

Experimental Data Collection Standards at SESAME Synchrotron

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Team Leader

Data collection and analysis

SESAME Synchrotron

Nov 2017

- First monochromatic beam @ XAFS/XRF

2018

- **Aug.:** First experiment @ XAFS/XRF
- **Nov.:** First experiment @ IR

2020

- **Jun.:** Data policy endorsed by SESAME Council
- **Dec.:** SESAME organization structure has been reformulated – adding Data Collection and Analysis Team (DCA)

2021

- **Feb.:** Initiation of DCA Team Role
- **Feb.:** First experiment @ MS

2023

- HESEB and BEATS first user (expected)

No	Beamline	Energy Range	Source Type	Status
BM02	IR (Infrared) spectromicroscopy	0.001-3 eV	Bending Magnet	Serving users
BM08	XAFS/XRF (X-ray Absorption Fine Structure/X-ray Fluorescence) spectroscopy	4.5-30 keV	Bending Magnet	
ID09	MS (Materials Science)	5-25 keV	MPW	
ID11 L	HESEB: Helmholtz-SESAME Beamline	70-1800 eV	Undulator	Commissioned
ID10	BEATS: Beamline for Tomography at SESAME	8-50 keV	3-Pole Wiggler	Installation
ID11 R	TXPES: Turkish X-ray Photoemission Spectroscopy	70-1800 eV	Undulator	Design
	MX Macromolecular Crystallography	4 - 14 keV	In-Vacuum Undulator	Planned
	SAXS (Small Angle X-ray Scattering)	8 keV	In-Vacuum Undulator	

- **Before Feb 2021**, experimental data collection was handled by beamline scientists, control and computing engineers.
- Team members: Two, one of them has just join the team.

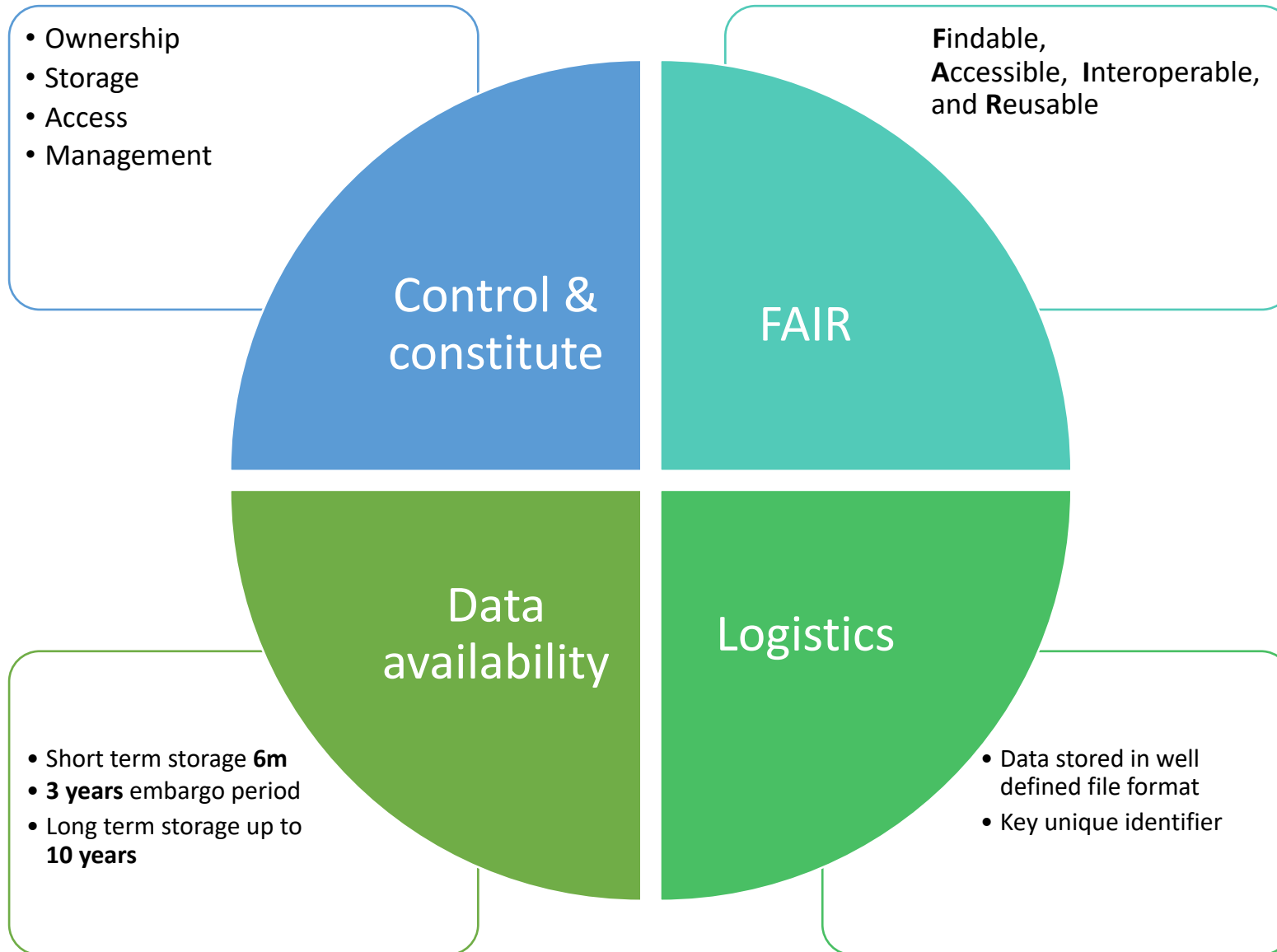
Smooth and reliable collection of experimental data and its metadata.

Ensuring that the experimental data is not randomly generated.

Responsibilities

Storing experiment data and metadata in stander well-defined file formats

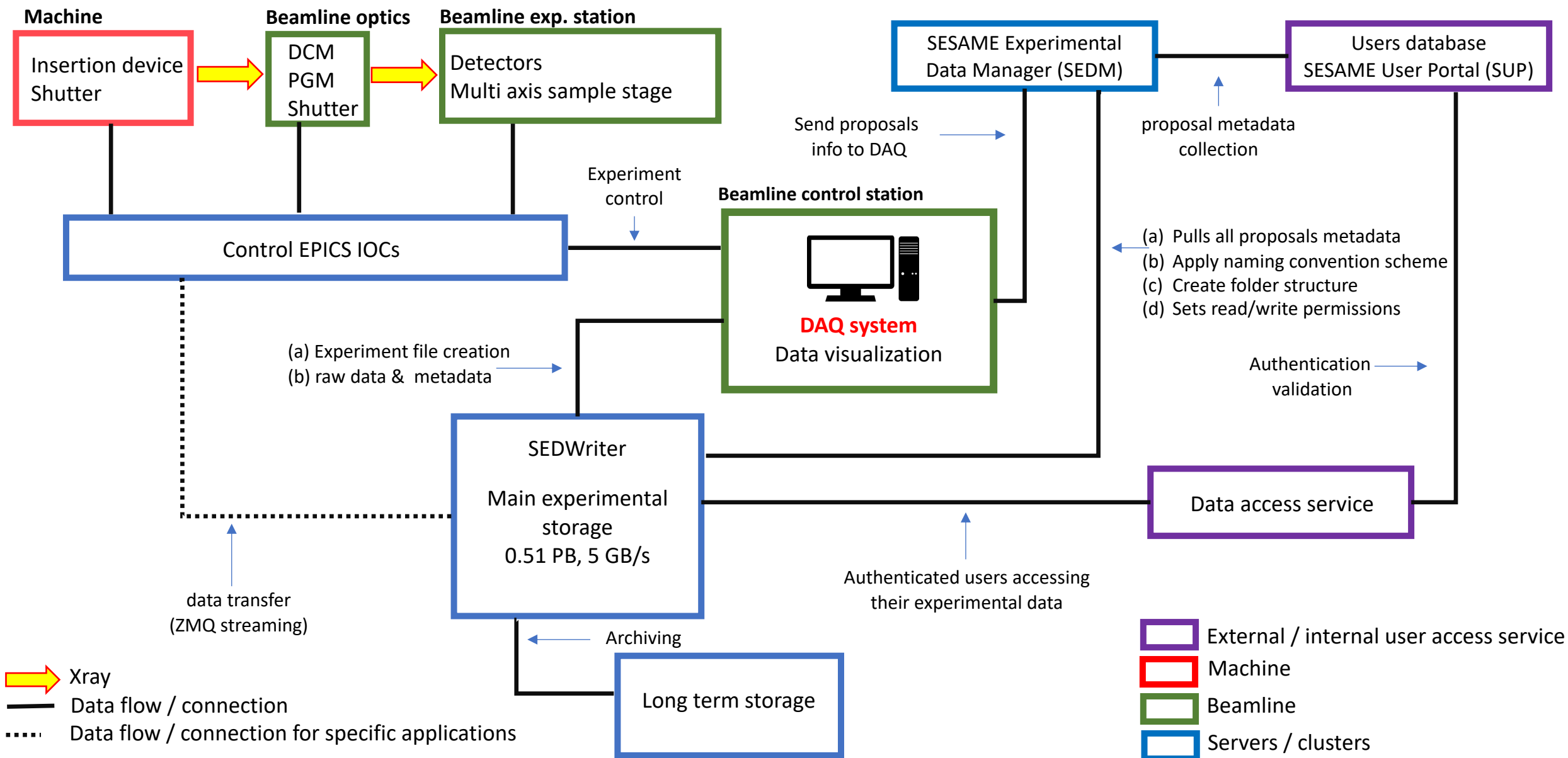
Providing essential pre/post processing tools





DAQ General Pipeline

SESAME





SESAME

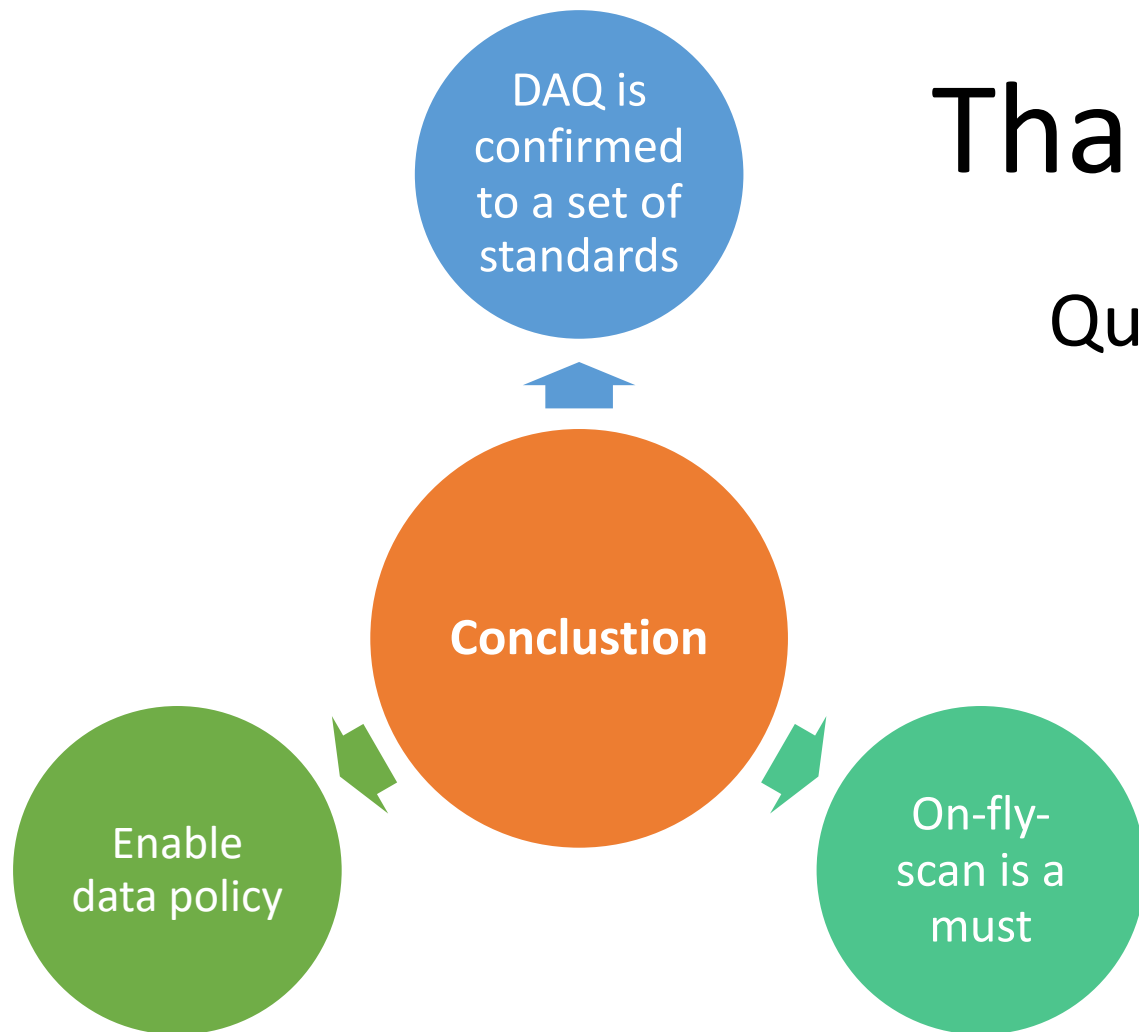
Technology used and DAQ features



Read *the* Docs

Feature	XAFS/XRF	MS	HESEB	BEATS
EPICS motor records	C	C	C	P
EPICS areaDetector	NA	D	NA	C
Auto Energy Calibration	C	T	T	NA
Users' DB integration	C	D	C	P
Step Scan	C	C	C	C
On-the-fly Scan	P	P	P	T
Unattended scanning	C	C	C	P
Auto sample changing	T	D	T	P
Data visualization	T	T	C	C
ZMQ streaming	NA	P	NA	C
Common file format	C	P	C	C
Config file	C	C	C	C
Universal file format	P (dxFile as initial finding)			
Long-term archiving	P (tape-based storage as initial finding)			
Data catalogue & access	P (ICAT as initial finding)			

C: Completed/done, P: Planned/ under evaluation, D: under Development, NA: Not Applicable, T: To be improved



Thanks...

Questions??

