluorescence and UV-Vis Spectroscopy Techniques at MAX IV

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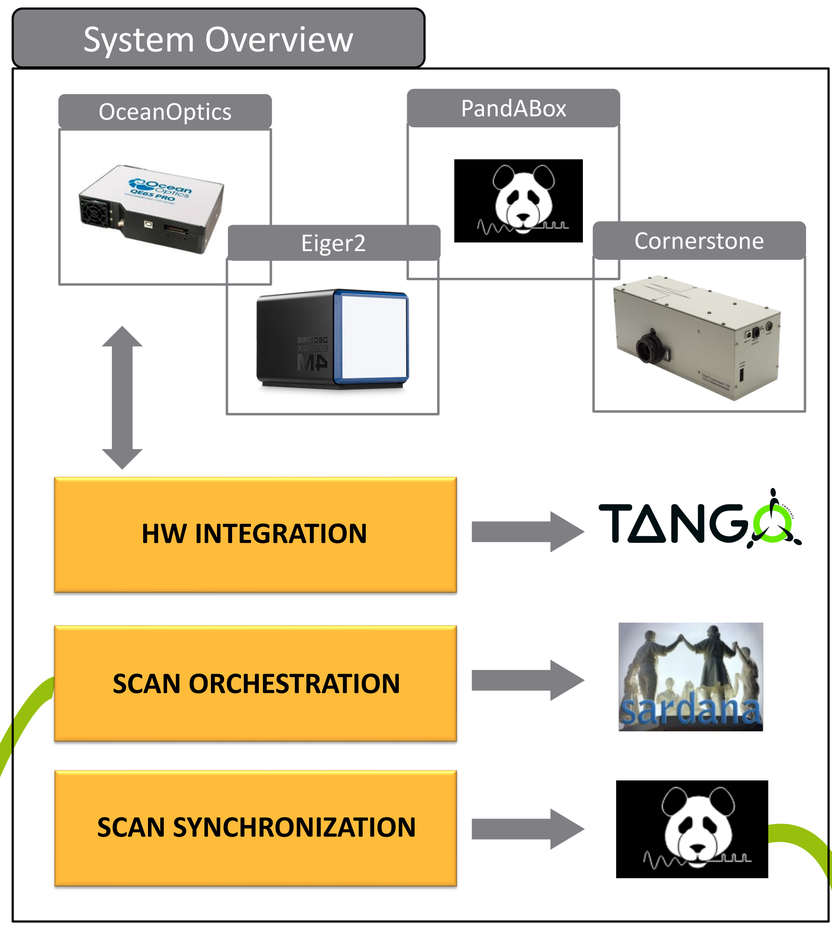
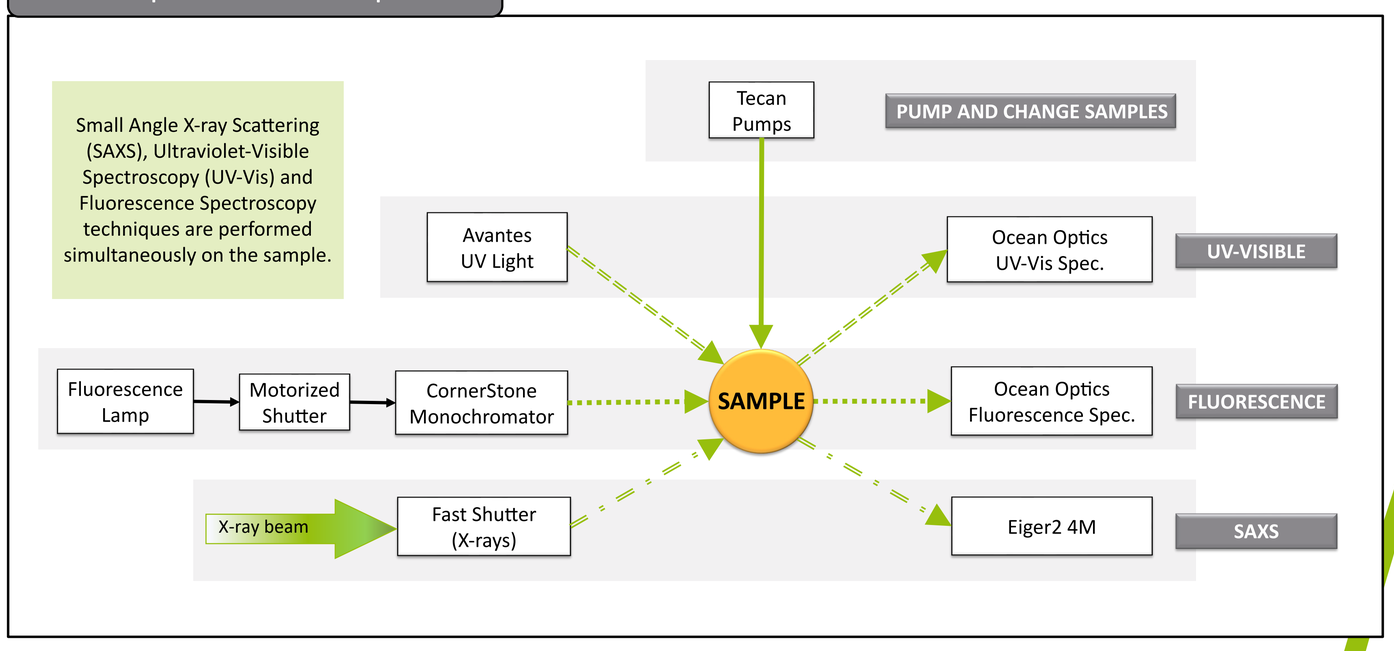
INTRODUCTION

CoSAXS is the Coherent and Small Angle X-ray Scattering (SAXS) beamline placed at the diffraction-limited 3 GeV storage ring at MAX IV Laboratory. This poster presents the data acquisition (DAQ) strategy for combined SAXS, Ultraviolet-visible and Fluorescence Spectroscopy techniques. In general terms, the beamline control system is based on TANGO and on top of it, Sardana provides an advanced scan framework.

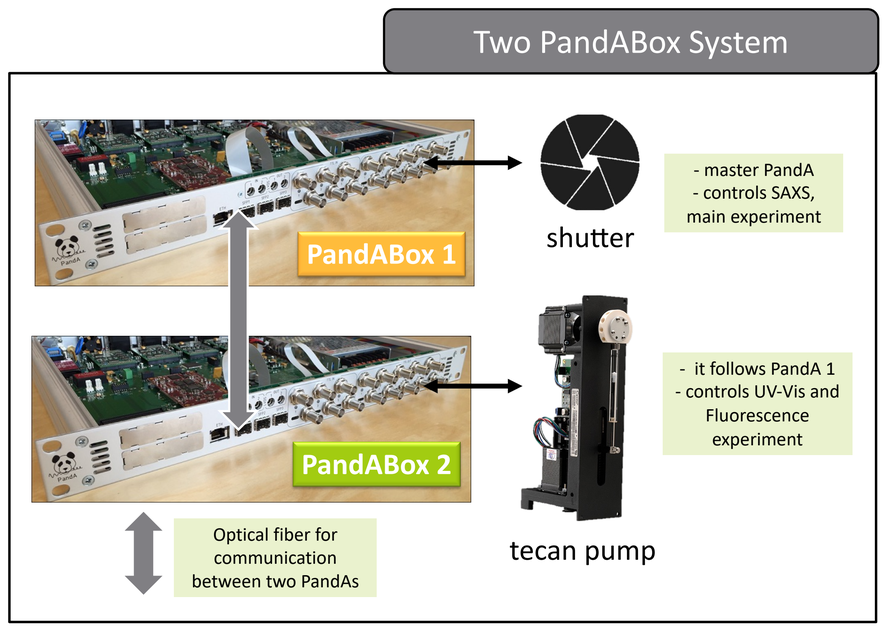
System Overview



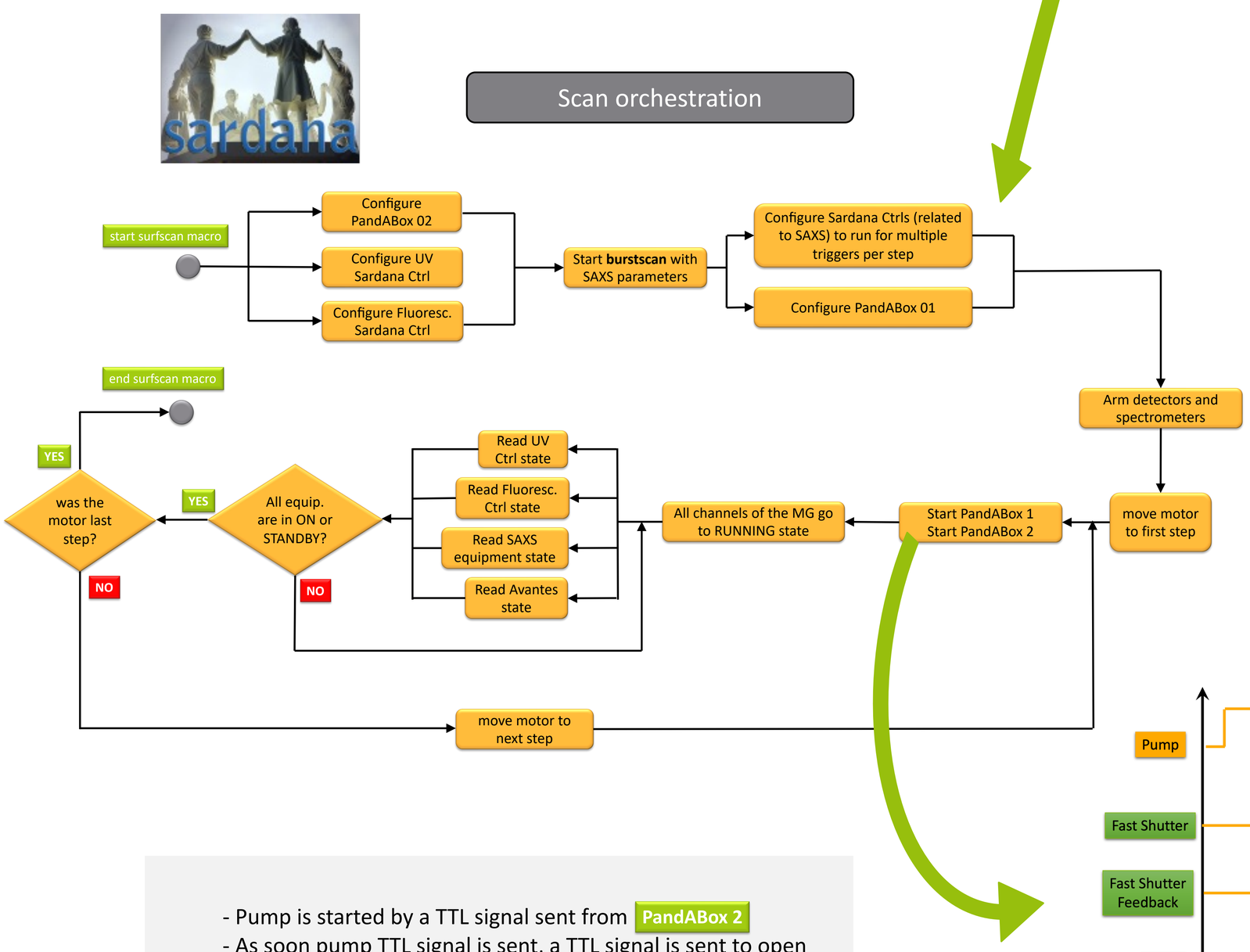
Experimental Setup



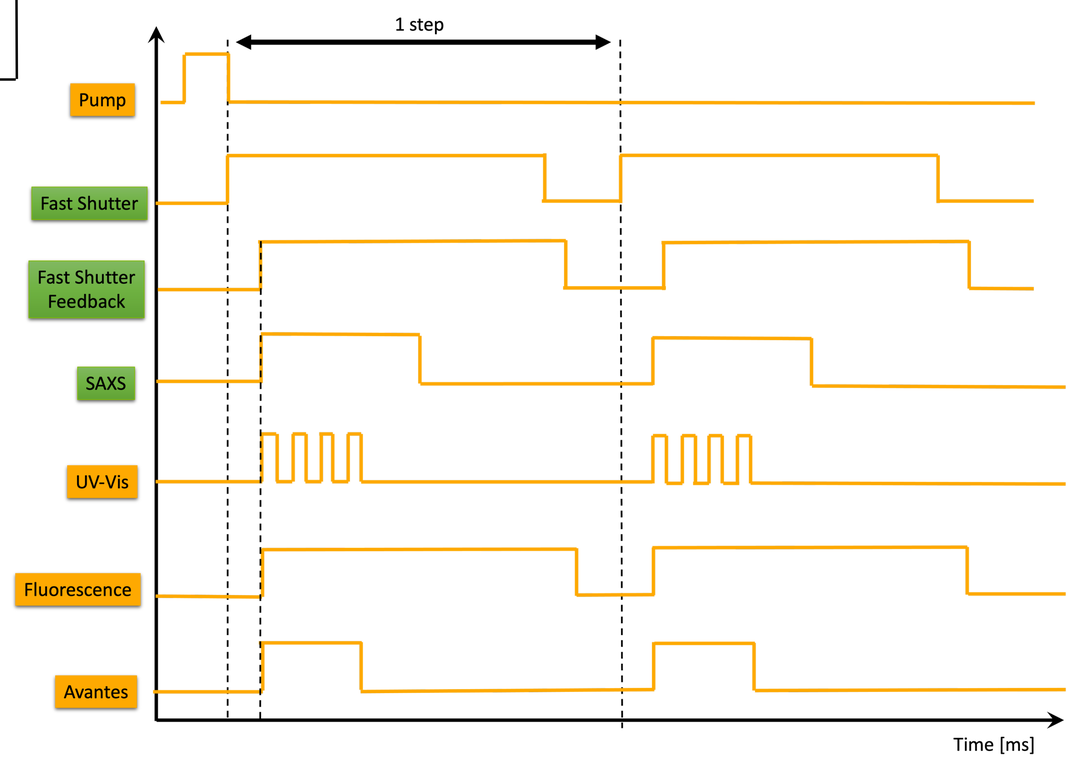
Two PandABox System



Scan orchestration



Experiment synchronization



- Pump is started by a TTL signal sent from **PandABox 2**
- As soon pump TTL signal is sent, a TTL signal is sent to open the fast shutter from **PandABox 1**
- As soon fast shutter feedback signal is high, the triggers are sent to SAXS detectors from **PandABox 1**
- At the same time SAXS triggers start, the triggers to UV-Vis and Fluorescence Spectrometers are sent from **PandABox 2**

MAX IV Laboratory

MAX IV Laboratory has operated successfully for more than 30 years and is currently operating the new MAX IV synchrotron facility in Lund. Fully developed it will receive more than 2 000 scientists annually, from Sweden and the rest of the world. They will do research in areas such as materials science, structural biology, chemistry, geology, physics and nanotechnology. MAX IV is the largest and most ambitious Swedish investment in national research infrastructure. It is the brightest source of x-rays worldwide, inaugurated June 2016. MAX IV Laboratory is hosted by Lund University.