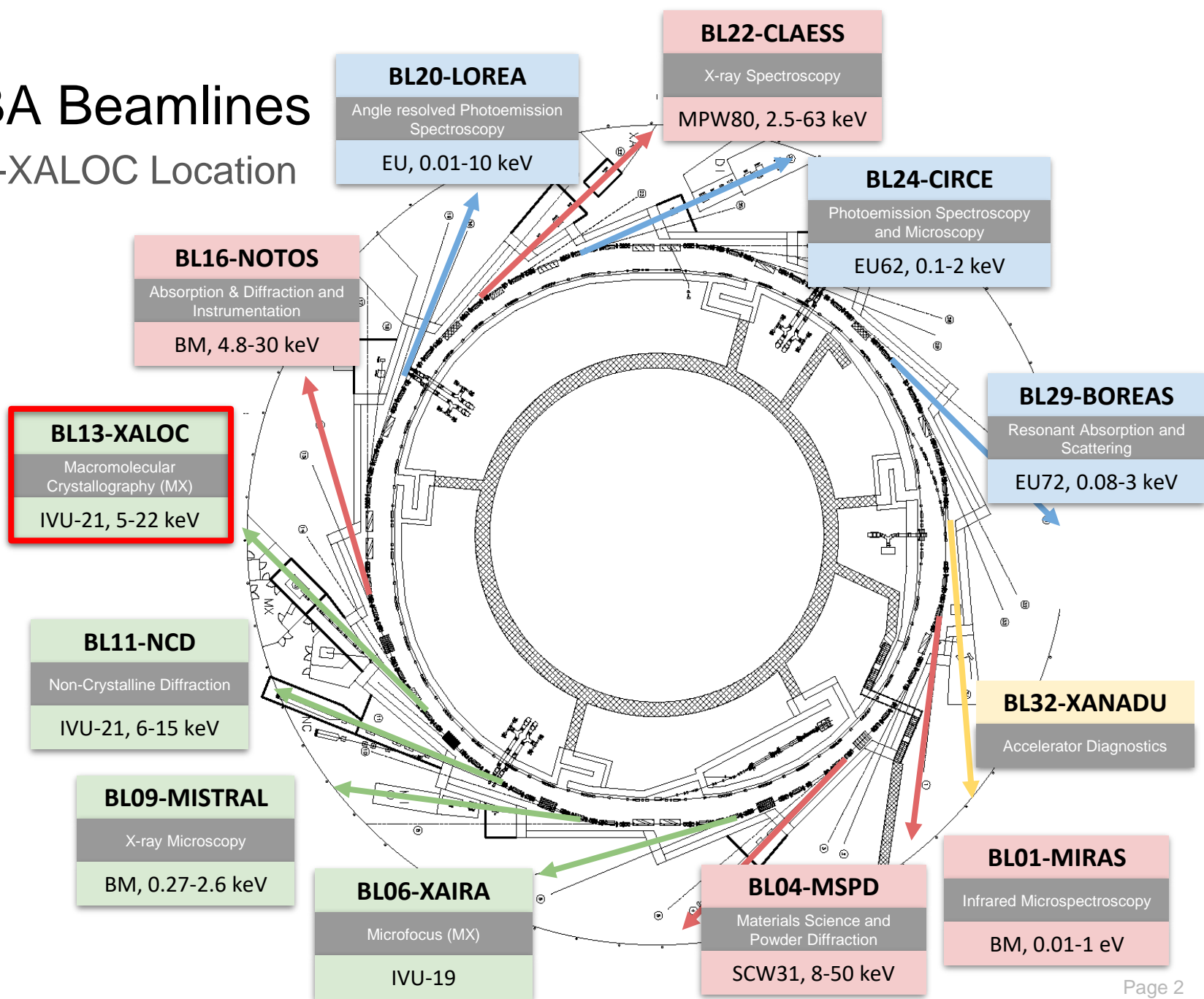# MXCuBE 2 @ ALBA
status report

Guifre Cuní, Jordi Andreu
On behalf of the controls group and BL13-XALOC

MXCuBE meeting, 12 March 2019,
MAX IV (Lund)

ALBA Beamlines
BL13-XALOC Location

BL20-LOREA
Angle resolved Photoemission Spectroscopy
EU, 0.01-10 keV

BL22-CLAESS
X-ray Spectroscopy
MPW80, 2.5-63 keV

BL24-CIRCE
Photoemission Spectroscopy and Microscopy
EU62, 0.1-2 keV

BL16-NOTOS
Absorption & Diffraction and Instrumentation
BM, 4.8-30 keV

BL29-BOREAS
Resonant Absorption and Scattering
EU72, 0.08-3 keV

BL13-XALOC
Macromolecular Crystallography (MX)
IVU-21, 5-22 keV

BL11-NCD
Non-Crystalline Diffraction
IVU-21, 6-15 keV

BL32-XANADU
Accelerator Diagnostics

BL09-MISTRAL
X-ray Microscopy
BM, 0.27-2.6 keV

BL06-XAIRA
Microfocus (MX)
IVU-19

BL04-MSPD
Materials Science and Powder Diffraction
SCW31, 8-50 keV

BL01-MIRAS
Infrared Microspectroscopy
BM, 0.01-1 eV

BL13 - XALOC Beamline

MX experiments

Detector: Pilatus2 6M (Dectris) LimaCCDs (Core 1.7) OS openSuSE 10.3.
Diffractometer: MD2M (Arinax) Icepap driven (no server).
Sample Changer: CATS (Irelec) spine/unipuck (double gripper) + plates.
Instrumentation control: Sardana/Taurus + Tango7.
OS platform: Linux (openSuSE 11.1/12.1)
Remote connection: NX Enterprise (No Machine)
MXCuBEv2: Debian9/Tango9

MXCuBE 2 @ BL13-XALOC
MXCuBE development and features

→ Development on Hardware Repository Qt4/2.3.0 branch.
→ ISPyB and EDNA in production stage.
→ Prepare migration of ALBA-Specific Hardware Objects to 3.0 version.

☑ Done

Optical Centring procedures.
Standard Data Collection.
LDAP authentication.
EDNA postprocessing optimized for the
ALBA cluster.
ISPyB database.
Remote Access (No Machine).
Migration to Debian9/taurus4.
Merge to 2.3.0 version.

☐ Future Work

Integrate new collection methods to
Sardana Scan Framework
(trigger by position)
- Standard Data Collection.
- Energy Scan.
- Helical Data Collection.
- Mesh Data Collection.
- X-ray Centring.

Integration of MXCuBE 2 @ ALBA

Sardana Support for BlissFramework

BlissFramework
Hardware Repository

**ALBA Control
System**
Sardana & Taurus

Bricks

Hardware Objects

Channel(s)	Command(s)

SardanaChannel class	*SardanaCommand* class	*SardanaMacro* class

Taurus Attribute	Tango Command	Sardana Macro

Taurus Device	Macroserver (Door)

Tango Device	Sardana Pool

Tango

Beamline Hardware
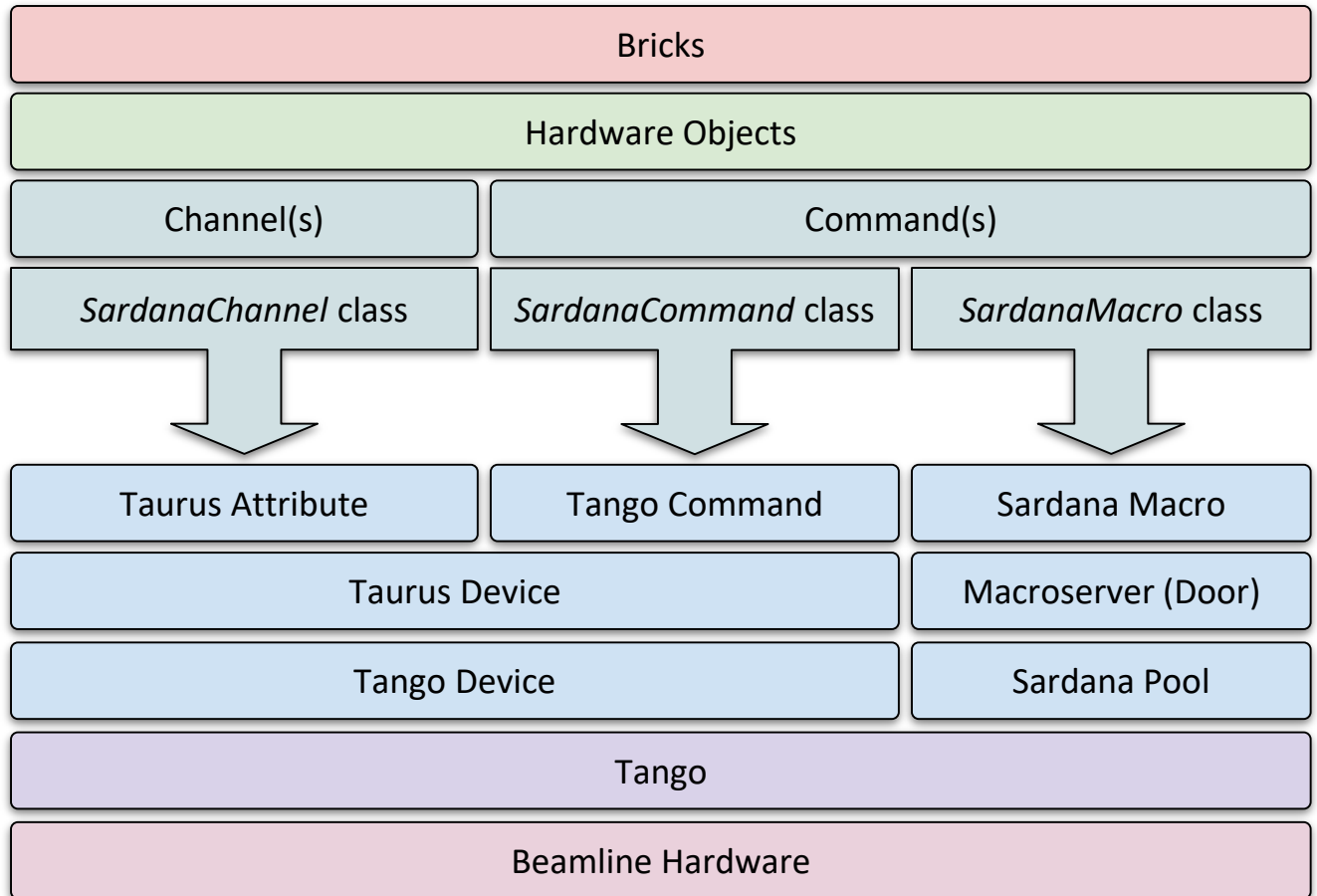
Integration of MXCuBE 2 @ BL13-XALOC

Architecture

LDAP	LIMS	ALBA Cluster
Authentication	ISPyB web & db	EDNA plugins

MXCuBE application

Tango	Taurus	Sardana
Diffractometer DS Beamline Supervisor DS CATS DS ...	Taurus Device Taurus Attribute	Door Device (macros) Generic Scan Framework

Beamline Hardware

Sample Changer
Diffractometer
Detector
Motors
Actuators
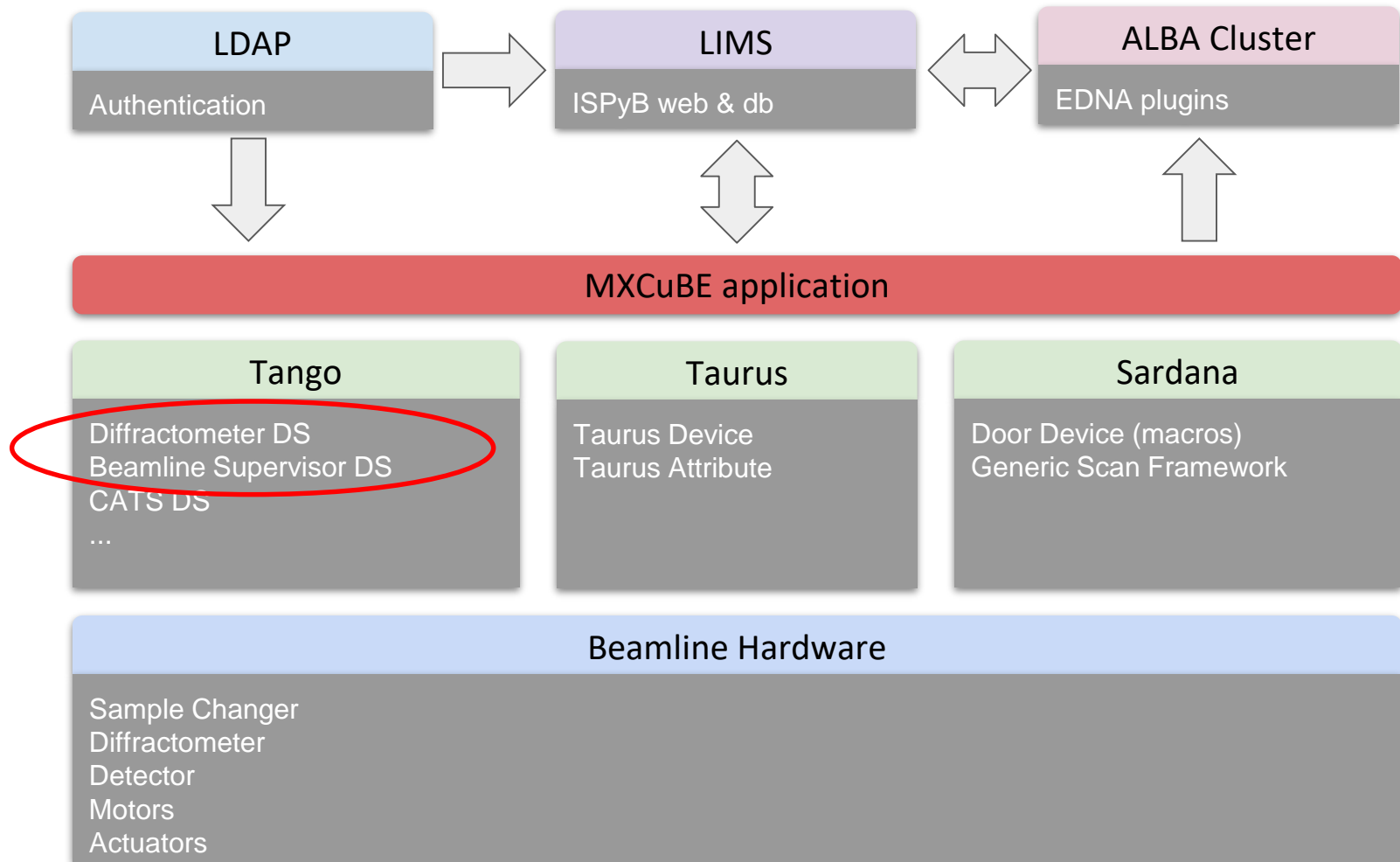
MXCuBE 2 @ BL13-XALOC

MXCuBE app snapshot

MXCuBE 2 @ BL13-XALOC

ISPyB portal snapshot : production stage

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New application for users

| Commissioning from mid 2018 | Friendly users 2nd half 2018 | Operation since Feb 2019 |

Current installation includes:
- Full interoperability with ISPyB
- Autocentering
- Characterization of crystals & calculation of diffraction plan
- Single wedge data collection method
- Autoprocessing using EDNAproc (soon, AUTOproc)

Next features:
- Helical and raster scans (via Sardana macros)
- Fluorescence methods
- Global Phasing pipelines for external BL operation

Highlights:

> *~80% of current users switched to MXCuBE*
> *Previous system not longer maintained*

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Thank you.

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