

Sardana Status

39th Tango Community meeting

21-23 May 2025, INAF, Giulianova, Italy



Vanessa Da Silva, Johan Forsberg (MAXIV)

Maria Teresa Nuñez (DESY)

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on behalf of the Sardana Community

Sardana - Scientific SCADA Suite

Built on top of Tango Control System



What is Sardana?

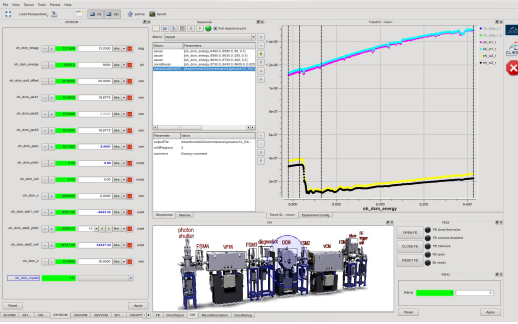
Sardana - Scientific SCADA Suite

Built on top of Tango Control System

100% Python

Four pillars extendable with plugins

Suite = Sardana & Taurus projects



Taurus based GUIs

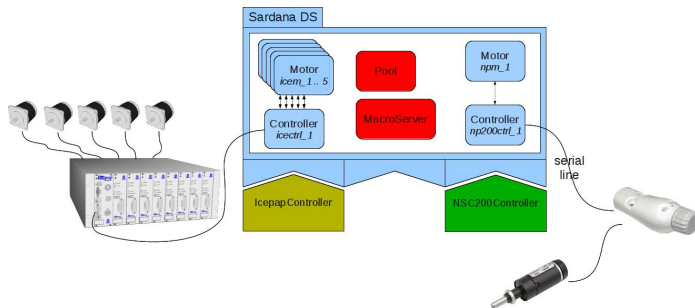
```
Door_zrezela_1 [13]: lsneas
Active      Name      Timer Experi. channels
*
mg_oddedtest oned01 oned01
mntgrp01    ct01 ct01, ct02, ct03, ct04
mntgrp02    ct01 ct01, ct02
mntgrp03    ct01 ct01, ct02, ct03, ct04, oned01

Door_zrezela_1 [14]: lsln
Name      Type      Controller Axis
gap01     PseudoMotor slitctrl01 1
icepap1302 Motor icepap13ctrl 2
mot01     Motor motctrl01 1
mot02     Motor motctrl01 2
mot03     Motor motctrl01 3
mot04     Motor motctrl01 4
mot05     Motor motctrl01 5
offset01 PseudoMotor slitctrl01 2
soprolec1 Motor soprolec_ctrl 1

Door_zrezela_1 [15]: hscan mot01 0 1 4 0.1
Operation will be saved in /home/zrezela/tmp/test.h5 (w5)
Scan #329 started at Sun Oct 12 13:43:27 2014. It will take at least 0:00:00.694422
Moving to start positions...
#Pt No mot01 ct01 ct02 ct03 ct04 dt
0 0 0.1 0.2 0.3 0.4 0.085824
1 0.25 0.1 0.2 0.3 0.4 0.249444
2 0.5 0.1 0.2 0.3 0.4 0.418941
3 0.75 0.1 0.2 0.3 0.4 0.570931
4 1 0.1 0.2 0.3 0.4 0.730435
Operation saved in /home/zrezela/tmp/test.h5 (w5)
Scan #329 ended at Sun Oct 12 13:43:28 2014, taking 0:00:00.845693,Dead time 40.9%
(motion dead time 29.5%)
```

Spock - IPython based CLI

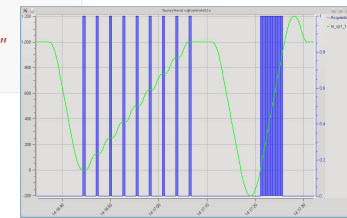
Device Pool - access to the hardware



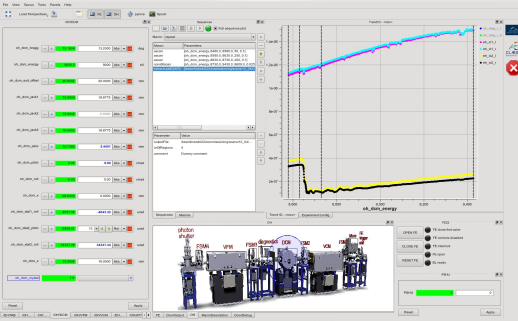
MacroServer - powerful sequencer

```
from sardana.macroserver.macro import macro

@macro()
def hello_world(self):
    """This is a hello world macro"""
    self.output("Hello, World!")
```



TANGO



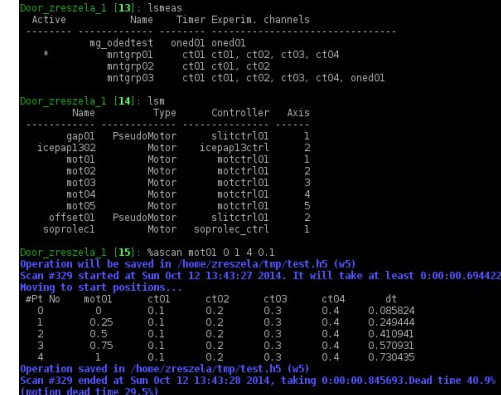
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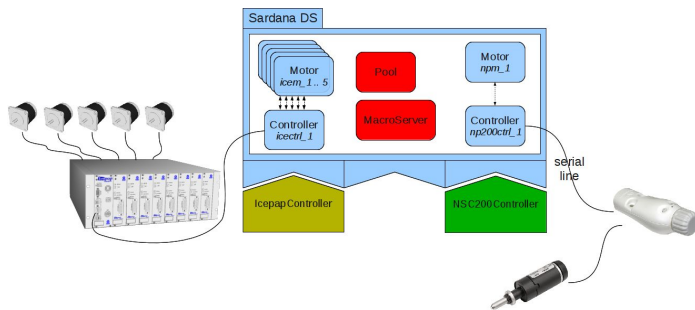
Community of users and developers



Spock - IPython based CLI

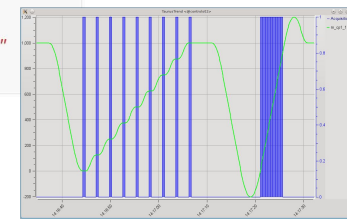


Device Pool - access to the hardware



MacroServer - powerful sequencer

```
from sardana.macroserver.macro import Macro
@macro()
def hello_world(self):
    """This is a hello world macro"""
    self.output("Hello, World!")
```



Sardana stable version 3.5 released on June 26th, 2024

Additions that were already reported in last Tango meetings:

- ✓ New features and bug fixes in configuration tool
- ✓ Improvements in showscan widget
- ✓ Experiment Status widget

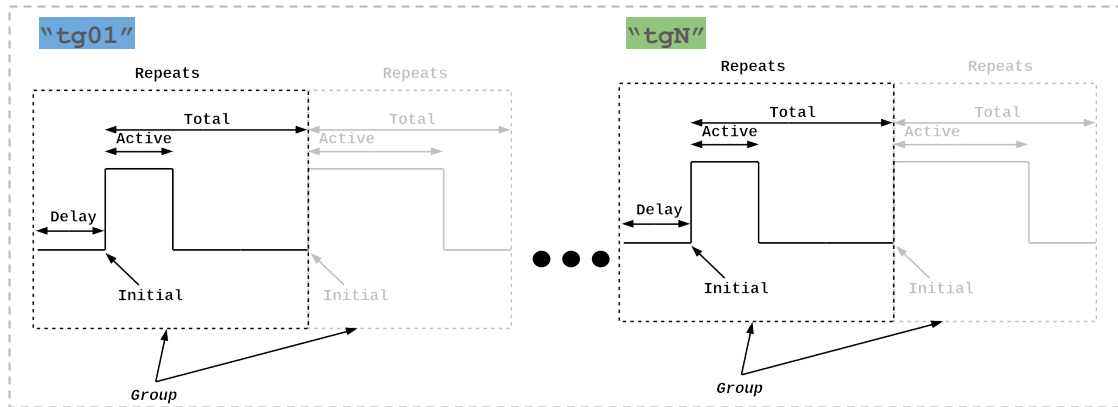
Next stable version 3.6 scheduled for July 2025

Current developments: **Continuous Scans**

Roadmap defined in Sardana CS Workshop 2023

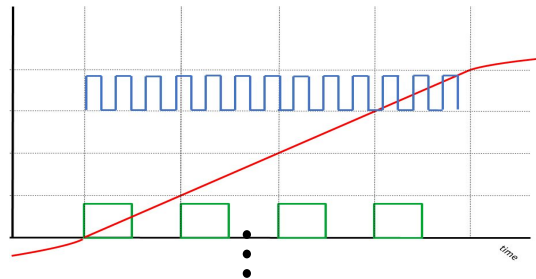
Improve support for multi-technique experiments

1. Multiple **synchronization** descriptions



Elements relationships **{JSON}**

Channel	Synchronizer	Synchronization
ct01	tg01	Trigger
...		...
...		
twod01	tgN	Gate



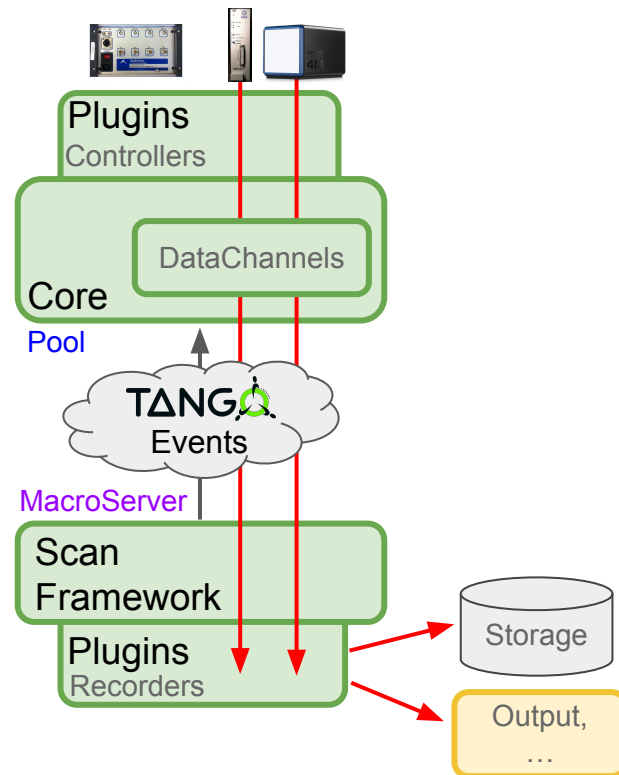
✓ Already available in develop branch

Current developments: **Continuous Scans**

Roadmap defined in Sardana CS Workshop 2023

Improve support for multi-technique experiments

2. New tools for **data composition**



Current developments: **Continuous Scans**

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Improve support for multi-technique experiments

2. New tools for **data composition**



Integrate ESRF **Blissdata** in Sardana

Minimize the stress on the MacroServer

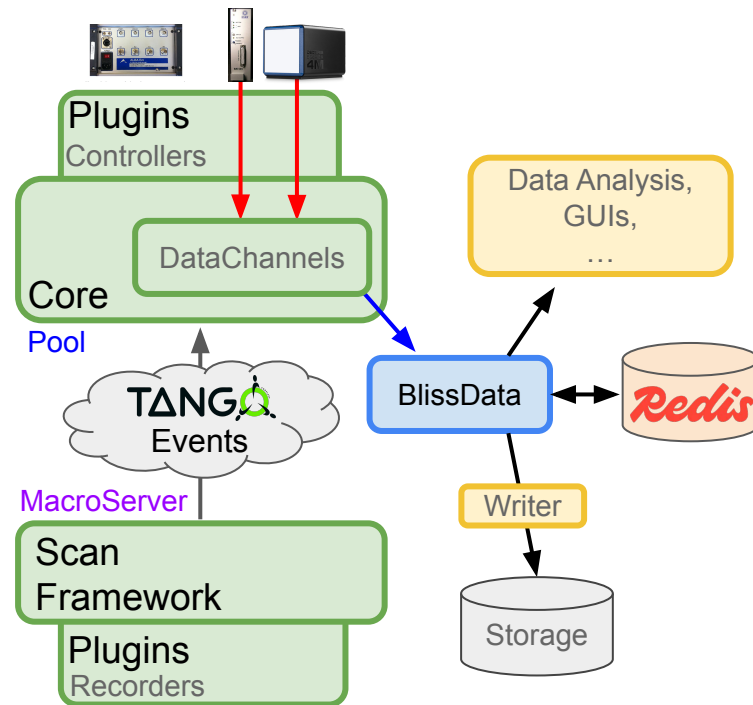
Real-time data available for **external consumers**

Avoid potential bottlenecks in Tango events

Enable external data composition

Tested successfully with multiple sync descriptions.

WiP for final integration



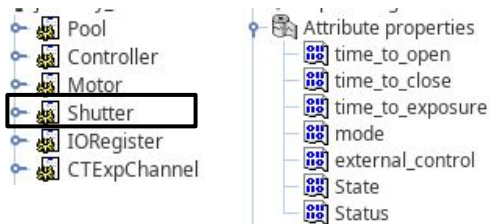
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Improve support for multi-technique experiments

3. Dedicated control for fast **shutters** (radiatio-sensitive or time resolved exp.)

Sardana device with
configuration attributes

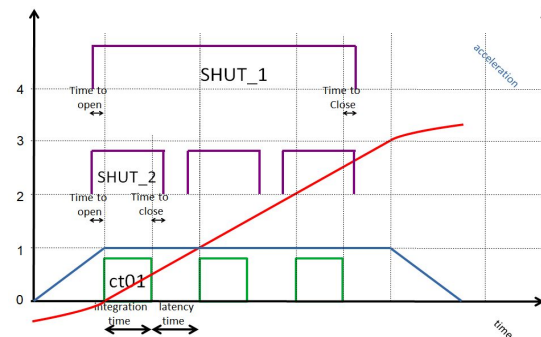


Measurement Group member

Active Measurement Group: mntgrp02

Channel	enabled	output	Plot Type	Plot Axes
ct01	true	true	No	
SHUT_1	true	true	No	
SHUT_2	true	true	No	

Native software and hardware control
using Multiple Synch. Description



SEP21: Shutter Synchronization

Aim to integrate shutters independently of its synchronization hardware.

https://gitlab.com/sardana-org/sardana/-/merge_requests/2029



Current developments: **Continuous Scans**

Roadmap defined in Sardana CS Workshop 2023

Meshct improvements

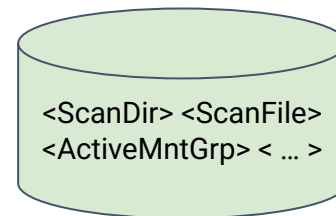


- <https://gitlab.com/sardana-org/sardana/-/issues/1946>
- Avoiding last latency time
- Optimize motion time of “step” motor
- Ensure Prepare is called once per meshct

Yimeng Li talk on Thursday@12:05 *Arbitrary Two-Dimensional Mapping Scan Utilizing the Sardana Framework*

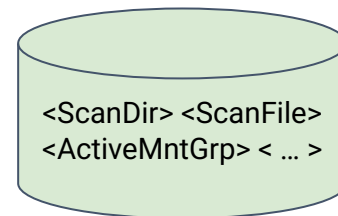
Current developments: **MacroServer Environment more user friendly**

- Global space to store variables persistently to be accessed during macro execution.
- Can be set on different scope: Global, Door, Macro, Door.Macro
- Modified via macros: `senv` and `usenv`
- Exposed as an attribute called `Environment` (pickled dictionary)
- Stored in a file using Python `shelve`



🎯 Current developments: **MacroServer Environment more user friendly**

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✓ Improve documentation

🔧 Review environment on different scope - [!2032](#)

🔧 Add to the configuration tool - [!2040](#)

🔧 Support other backends (Redis & TangoDB) - [!2054](#)

💡 [SEP14](#) MSenv Taurus scheme



Current developments: **Other improvements**

- 🔧 Better Sardana Archiving: Push events for attributes “position” and “state” from code



- 🔧 Add custom commands to controllers and extend Sardana to support typical workflows for high-intensity laser experiments

Alexander Kessler talk this morning *Tango-Controls @ HIJ-POLARIS: state and upcoming activities*

HI JENA
Research School
of Advanced Photon Science

s²innovation

Plugin development

<https://gitlab.com/sardana-org/sardana-extras/>

Available plugins for widely used hardware/software:

- IcePAP <https://gitlab.com/icepap-organization/sardana-icepap>
- LImA <https://github.com/alba-Synchrotron/sardana-limaccd>
- PandaBox <https://gitlab.com/MaxIV/pandabox/sardana-kitslabpandabox>
- AlbaEM
- ...



Migration of plugins/tools to sardana-org to promote collaboration.

e.g. <https://gitlab.com/sardana-org/sardana-tango>

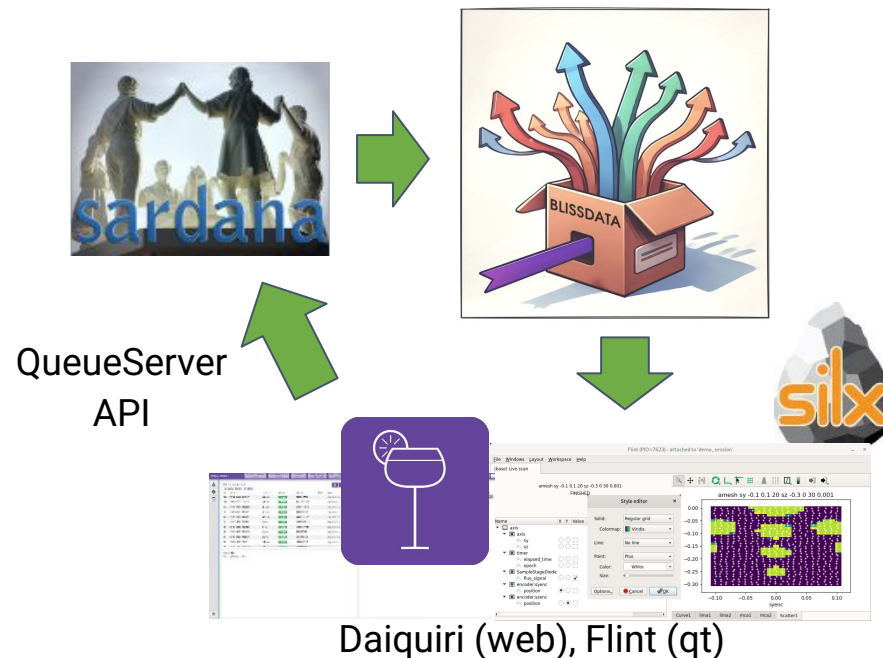
Integrate Sardana, Bluesky-QueueServer, Blissdata, and Daiquiri for control and data visualization



Thanks Udai Singh!



- Daiquiri and Flint takes data from Blissdata for real-time experiment monitoring.
- Modification of Bluesky-QueueServer and Blissdata provide a unified data layer under the Daiquiri interface. Enable the submission of Sardana macros as part of the Bluesky queue and allow for tracking their execution status.
<https://gitlab.desy.de/fs-ec/queueserver/-/tree/sardana>
- Publish Blissdata events to Mattermost and SciLog
- Use of the Sardana Blissdata recorder available in [sardana-redis](#)



Integrate Sardana, Bluesky-QueueServer, Blissdata, and Daiquiri for control and data visualization



Thanks Udai Singh!

```
{'item_type': 'plan',
 'name': 'attenuse',
 'args': ['on'],
 'user': 'Queue Server API User',
 'user_group': 'primary',
 'item_uid': 'd3348236-5b30-44cd-9799-b8651908ccde',
 'result': {'exit_status': 'completed',
            'run_uids': [],
            'scan_ids': [],
            'time_start': 1744535436.2154074,
            'time_stop': 1744535436.7156112,
            'msg': '',
            'traceback': ''}},
{'item_type': 'plan',
 'name': 'a2scan',
 'args': ['om', '0.06', '0.5', 'tt', '0.12', '1.0', 64, '0.1'],
 'user': 'Queue Server API User',
 'user_group': 'primary',
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 'result': {'exit_status': 'completed',
            'run_uids': [],
            'scan_ids': [],
            'time_start': 1744535436.7217457,
            'time_stop': 1744535538.4589655,
            'msg': '',
            'traceback': ''}},
{'item_type': 'plan',
 'name': 'umv',
 'args': ['om', 0],
 'user': 'Queue Server API User',
 'user_group': 'primary',
 'item_uid': 'fe259253-f07e-4ef6-88fa-964044243bef',
 'result': {'exit_status': 'completed',
            'run_uids': [],
            'scan_ids': [],
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            'time_stop': 1744535541.4740975,
            'msg': '',
            'traceback': ''}},
{'item_type': 'plan',
 'name': 'umv',
 'args': ['tt', 0]}
```

Remote plan
submission

beamtime_11021424_log

March 11

P65bot BOT 5:32 AM

dscan exp_dmy01 0.0 120.0 120 1.0 with id 4739 is finished

dscan sz-0.2 0.2 20 1.0 with id 4740 in /gpfs/current/raw/ercl3_300mm_04740.nxs is started

dscan sz-0.2 0.2 20 1.0 with id 4740 is finished

qscan 0.0 0.0 0.0 0.0 0.018 0.032 16 1.0 with id 4741 in /gpfs/current/raw/ercl3_300mm_04741.nxs is started

qscan 0.0 0.0 0.0 0.0 0.018 0.032 16 1.0 with id 4741 is finished

qscan 0.0 0.0 0.0 0.0 0.027 0.05 8 1.0 with id 4742 in /gpfs/current/raw/ercl3_300mm_04742.nxs is started

qscan 0.0 0.0 0.0 0.0 0.027 0.05 8 1.0 with id 4742 is finished

qscan 0.0 0.0 0.0 0.0 0.045 0.089 8 1.0 with id 4743 in /gpfs/current/raw/ercl3_300mm_04743.nxs is started

qscan 0.0 0.0 0.0 0.0 0.045 0.089 8 1.0 with id 4743 is finished

qscan 0.0 0.0 0.0 0.0 0.074 0.18 6 1.0 with id 4744 in /gpfs/current/raw/ercl3_300mm_04744.nxs is started

qscan 0.0 0.0 0.0 0.0 0.074 0.18 6 1.0 with id 4744 is finished

qscan 0.0 0.0 0.0 0.0 0.15 0.24 4 1.0 with id 4745 in /gpfs/current/raw/ercl3_300mm_04745.nxs is started

qscan 0.0 0.0 0.0 0.0 0.15 0.24 4 1.0 with id 4745 is finished

qscan 0.0 0.0 0.0 0.0 0.22 0.3 4 2.0 with id 4746 in /gpfs/current/raw/ercl3_300mm_04746.nxs is started

qscan 0.0 0.0 0.0 0.0 0.22 0.3 4 2.0 with id 4746 is finished

qscan 0.0 0.0 0.0 0.0 0.31 0.5 8 2.0 with id 4747 in /gpfs/current/raw/ercl3_300mm_04747.nxs is started

qscan 0.0 0.0 0.0 0.0 0.31 0.5 8 2.0 with id 4747 is finished

qscan 0.0 0.0 0.0 0.0 0.52 0.6 3 5.0 with id 4748 in /gpfs/current/raw/ercl3_300mm_04748.nxs is started

qscan 0.0 0.0 0.0 0.0 0.52 0.6 3 5.0 with id 4748 is finished

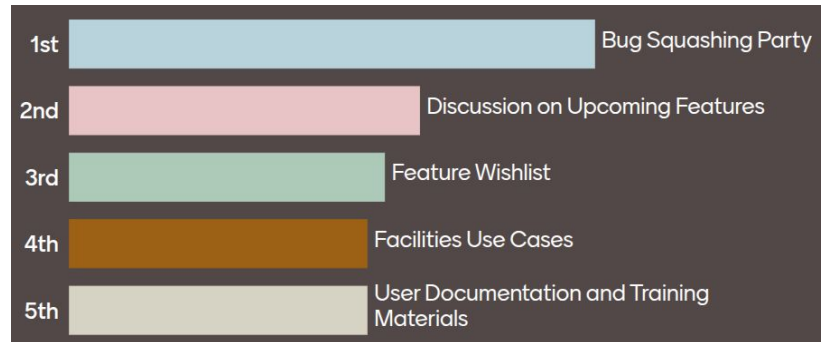
Write to beamtime_11021424_log

Sardana Project

- Monthly follow-ups organized by ALBA, DESY, MAX-IV, SOLARIS.
- Current open Issues: 355
- Current open MRs: 55
(significant number of contributions!)



Sardana Workshop at 27-29 August 2025



Big thanks to all contributors (issues, MRs, commits in last 2y, alphabetical order)

Albert Olle, Alexander Kessler, András Wacha, Anton Joubert, Antonio Bartalesi, Áureo Freitas, Benjamin Bertrand, Carla Takahashi, Canrong Qiu, Daniel Schick, Dmitry Egorov, Elmir Jagudin, Henrique Silva, Hanno Perrey, Ireneusz Zadworny, Isak Lindhé, Jan Kotanski, Johan Forsberg, Jordi Aguilar, José Gabadinho, Julen Rodríguez, Leonid Lunin, Lin Zhu, Lukas Wittenbecher, Marco Leorato, Markus Bala, Martí Caixal, Miquel Navarro, Michał Gandor, Michael Schneider, Michał Piekarski, Oriol Vallcorba, PhillJC, Roberto Javier Homs Puron, Teresa Nuñez, Vanessa Silva, Vincent Hardion, Wojciech Kitka, Wojciech Wantuch, Yimeng Li, Yury Matveyev, Zbigniew Reszela

Thank you for your attention!



Sardana Workshop
27-29 August 2025

