Sardana Status

by Johan Forsberg, Vanessa Silva (MAXIV)
   Michael Schneider (MBI-Berlin)
   Michał Piekarski (SOLARIS)
   Jordi Aguilar, Oriol Vallcorba, Zbigniew Reszela (ALBA)
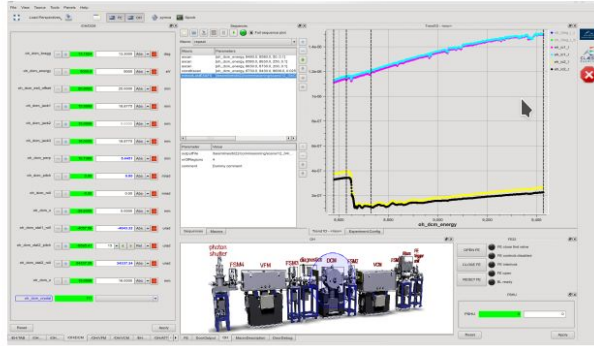on behalf of the **Sardana Community**

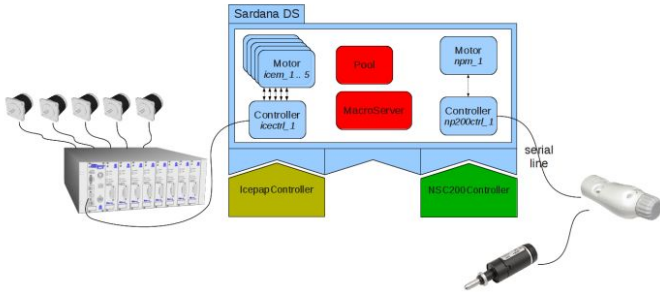38th Tango Community Meeting 2024, 28-30.05.2024

Agenda

- Sardana release 3.5
- Sardana Continuous Scans Workshop 2023
- Extras

What is Sardana?

Taurus based GUIs

Spock – IPython based CLI

Scientific SCADA Suite

Suite = Sardana & Taurus projects

100 % Python

Built on top of Tango CS

Extendable with plugins

Configure, don't program!

Device Pool – HW access + low level control

MacroServer – powerful sequencer


```python
from sardana.macroserver.macro import macro

@macro()
def hello_world(self):
    """This is a hello world macro"""
    self.output("Hello, World!")
```
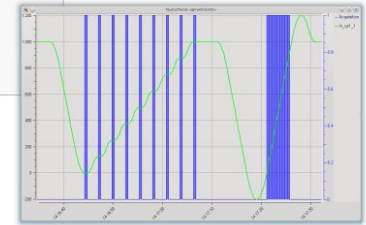
Sardana release 3.5

Sardana 3.5 release

- Finally around the corner (3.4 release on 2023-04-06)
  - Hopefully will be released soon after this meeting.
- What's new?
  - **New features and bug fixes in configuration tool and format**
  - Experiment status widget (presented on last Tango Meeting)
  - Multiple fixes in scan macros
  - **Improvements in showscan widget**
  - …

Sardana configuration - update

- **News**
 - Lots of bug fixes!
  - Support for splitting configuration across **multiple YAML files**
  - Generating a **graph** representation of a configuration
  - Feedback from first usage at the beamlines
    - Alba doing some testing
    - Not really used yet at MAX IV (awaiting 3.5)
  - Difficulties we find due to limitations in Tango
    - Mainly reading/writing **properties without type** knowledge
- Near future plan:
  - testing and stabilizing
  - Main missing piece: environment support
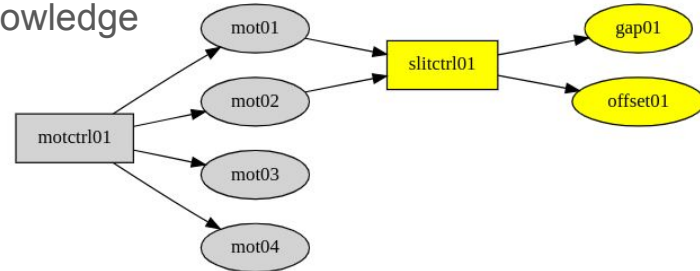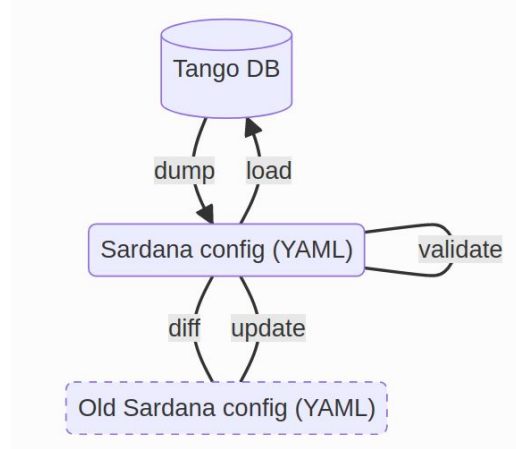
Thanks to Johan Forsberg from MAXIV!

New features in showscan online

work-in-progress: UI enhancements and quality-of-life features

goal: intuitive interface to control and monitor scans

- **pre-scaling axis**
  visual indication of scan progress
- **click-to-move**
  move motor directly in scan result
- **live position display**
  easily confirm position (WIP)
- **scanstats display**
  visualize results of automatic peak finding (WIP)
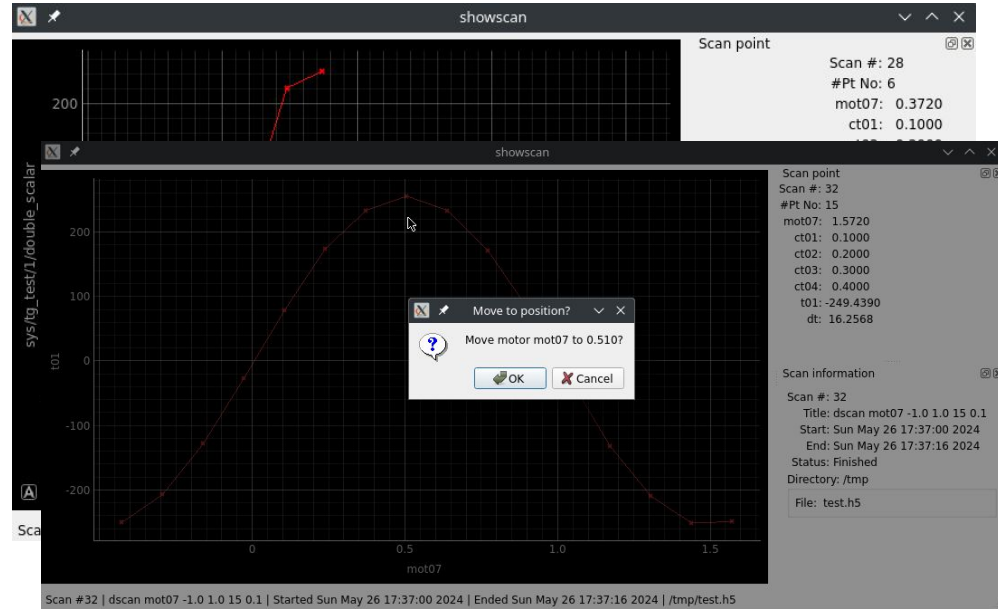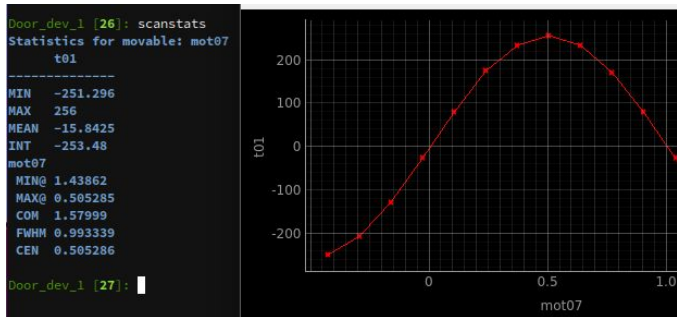
Thanks to Michael Schneider from MBI-Berlin!

Sardana Continuous Scans Workshop 2023

Sardana Continuous Scans Workshop 2023

CONTINUOUS SCANS WORKSHOP
20th-21st September, SOLARIS, hybrid

- 42 participants from 11 different institutes (17 local and 24 remote)
- 3 presentation sessions
- 2 brainstorming discussions sessions

Many thanks to Michał Piekarski and SOLARIS! Photos: Wojciech Wantuch (SOLARIS)

Sardana Continuous Scans Workshop

Main topics:

- Presentation of different scanning frameworks (Bliss, Flyscan, DESY and Diamond solutions…)
- brainstorming discussions about Sardana continuous scans missing features and challenges
- Potential collaboration areas

Conclusions:

- Sardana roadmap in terms of continuous scans (missing features voting)
- Idea to reuse BlissData as Sardana recorder (PoC already done) and Flint as online visualisation tool

Data publishing to Redis

Motivation:

1. Avoid potential bottlenecks in Tango events
2. Minimize the stress on the MS
3. Enable external data composition
4. Make data available on the fly for external consumers (e.g. online data analysis)
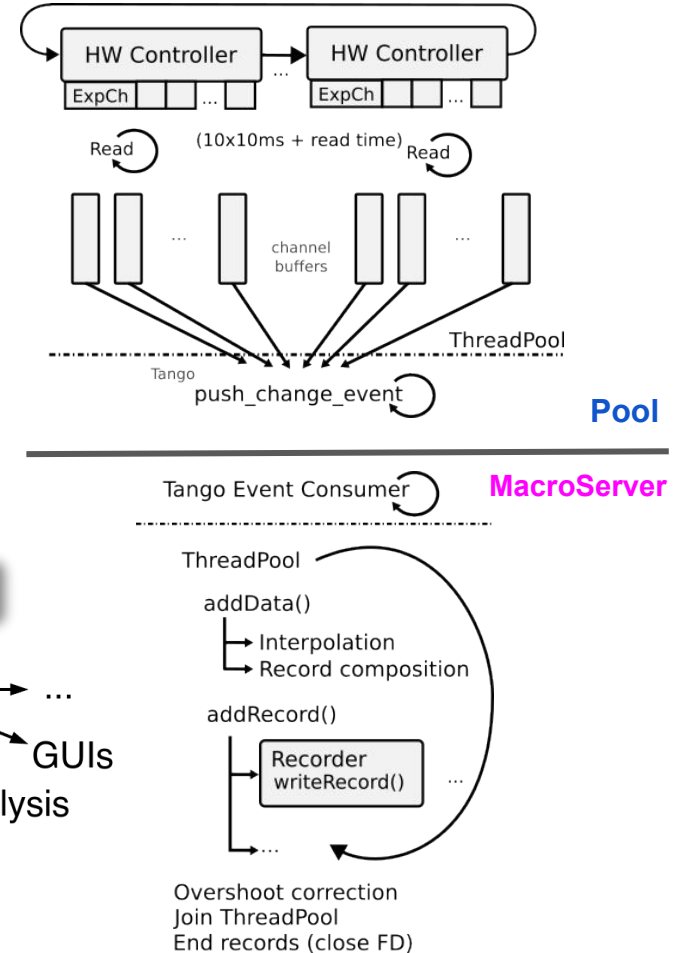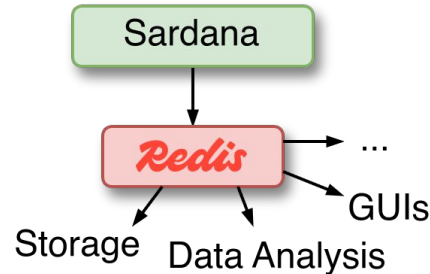
Data publishing to Redis

Motivation:
1. Avoid potential bottlenecks in Tango events
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   (e.g. online data analysis)

Roadmap:
- Evaluate existing solutions: ESRF **Blissdata** and clients
  (Flint, NeXus writer)
- Store via **data recorder**
  (tackles points 2 and 4)
- Store directly from the **Pool**
  (tackles all points)

https://github.com/ALBA-Synchrotron/sardana-redis
https://gitlab.esrf.fr/bliss/bliss/
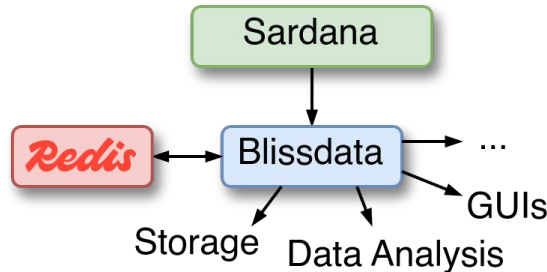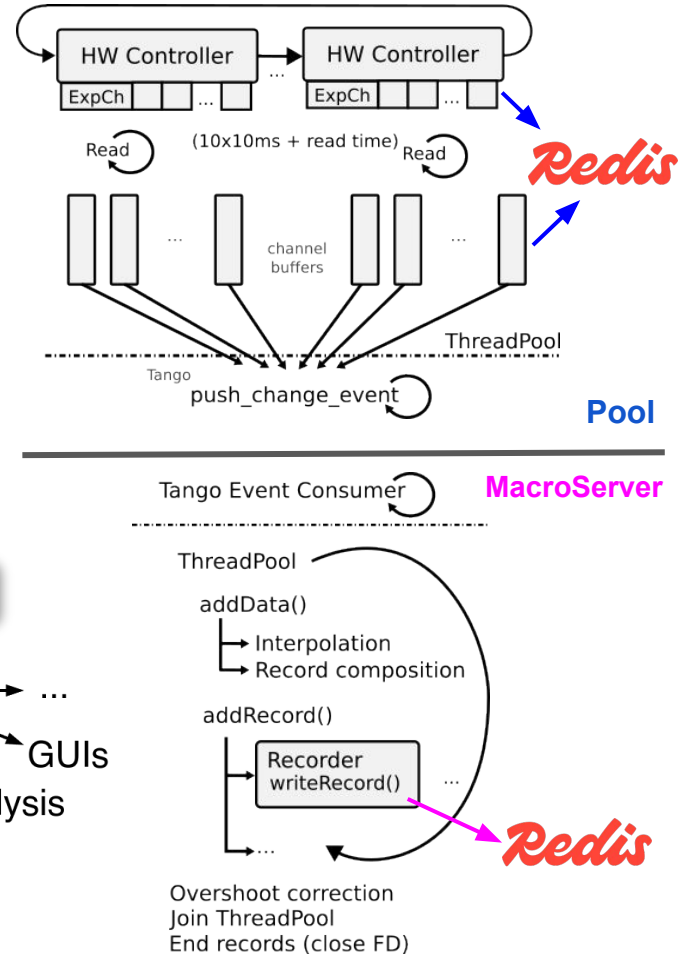
Enhancing synchronization in continuous scans

meshct improvements

multiple synch description: use case

SEP21: Shutter Synchronization WIP

- start once: only motion task is performed between lines for a lower overhead
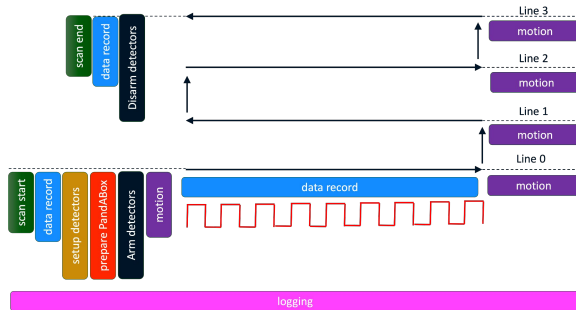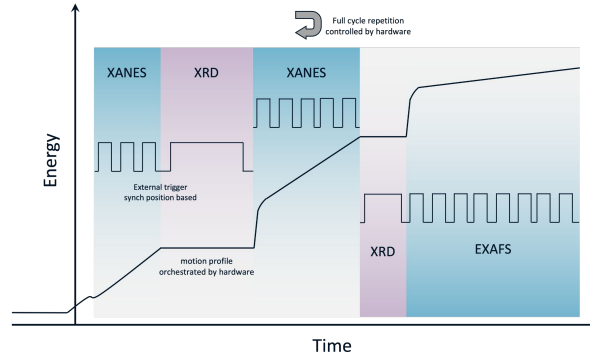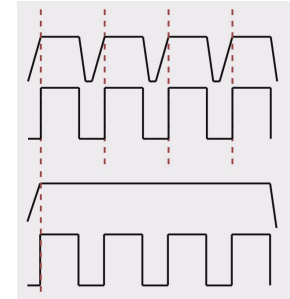 - decrease of 70% of the overhead time per line
- active time recalculation: better matching of external triggers synchronization with motor flyscan time
  - avoid motor moving further for an extra "latency_time"
  - matches start/end position when running snake scan

- multimodal DAQ for complementary techniques
- triggers to detectors generated on position-domain. Different detectors are triggered with different pulse train
- motion fully orchestrated by hw: motion profile fully driven by trajectory
- requires future developments in Sardana to fully support multi-techniques running sequentially and/or simultaneously

- new object in Sardana to control shutters
- User configures: opening/closing pattern, software/hardware control… Controllers receive all parameters needed
- Towards multiple HW/SW synchronizations

Thanks to Vanessa Silva from MAXIV!

Extras

Feature Request: Device level dynamic attributes

- Context: Sardana Motor can by a quite different thing depending on the Controller plugin
  - One controller may support read and write of MaxCurrent
  - The other controller may just support read of MaxCurrent
- Current cppTango implementation of dynamic attributes does not allow that
  - JTango does allow
  - cppTango allows that for commands
- Sardana hack: remove attributes from the Class before adding new ones
  - Causes other problems e.g. messes with read/write methods of attributes

tango-controls / cppTango / Issues / #814

Support for device level dynamic attributes

○ Open   Issue created 3 years ago by **Henrik Enquist**

Sardana Workshop after this Tango Meeting

- This Thursday: 13:45 - 18:00 at SOLEIL
  - Many thanks to SOLEIL for hosting this event and to Gwen for her help in organizing it.
- Not an introduction to Sardana but a presentations/demos of new features and discussions on future plans:
  - Configuration format and tools
  - Continuous Scans
  - Data publishing with Redis
  - Documentation and User's Training
  - …
- Full agenda:
  https://gitlab.com/sardana-org/sardana-followup/-/blob/main/20240530-SOLEIL/AGENDA.md
- If you don't have plans for the Thursday afternoon, you are more than welcome to join us!

Summary

- Sardana release 3.5 right after this meeting will be full of new features and bug fixes.
- Continuous Scan Workshop takeaways are already being implemented.

Thank you for your attention!