NICOS – an Instrument Control Framework

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Features

GUI
- Highly configurable user interface
- Overview of scans
- Convenience functions, e.g. plot, fit, print
- Graphical script editor
- Basic data treatment capabilities

Open Source Development
- Version Control (git)
- Code review (gerrit)
- Ticket system (redmine)
- Automated tests (jenkins)

Hardware access
- Different middleware support (TANGO/TACO, EPICS, SECoP)
- Serial line and network support

User highlights
- Scripting language (Python)
- **Self-explanatory** command and device parameter names
- **Few basic** commands needed, e.g. move, read, count, scan
- Instrument specific commands, e.g. tomo
- Dry Run to check scripts incl. limit checks and runtime estimation
- Interactive online help system
- On-the-fly configuration change
- Flexible configuration system to reflect hardware setup

Plug and Play of mobile components
Automatically loaded configuration when a sample environment or measurement option is connected

Electronic Logbook
- Archive user activities and outputs
- Add comments, plots, and external docs

History database
- History plots
- Automatic logging of instrument parameters during the experiment

Script execution daemon
- Configurable transport layers: tcp sockets, zmq
- Selectable messaging formats: json, python-pickle

Data writing
- Different data formats simultaneously
- Easy adding of new data formats

Misc
- **Client Server** architecture
- Optimized device access via cache and device polling
- **Watchdog** with alarms and actions

In use at

14 instruments
used together with IBEX-GUI

24 instruments

1 instrument

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http://www.nicos-controls.org