Generic Data Acquisition Interfaces and Processes in Sardana

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GENERAL PROBLEM

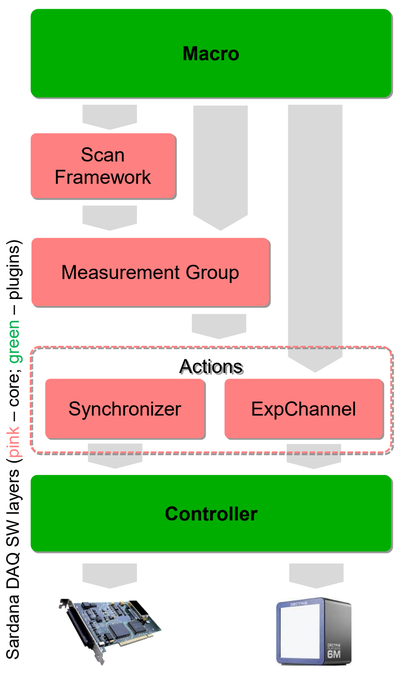
- Diverse experiment control apps across different facilities
- Multiple tools for different DAQ modes within the same lab
- Users lack of time to understand DAQ architecture

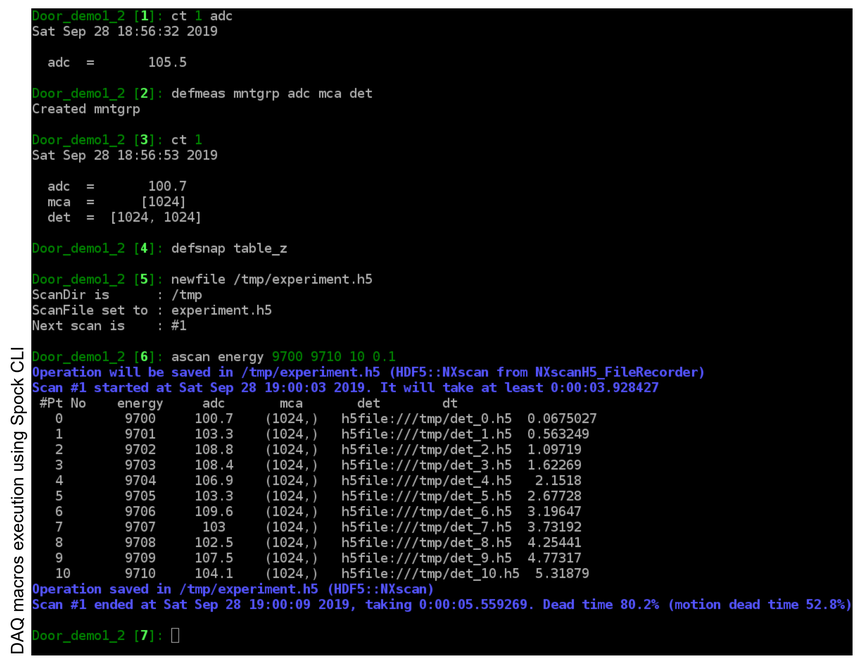
TECHNICAL PROBLEM

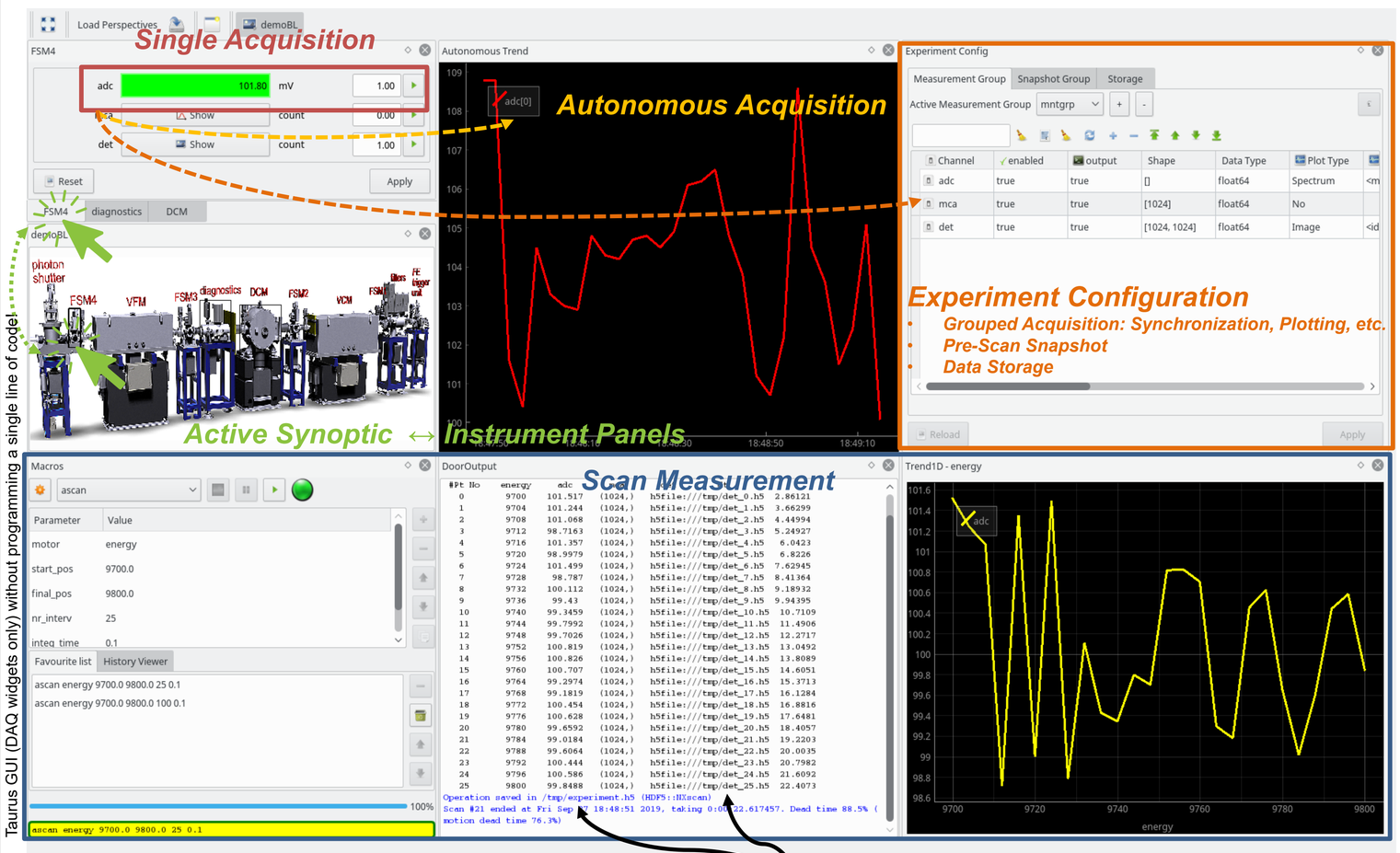
- Rich in features DAQ HW are hard to abstract in SW
- Detectors HW produce larger volumes of data at higher rate

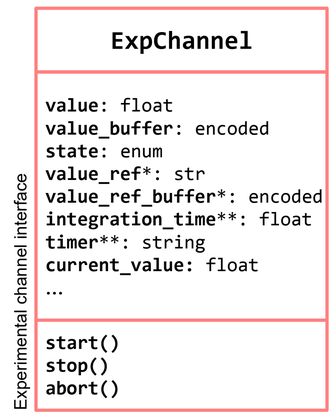
SOLUTION

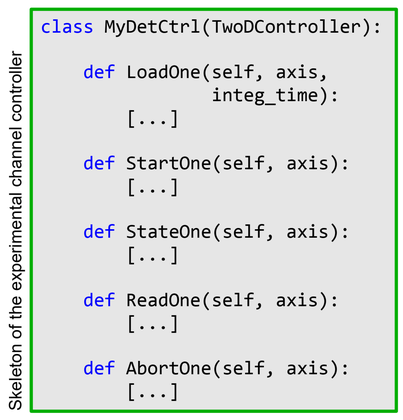
- Flexible GUI and CLI interfaces to the CS
- Active synoptic as navigation tool to instrument panels
- **Python based macro execution** environment
- Turn-key step and continuous scan macros
- **Scan framework** for development of custom scans
- HDF5, SPEC, FIO or any custom data format
- 1D and 2D **data references** accessible via **HDF5 VDS**
- Generic DAQ synchronization (SW or HW)
- **Single, grouped and autonomous DAQ modes**
- Generic interface of experimental channels







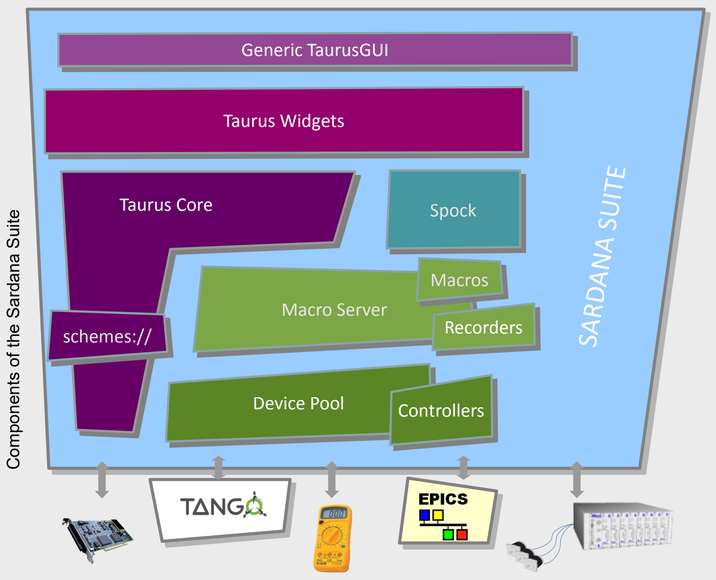




BENEFITS

- **Improved UX** at different sites within Sardana and Taurus collaboration
- **Gentle learning curve to the CS:**
  - Consistent look-and-feel
  - SPEC-like macro execution syntax
- **Well isolated layers of DAQ SW**
  - Easier to understand DAQ architecture
  - Promote code reusability
  - Facilitate new developments

SARDANA – Scientific SCADA Suite



- Widely used
- Production-ready
- Well supported
- Actively developed
- Free/Open Source
- Community-driven
- Modular
- Multi-platform
- Based on Python
- Easy to install

More than 30 labs using Sardana

NEXT

- Reduce dead times in scans
- Finish implementation of autonomous DAQ
- Refactor plugin system
- Generalize capabilities
- Support non-linear motion trajectories

MORE INFO

- `https://sardana-controls.org`
- `https://taurus-scada.org`

Acronyms and abbreviations
app – application, **lab** – laboratory, **DAQ** – data acquisition, **HW** – hardware, **SW** – software,
GUI – Graphical User Interface, **CLI** – Command Line Interface, **UX** – user experience, **CS** – Control System

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