Sardana @ SOLARIS

Lund, 27.08.2025

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SOLARIS National Synchrotron Radiation Centre

Outline

- where do we use Sardana
- how do we run Sardana
- macros and controllers distribution
- packaging
- custom solutions

NSRC SOLARIS

- Third generation light source.
- Constructed 2010 - 2015 in Krakow, Poland.
- Between 2015 and 2018 the synchrotron as well as two beamlines (PIRX and URANOS) were commissioned.
- Since **October 2018** Solaris has been in the user operation mode.

NSRC SOLARIS

Fot. Aleksander Koczur

SOLARIS research infrastructure

Available and in user operation

Starting up

Project accepted, in construction, available in the future

Project application to be submitted

Available space for 4-5 beamlines

+

CryoEm centre

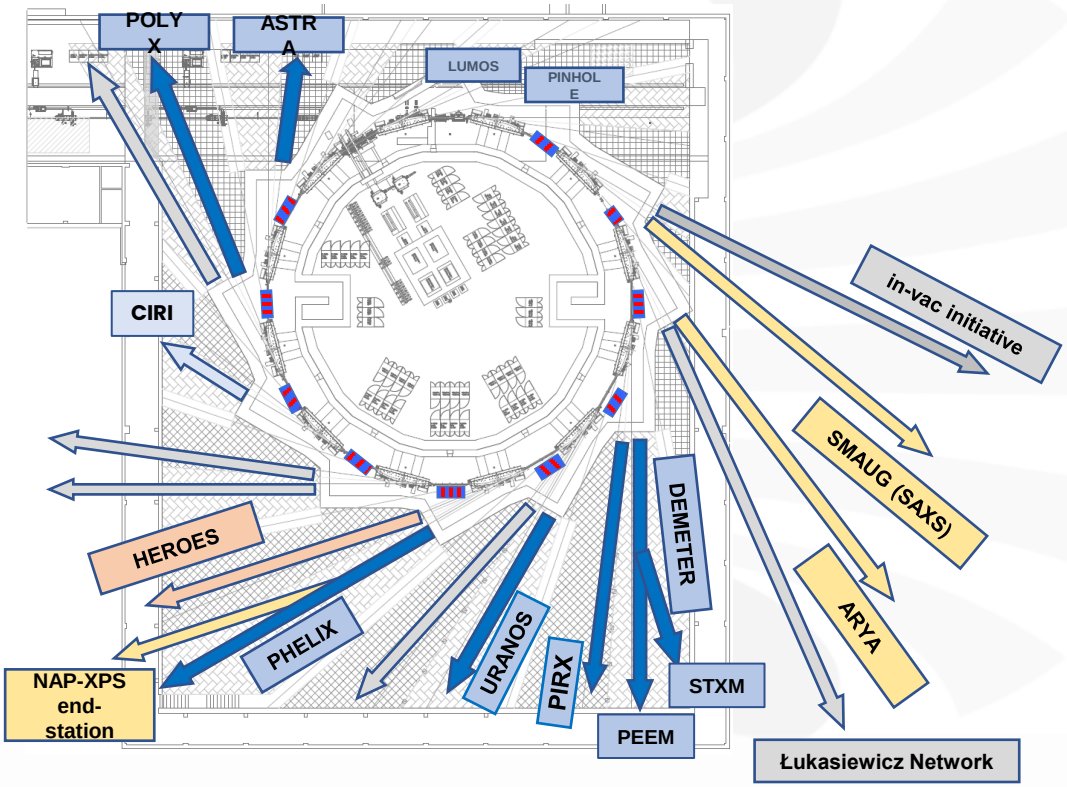
Structural Biology Core Facility

Krios

Glacios

Neutron-lab
(in construction)

Research University



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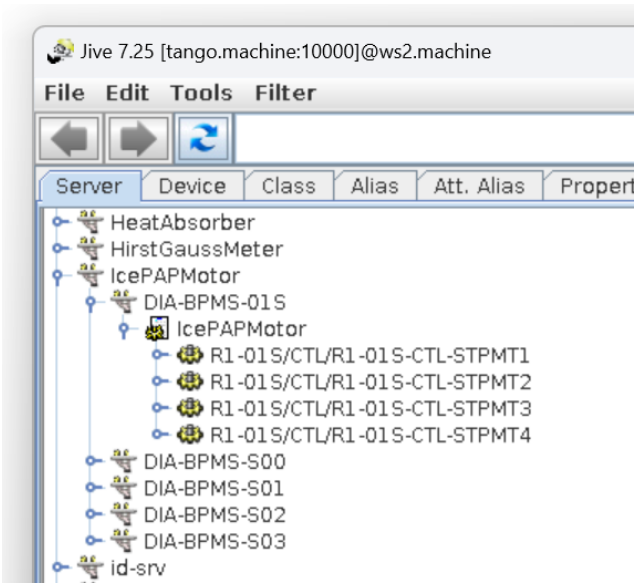
Sardana @ SOLARIS

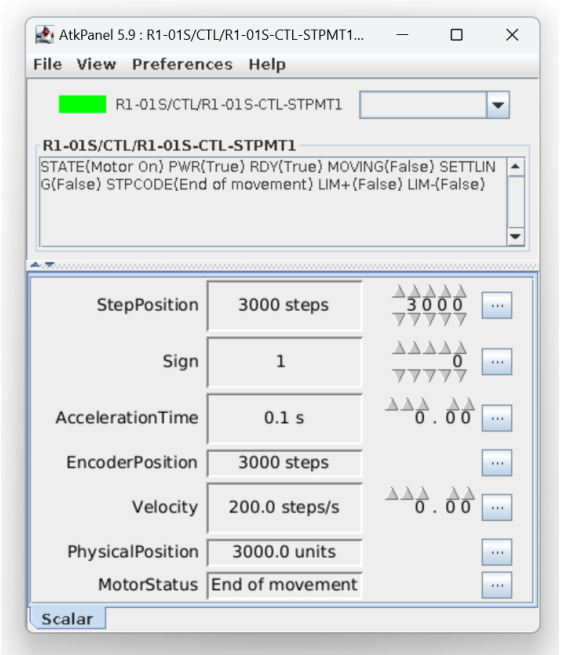
MACHINE

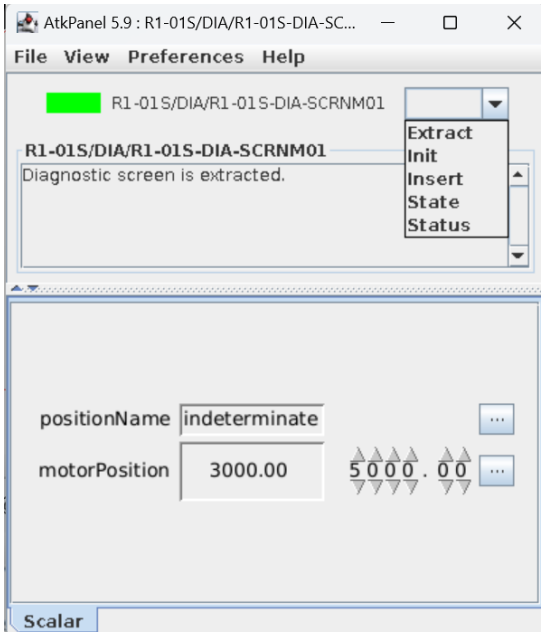
BEAMLINES

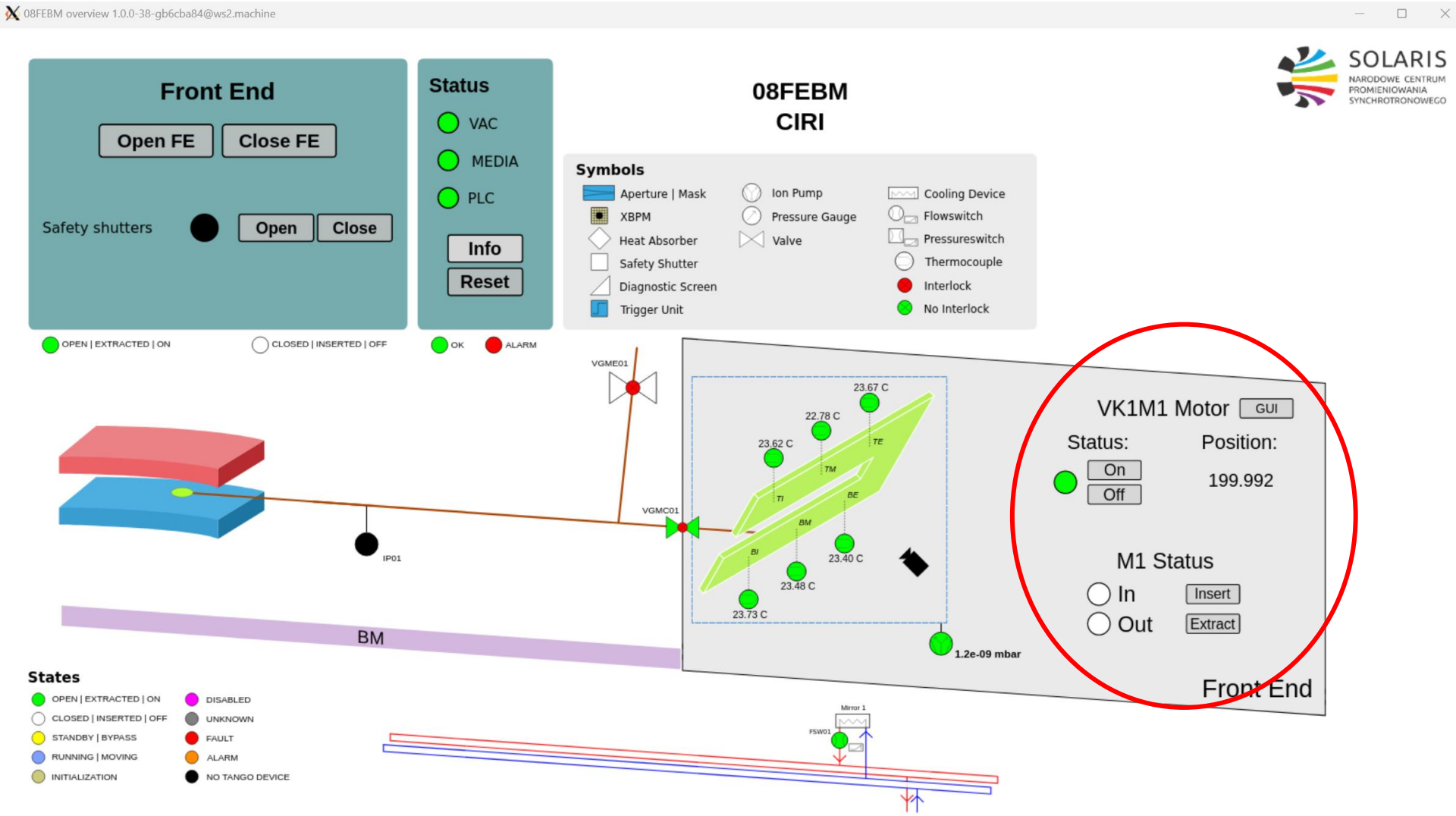
MACHINE

- we do not use Sardana in the machine (linac, ring) – typically diagnostic elements
- interface to the motors is done by thin Tango DS
- FE motors are interfaced by beamlines' Sardana instances

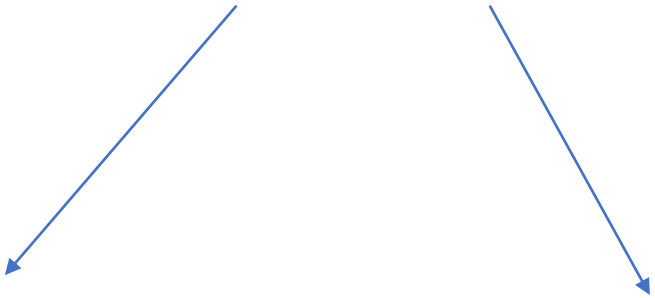







08FEBM overview 1.0.0-38-gb6cba84@ws2.machine
SOLARIS
NARODOWE CENTRUM PROMIENIOWANIA SYNCHROTRONOWEGO
Front End
Open FE
Close FE
Safety shutters
Open
Close
Status
VAC
MEDIA
PLC
Info
Reset
08FEBM
CIRI
Symbols
Aperture | Mask
XBPM
Heat Absorber
Safety Shutter
Diagnostic Screen
Trigger Unit
Ion Pump
Pressure Gauge
Valve
Cooling Device
Flowswitch
Pressureswitch
Thermocouple
Interlock
No Interlock
OPEN | EXTRACTED | ON
CLOSED | INSERTED | OFF
OK
ALARM
VGME01
VGMC01
IP01
BM
23.67 C
22.78 C
23.62 C
TE
TM
TI
BE
BM
BI
23.40 C
23.48 C
23.73 C
1.2e-09 mbar
VK1M1 Motor
GUI
Status:
Position:
On
Off
199.992
M1 Status
In
Out
Insert
Extract
Front End
States
OPEN | EXTRACTED | ON
CLOSED | INSERTED | OFF
STANDBY | BYPASS
RUNNING | MOVING
INITIALIZATION
DISABLED
UNKNOWN
FAULT
ALARM
NO TANGO DEVICE
Mirror 1
FSW01

BEAMLINES

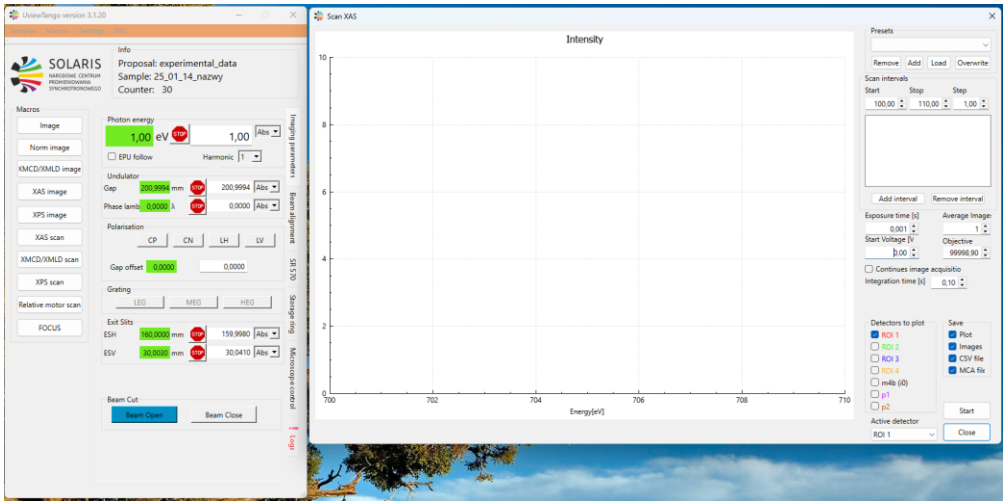


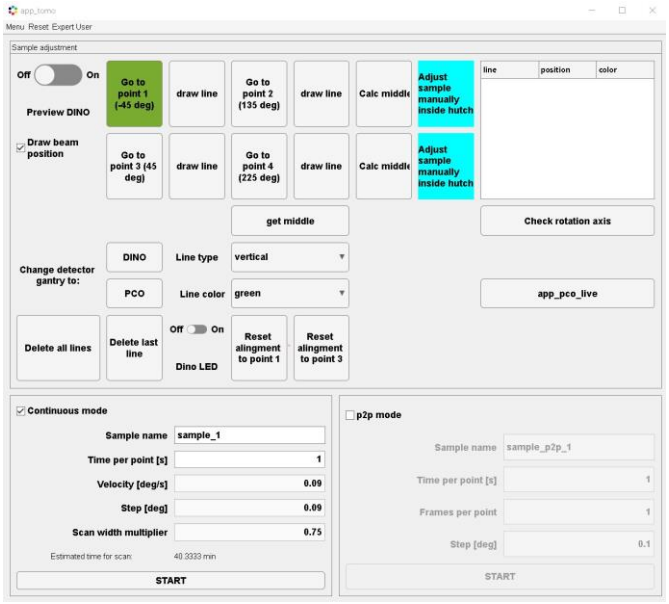
Pool only

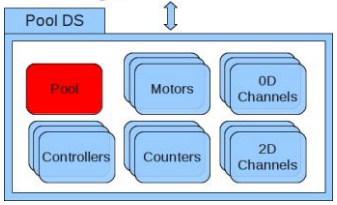
Pool + MacroServer

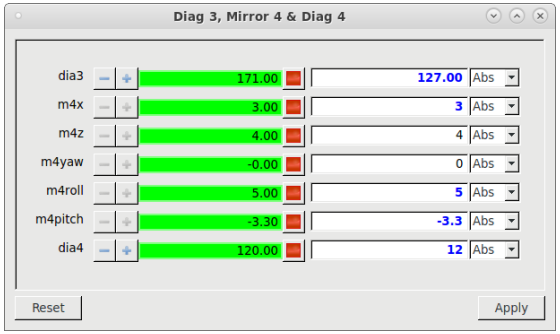
Pool only

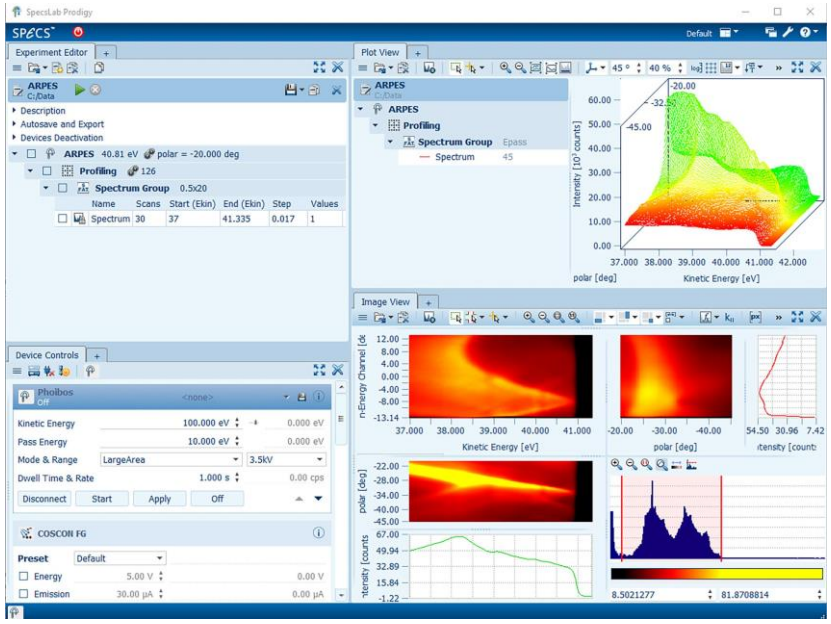
- POLYX
  - mainly interface to motors and elements, commisioning
  - Matlab for experiments
- CIRI – IR beamline (thrid-party software)
- URANOS
  - mainly interface to motors and elements, commisioning
  - Scienta SES/Peak for experiments
- ASTRA
  - mainly interface to motors and elements, commisioning
  - LabVIEW for experiments


SOLARIS
Intensity
Energy[eV]


Go to point 1 (-45 deg)
Go to point 2 (135 deg)
Go to point 3 (45 deg)
Go to point 4 (225 deg)
draw line
Calc middle
Adjust sample manually inside hutch
get middle
Check rotation axis
DINO
PCO
Line type
vertical
Line color
green
app_pco_live
Delete all lines
Delete last line
Reset alingment to point 1
Reset alingment to point 3
Preview DINO
Draw beam position
Change detector gantry to:
Dino LED
Continuous mode
Sample name
sample_1
Time per point [s]
Velocity [deg/s]
Step [deg]
Scan width multiplier
START
p2p mode

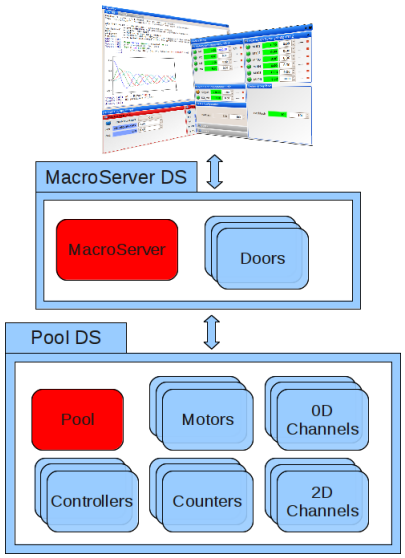

Pool DS
Pool
Motors
0D Channels
Controllers
Counters
2D Channels

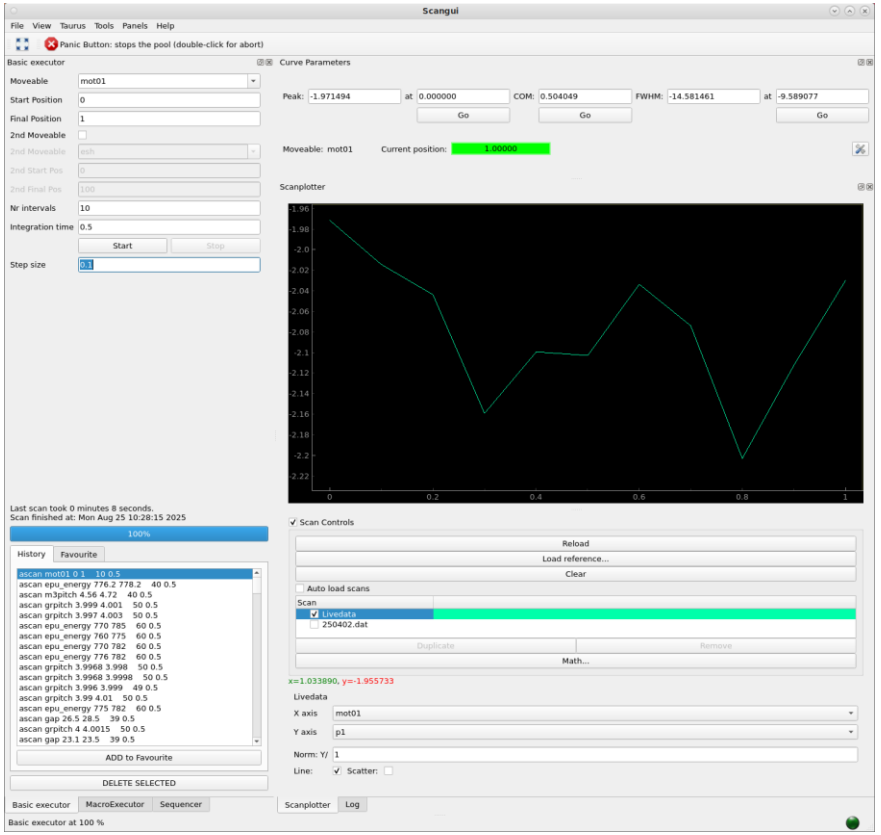

Diag 3, Mirror 4 & Diag 4
dia3 171.00 127.00 Abs
m4x 3.00 3 Abs
m4z 4.00 4 Abs
m4yaw -0.00 0 Abs
m4roll 5.00 5 Abs
m4pitch -3.30 -3.3 Abs
dia4 120.00 12 Abs
Reset
Apply

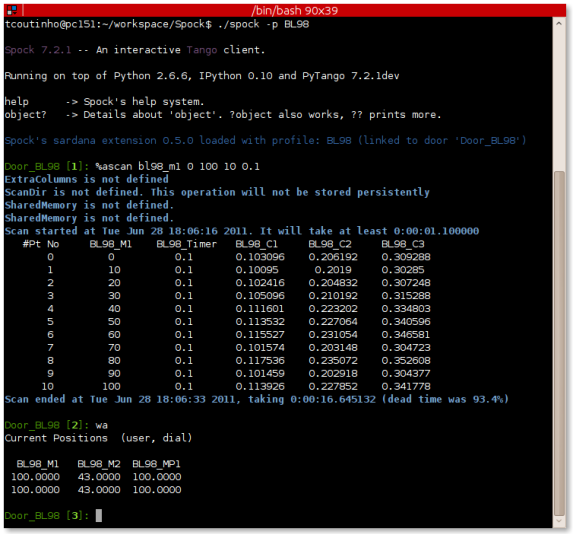

SPECS
Experiment Editor
Plot View
Image View
Device Controls
Phoibos
COSCOR FG
Kinetic Energy
Pass Energy
Dwell Time & Rate
Disconnect
Start
Apply
Off

Pool + MacroServer

- DEMETER
  - mainly interface to motors and elements, commisioning
  - STXM GUI for STXM experiments
  - Uview application for PEEM/LEEM experiments
  - sometimes scanning in Sardana
  - plan to move „scan logic” from GUIs to macros
- PHELIX
  - mainly uses Sardana (ScanGUI)
  - some experiments via Prodigy
- PIRX
  - Sardana only
  - mainly spock (CLI)

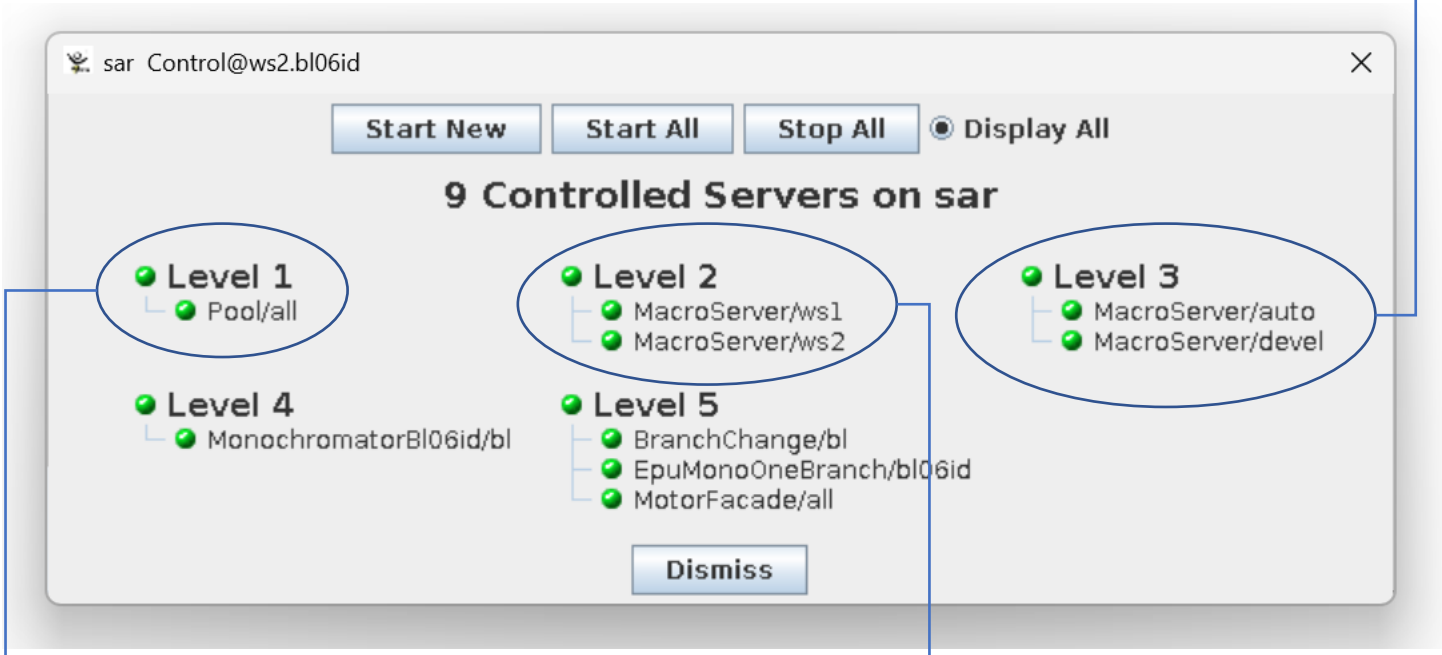

MacroServer DS
MacroServer
Doors
Pool DS
Pool
Motors
0D Channels
Controllers
Counters
2D Channels


Scangui
File View Taurus Tools Panels Help
Panic Button: stops the pool (double-click for abort)
Basic executor
Moveable mot01
Start Position 0
Final Position 1
2nd Moveable
Nr intervals 10
Integration time 0.5
Start
Step size 0.1
Curve Parameters
Peak: -1.971494 at 0.000000 COM: 0.504049 FWHM: -14.581461 at -9.589077
Go
Moveable: mot01 Current position: 1.00000
Scanplotter
Last scan took 0 minutes 8 seconds.
Scan finished at: Mon Aug 25 10:28:15 2025
100%
History Favourite
ascan mot01 0 1 10 0.5
ascan epu_energy 776.2 778.2 40 0.5
ascan m3pitch 4.56 4.72 40 0.5
ascan grpitch 3.999 4.001 50 0.5
ascan grpitch 3.997 4.003 50 0.5
ascan epu_energy 770 785 60 0.5
ascan epu_energy 760 775 60 0.5
ascan epu_energy 770 782 60 0.5
ascan epu_energy 776 782 60 0.5
ascan grpitch 3.9968 3.998 50 0.5
ascan grpitch 3.9968 3.9998 50 0.5
ascan grpitch 3.996 3.999 49 0.5
ascan grpitch 3.99 4.01 50 0.5
ascan epu_energy 775 782 60 0.5
ascan gap 26.5 28.5 39 0.5
ascan grpitch 4 4.0015 50 0.5
ascan gap 23.1 23.5 39 0.5
ADD to Favourite
DELETE SELECTED
Scan Controls
Reload
Load reference...
Clear
Auto load scans
Scan
Livedata
250402.dat
Duplicate
Remove
Math...
x=1.033890, y=-1.955733
Livedata
X axis mot01
Y axis p1
Norm: Y/ 1
Line: Scatter:
Basic executor MacroExecutor Sequencer
Scanplotter Log
Basic executor at 100 %


/bin/bash 90x39
tcoutinho@pc151:~/workspace/Spock$ ./spock -p BL98
Spock 7.2.1 -- An interactive Tango client.
Running on top of Python 2.6.6, IPython 0.10 and PyTango 7.2.1dev
help -> Spock's help system.
object? -> Details about 'object'. ?object also works, ?? prints more.
Spock's sardana extension 0.5.0 loaded with profile: BL98 (linked to door 'Door_BL98')
Door_BL98 [1]: %ascan bl98_m1 0 100 10 0.1
ExtraColumns is not defined
ScanDir is not defined. This operation will not be stored persistently
SharedMemory is not defined.
SharedMemory is not defined.
Scan started at Tue Jun 28 18:06:16 2011. It will take at least 0:00:01.100000
#Pt No BL98_M1 BL98_Timer BL98_C1 BL98_C2 BL98_C3
0 0 0.1 0.103096 0.206192 0.309288
1 10 0.1 0.10095 0.2019 0.30285
2 20 0.1 0.102416 0.204832 0.307248
3 30 0.1 0.105096 0.210192 0.315288
4 40 0.1 0.111601 0.223202 0.334803
5 50 0.1 0.113532 0.227064 0.340596
6 60 0.1 0.115527 0.231054 0.346581
7 70 0.1 0.101574 0.203148 0.304723
8 80 0.1 0.117536 0.235072 0.352608
9 90 0.1 0.101459 0.202918 0.304377
10 100 0.1 0.113926 0.227852 0.341778
Scan ended at Tue Jun 28 18:06:33 2011, taking 0:00:16.645132 (dead time was 93.4%)
Door_BL98 [2]: wa
Current Positions (user, dial)
BL98_M1 BL98_M2 BL98_MP1
100.0000 43.0000 100.0000
100.0000 43.0000 100.0000
Door_BL98 [3]:

How do we run Sardana?

One MacroServer for apps
One MacroServer for CS



One Pool per
beamline

One MacroServer
per each workstation

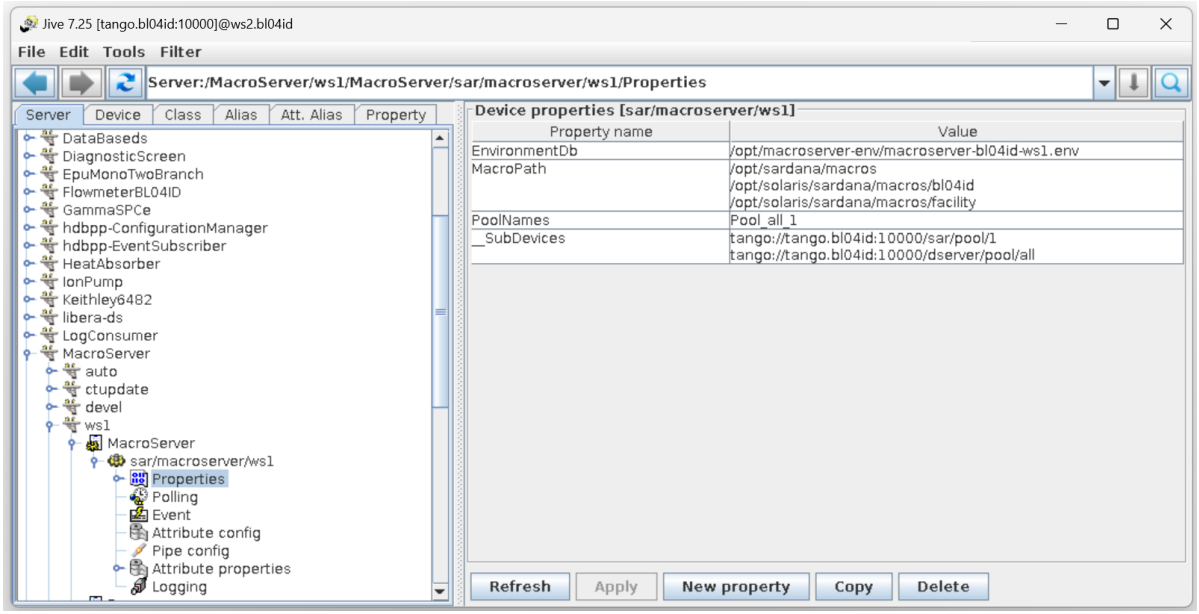
Custom macros and controllers

develop / lib-solaris-sardanacontrollers / controllers /

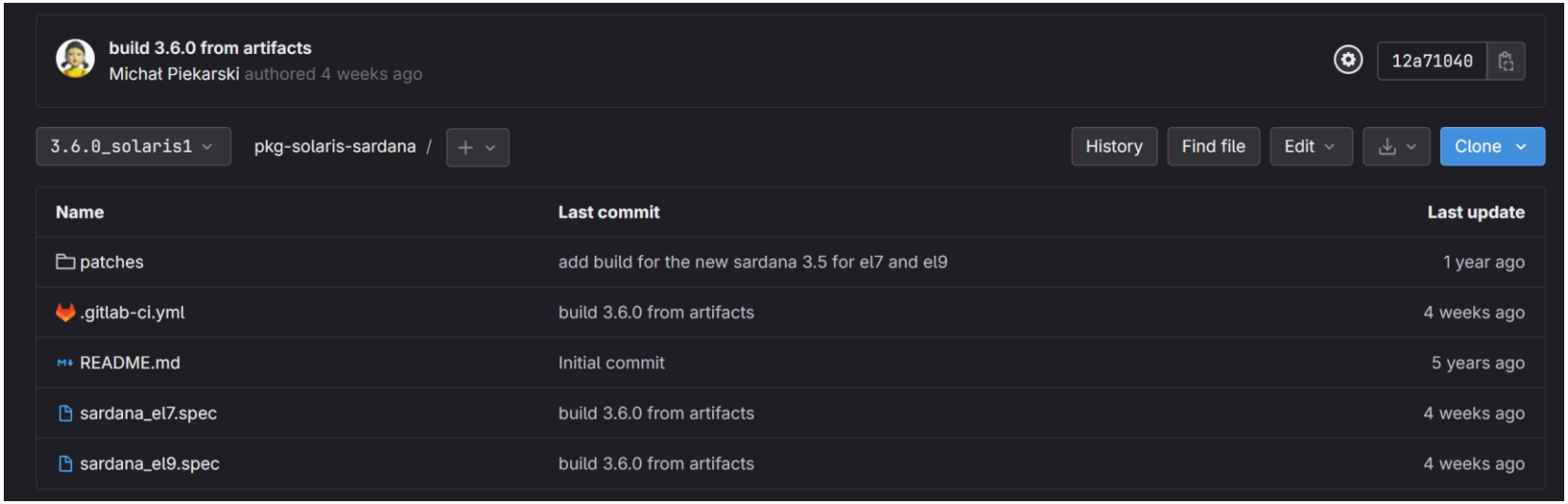
Name	Last commit
..	
bl04bm	fix typos
bl04id	support branch merge
bl05id	fix tango imports
bl06id	redundant parenthesis
bl09bm	Apply 3 suggestion(s) to 1 file(s)
facility	comment out idproxy since it is not necessary now

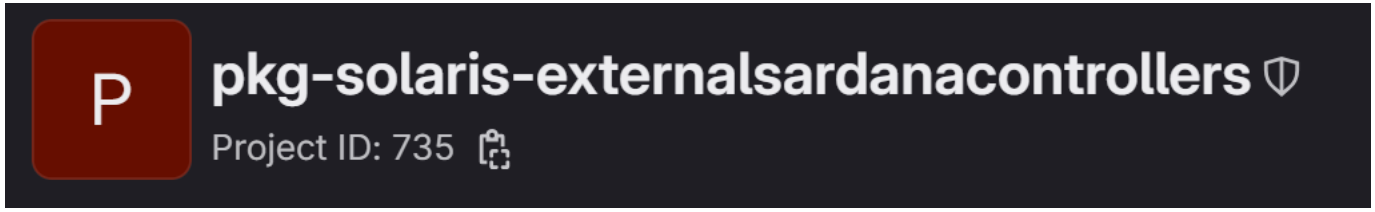
develop / lib-solaris-sardanamacros / macros /

Name	Last commit
..	
bl04bm	dummy change, update shutter in env_bl04bm.py
bl04id	minor spelling fix
bl05id	black it
bl06id	Add macros from different projects
facility	another name change



Some Sardana DevOps stuff

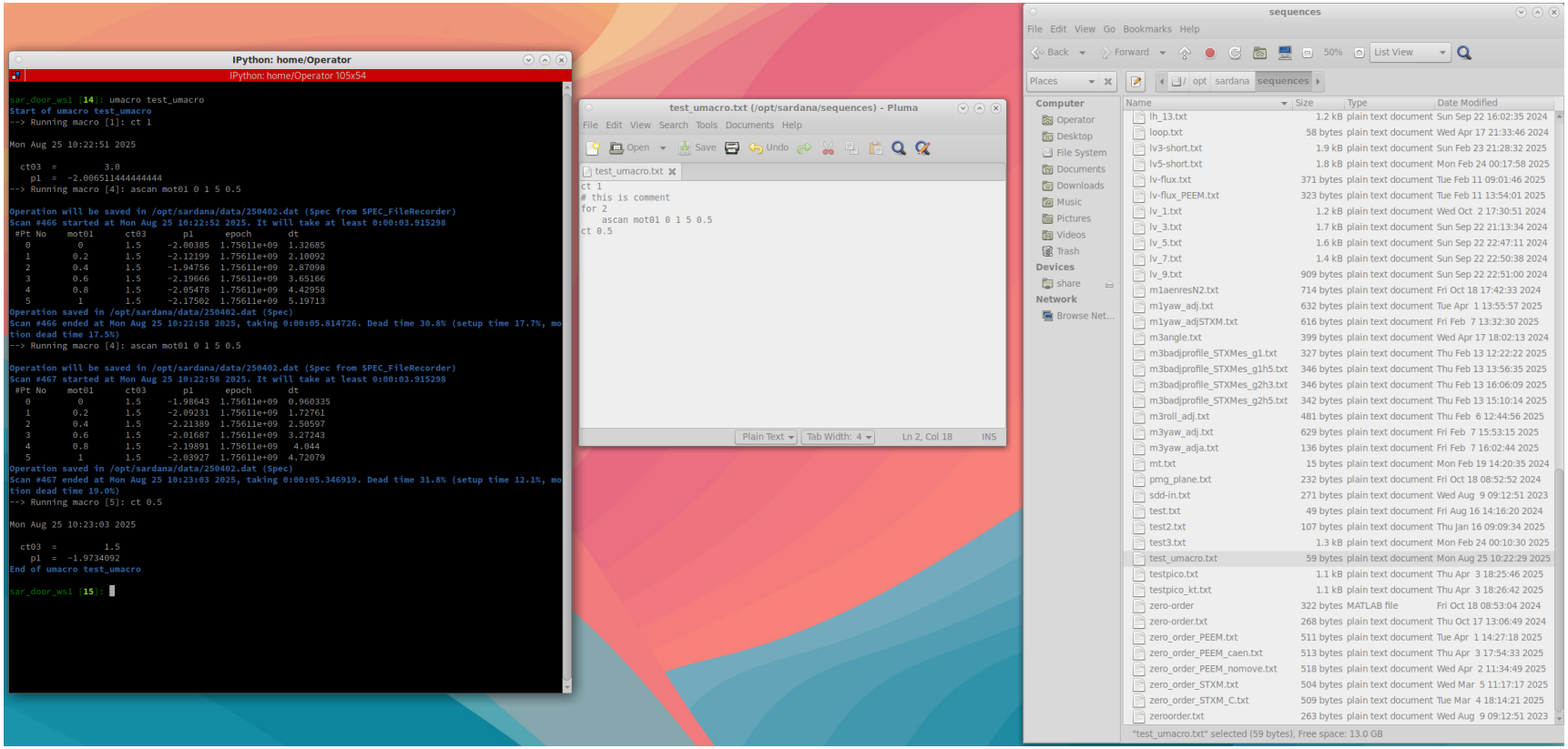




Custom solutions

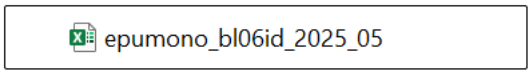
Umacro

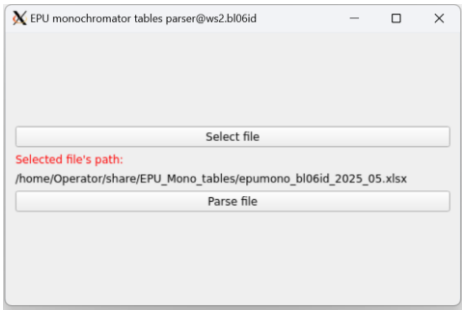
- Run a sequence of macros saved in txt file

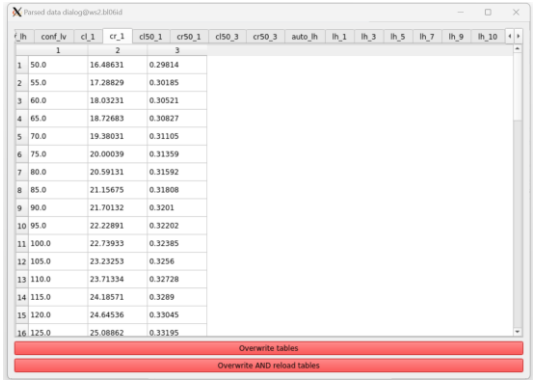


EPUMono system

- Solution to bind EPU and monochromator movements







Thank you!

Questions?

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