Control System Studio

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Control System (CS) Studio

User Interface tools
– Display editor & runtime
– Strip Chart
– Channel Access utilities

Also
– Archive system
– Alarm Handler
– Site-Specific support for logbook, PV names, ..

.. integrated, site-specific user-interface tool for Windows, Linux, OS X
What does CS-Studio look like?
Australian Square-Kilometer Array Pathfinder (ASKAP)

ORNL ‘CG-1D’ Beam Line

Neutron Tomography, EPICS/CSS since Jan. 2013
ORNL SNS ‘VULCAN’ Beam Line

Engineering Diffractometer, EPICS/CSS since March 2014
Kunal Shroff, May 2014
Airplane Simulator/Test

Somewhere ...
What is CS-Studio?
CS-Studio Components

Common Use
- Display Builder
- Data Browser
- Probe
- PV Table
- PV Tree
- Channel Access
- PV Autocomplete from History

Selected Use
- Alarm System
- Archive Appliance, RDB Archiver, Channel Archiver
- ChannelFinder
- Olog, SNS Elog
- PV Access, MQTT
- Autocomplete from Channel Finder, SNS PV database, Archive
Integration: Alarm...

Context-Menu

Complete Alarm Perspective:
Tree view, Table of current alarms
Integration: Alarm...
Integration: Alarm...
Integration: Alarm...

Received vacuum alarm on beam line. Looks like the reading dropped to zero. The same happened a few times before. We assumed that just as before the sensor was disconnected, so we checked the XY123 controller box. Upon inspection, we noticed that ...
CS-Studio

is a collection of components.

Integrated Workflow:

- Alarm display
- Display Builder (Channel Access)
- Data Browser (with RDB Archive)
- Logbook (SNS Elog)

Result:

The instrument returned to normal automatic operation as of 95:30.

RFQ Recovery from SCL 19a Trip
During the 30-second beam recovery from SCL 19a, the RFQ resonance error decreased quickly. In order to save the RFQ from opening loop, I dropped the field down by one click. After the resonance error became stable, I restored the field back to .340.

Note: The BEAST alarm for RFQ resonance error came in and this is what alerted us that there was a problem. The alarm annunciacted in time for us to do something instead of it being too late.

- 2014_04_03_103941.jpg -
Evolution of CS-Studio

Since ~2010:
Operational at several sites

Since ~2016:
SNS beam lines, planned for ESS

2019:
SNS beam lines
From 2014 to 2018
Getting Started with CSS

• Start `css`
Exercise: Probe

- Use “Probe” in toolbar or Menu Applications, Display, Probe
- Enter PV name “sim://sine”
- Open another Probe for “training:random” (or some other PV from your IOC)
- Close Probe
- Open it again
- Note previously used PVs in history as you enter new PV
- Right-click on the “Probe” tab, Select “Split Horizontally”, and move one of the probes to new panel.
Exercise: Data Browser

- Menu Applications, Display, Data Browser
- Right-click on plot, Add PV, “sim://sine”
- Wait a little, press Stagger button, then zoom and select a region on the time axis
Exercise: PV Tree

- Menu Applications, Display, PV Tree
- Enter a PV from an IOC, like “training:random”
CSS PV Exchange

- PV in *any* CSS Tool
  ➜ Context Menu ➜ Select other PV Tool

Try:
Right-click on item in PV Tree, select Data Browser
More Display Arrangements

• Tab Context Menu:
  – Split Horizontally/Vertically
  – Detach
  – Lock Pane

• Window Menu:
  – Show/Hide Toolbar
  – Always show tabs?
  – Save Layout As .. / Load Layout
Saved Layout Example

- Hide the toolbar
- Open File Browser
- Split Pane Horizontally, leave file browser at left
- Lock the left pane
- Window, Save Layout As..., “Demo 1”

- Create another one as “Demo 1”
- Switch between them
**Settings**

- CSS saves its settings in `~/.phoebus`
  - Change that via `-Dphoebus.user=/path/to/other/dir` on startup
    - Your ‘start’ script could copy certain saved layouts into that dir to share a set of layouts

- For command line settings, run with `-help`:

```
PHOEBUS
```

```
Command-line arguments:

- `help`  - This text
- `splash`  - Show splash screen
- `nosplash`  - Suppress the splash screen
- `settings settings.xml`  - Import settings from file, either exported XML or property file format
- `export_settings settings.xml`  - Export settings to file
- `logging logging.properties`  - Load log settings
- `list`  - List available application features
- `server port`  - Create instance server on given TCP port
- `app probe`  - Launch an application with input arguments
- `resource /tmp/example.plt`  - Open an application configuration file with the default application
```

- For details on the ”-settings” file, see online help

```
Docs » Preference Settings
```

**Preference Settings**

The following preference settings are available for the various application features.

```plaintext
# Channel Access address list
addr_list=
auto_addr_list=true
max_array_bytes=10000000
server_port=5064
repeater_port=5065
```