OAK RIDGE National Laboratory

Control System Studio

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ORNL is managed by UT-Battelle, LLC for the US Department of Energy

U.S. DEPARTMENT OF ENERGY

Control System (CS) Studio

User Interface tools

- Display editor & runtime
- Strip Chart
- Channel Access utilities

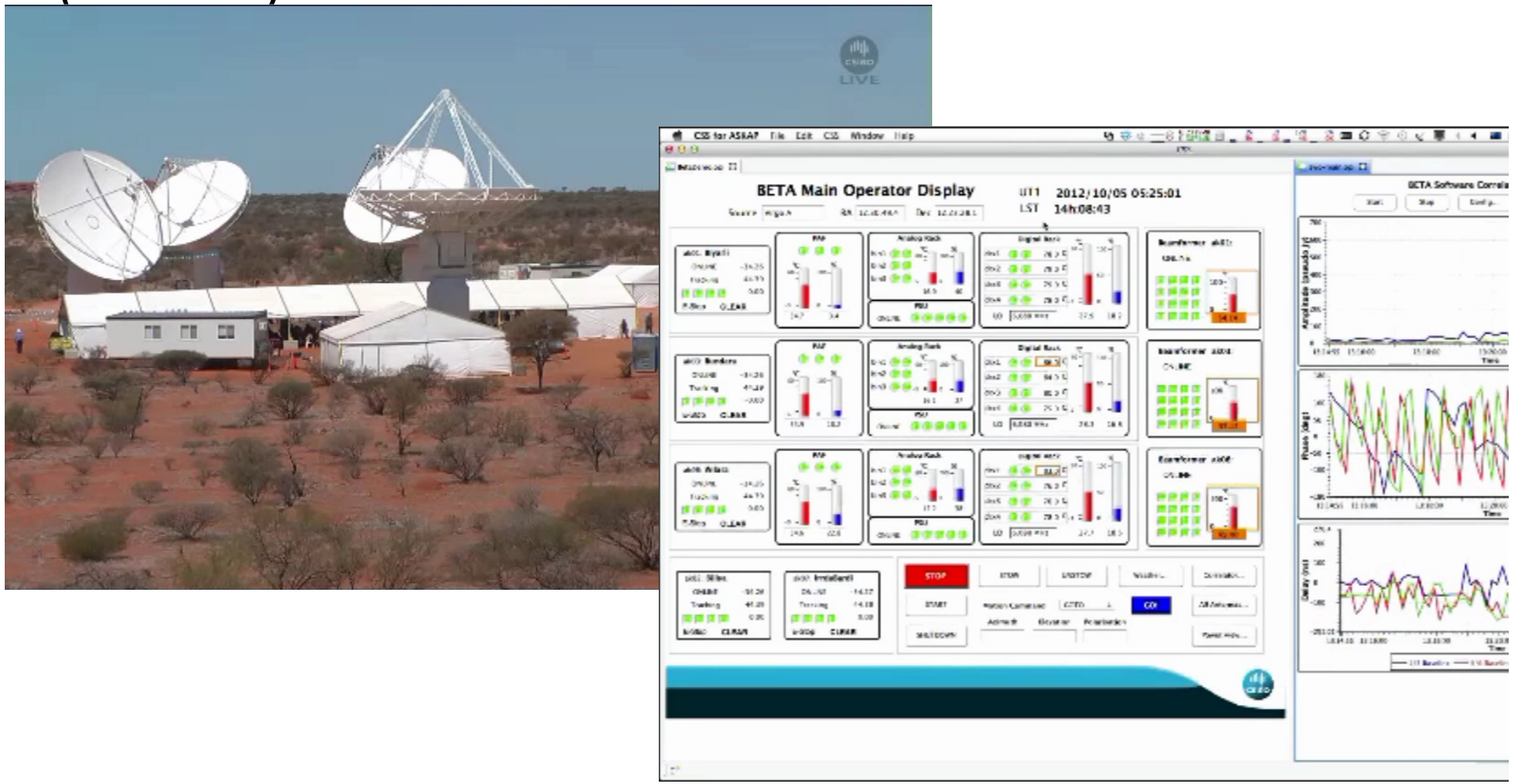
Also

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

.. integrated user-interface tool for Windows, Linux, OS X

What does CS-Studio look like?

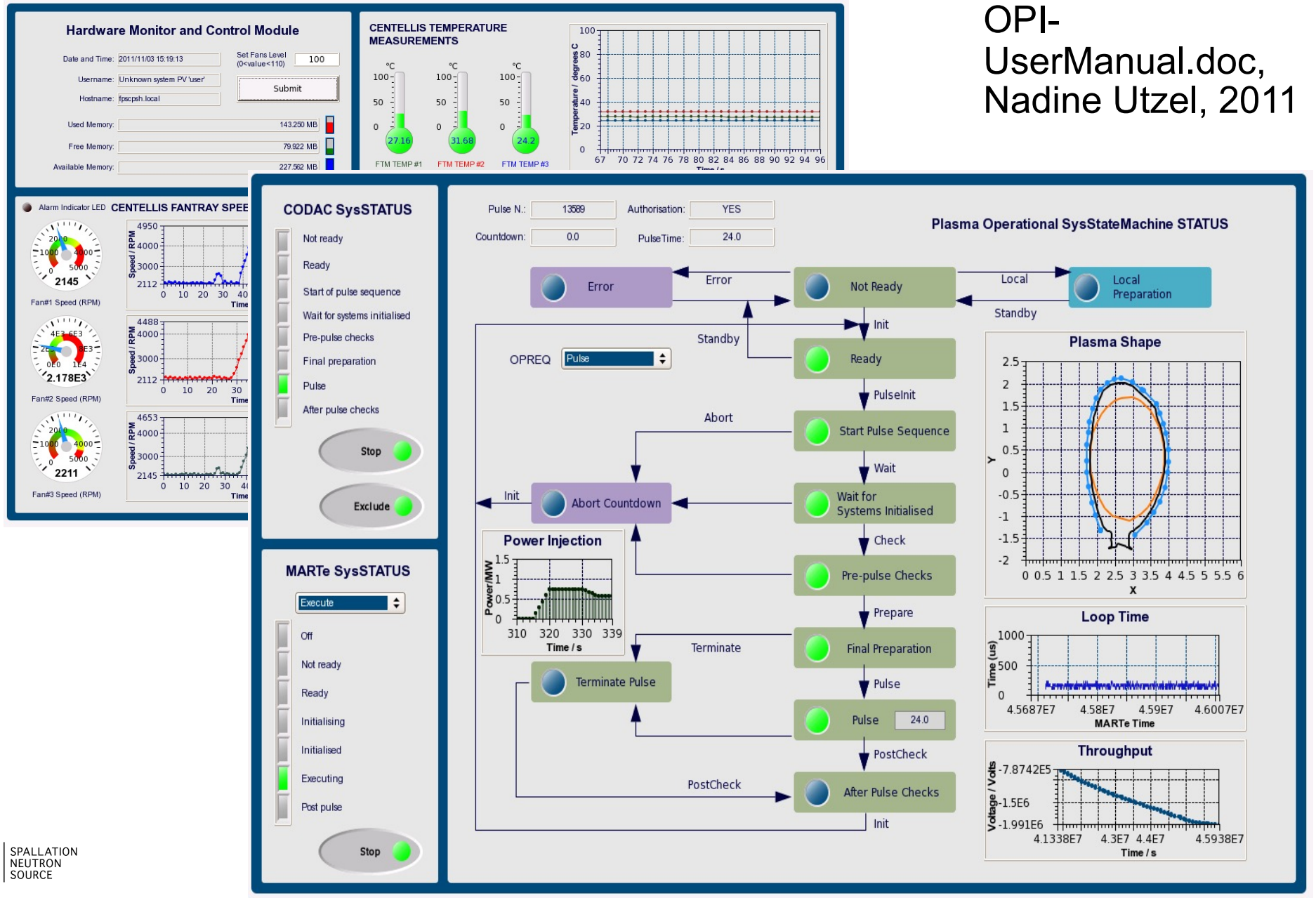
Australian Square-Kilometer Array Pathfinder (ASKAP)



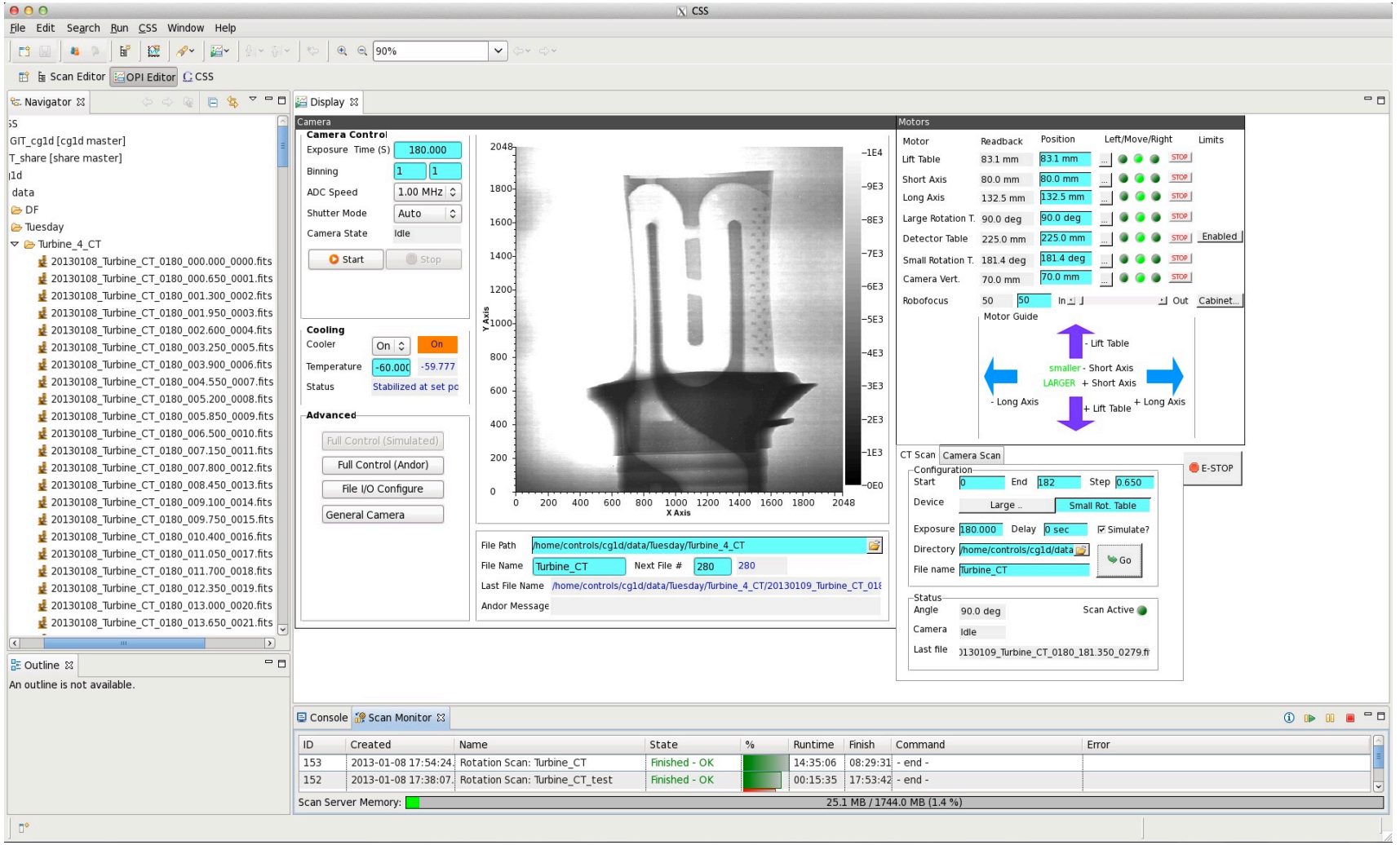
Oct. 2012, Juan Guzman, http://www.aps.anl.gov/epics/tech-talk/2012/msg02113.php

ITER

ITER-FPSC-vBetaVersionPanels OPI-UserManual.doc, Nadine Utzel, 2011

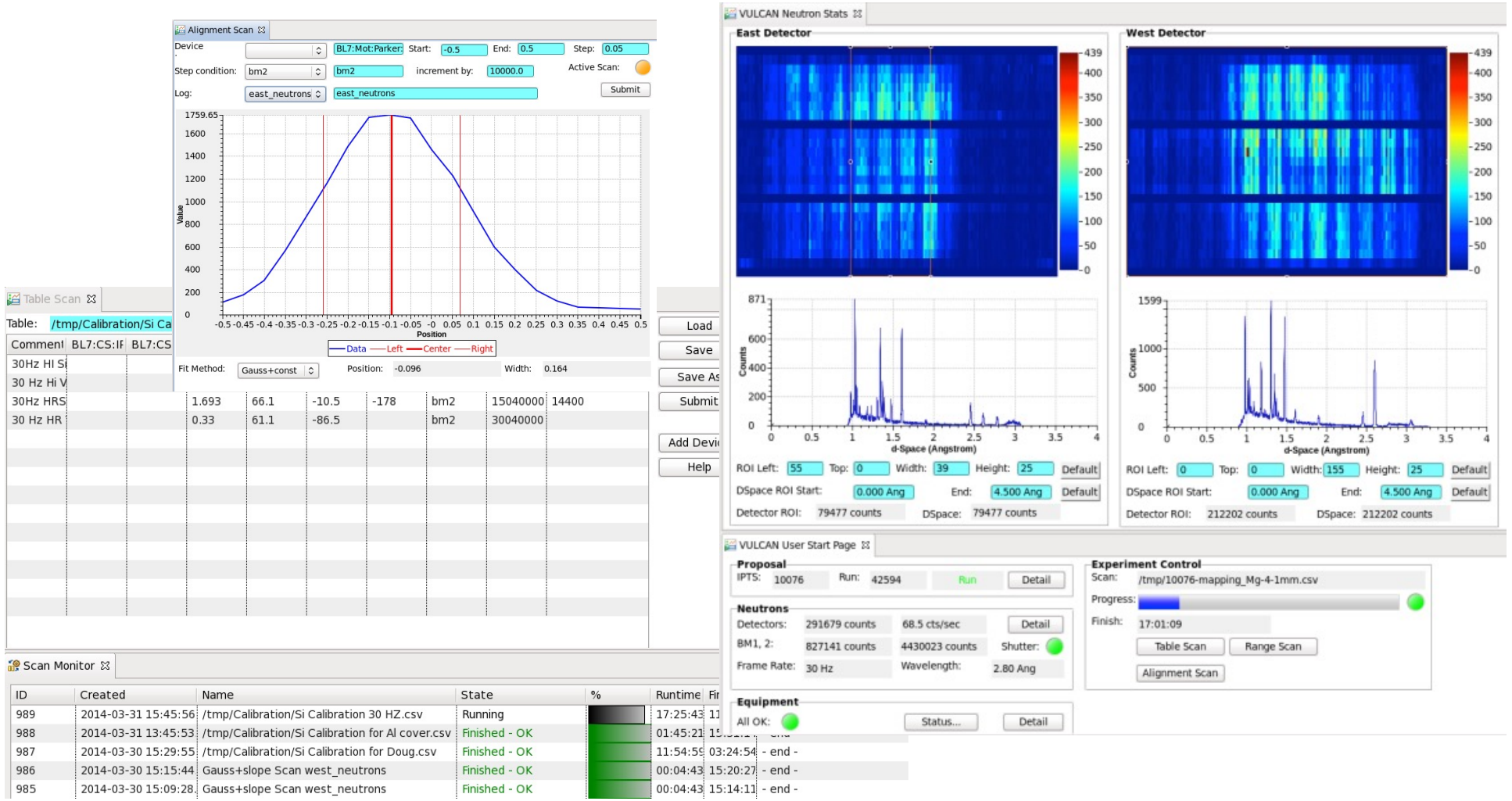


ORNL ‘CG-1D’ Beam Line



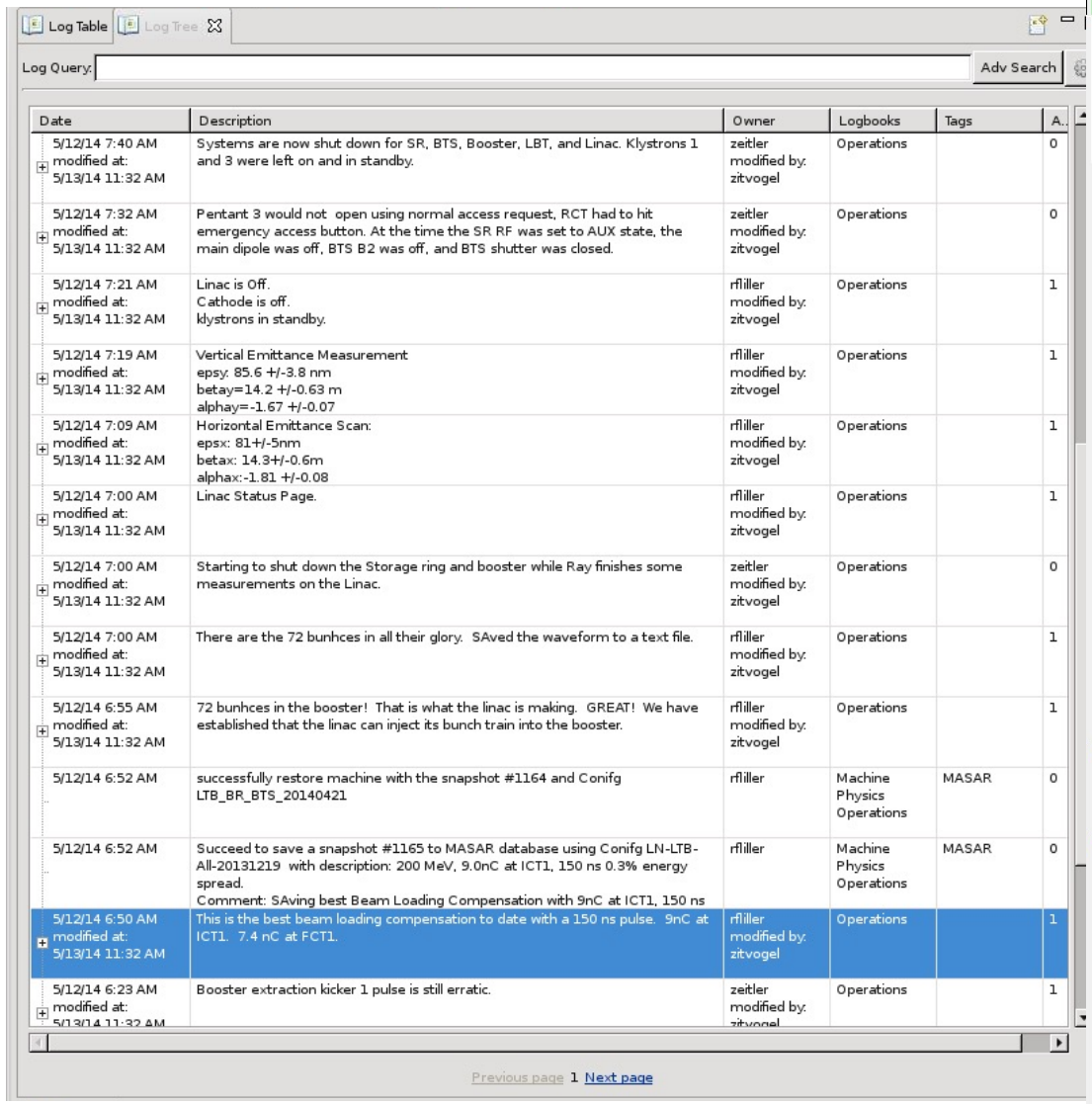
Neutron Tomography, EPICS/CSS since Jan. 2013

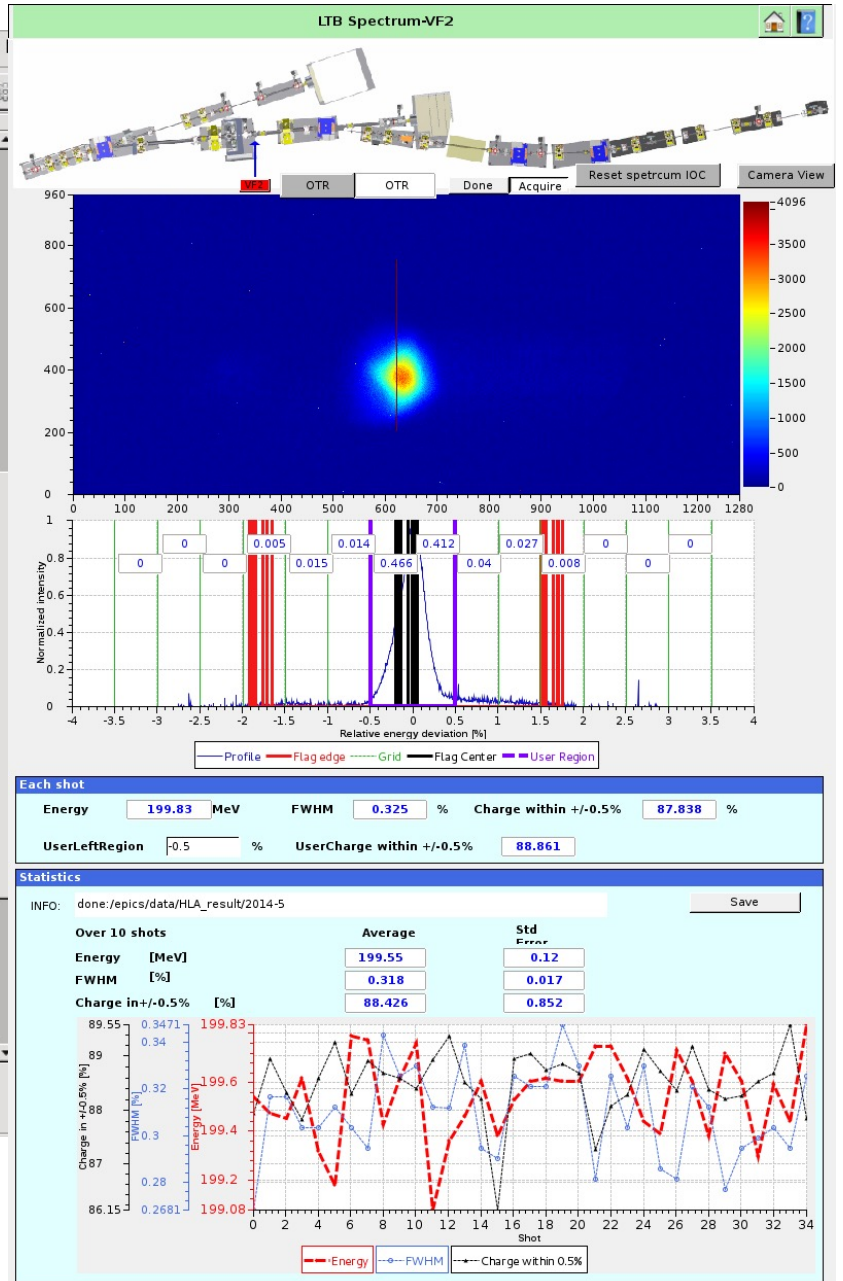
ORNL SNS 'VULCAN' Beam Line



Engineering Diffractometer, EPICS/CSS since March 2014

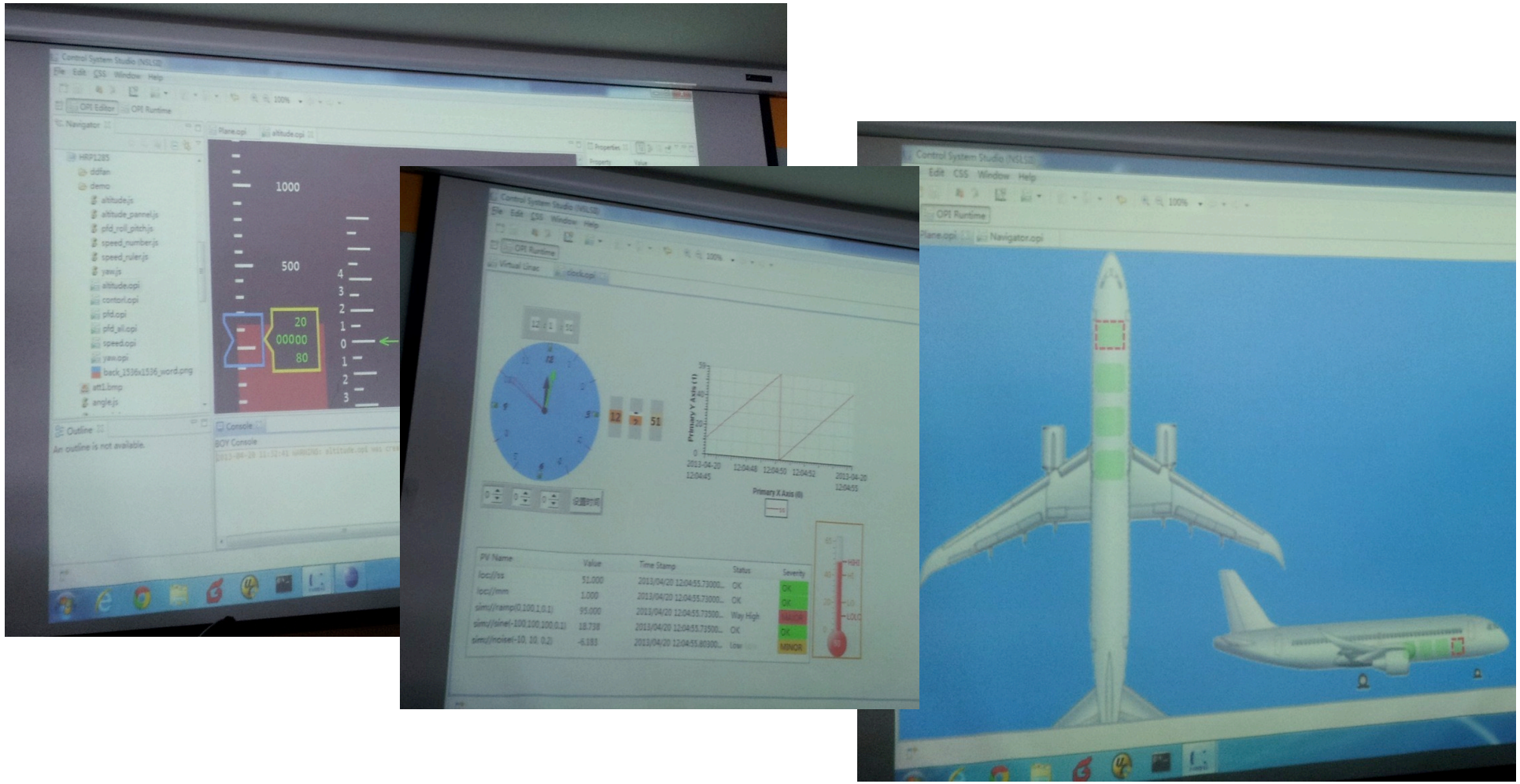
BNL NSLS2





Kunal Shroff, May 2014

Airplane Simulator/Test



Somewhere …

What is CS-Studio?

CS-Studio Components

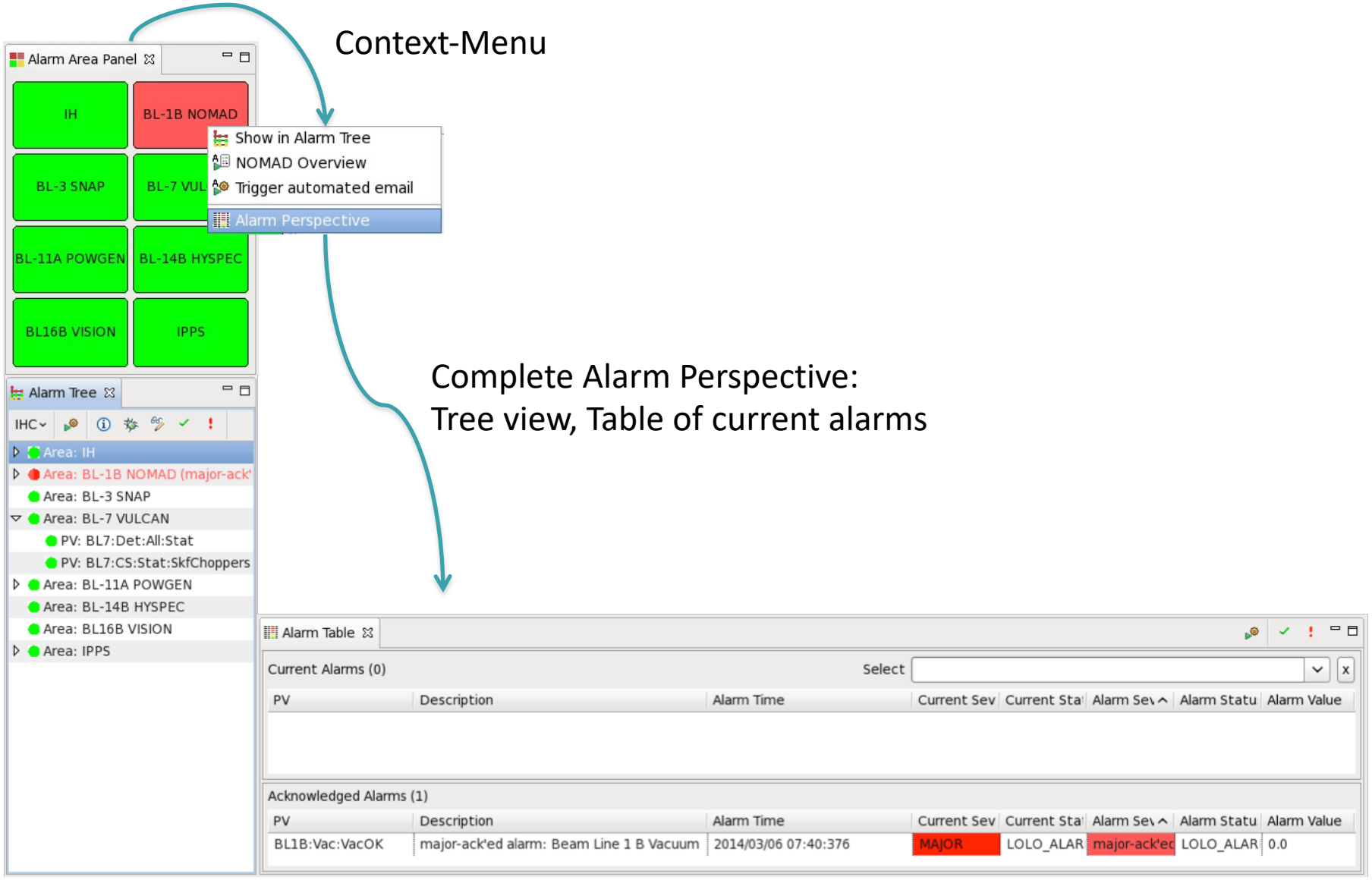
Common Use

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

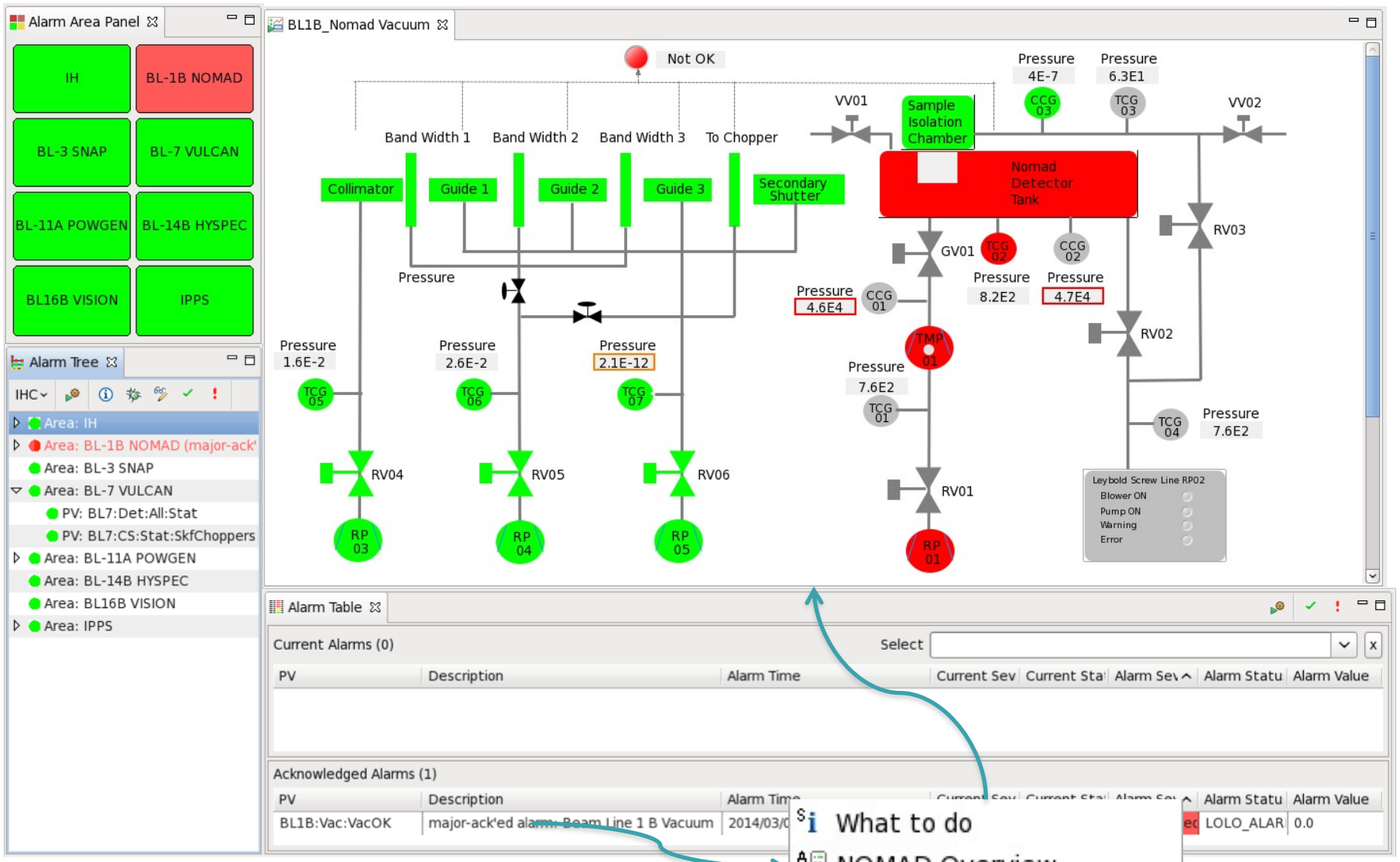
Selected Use

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

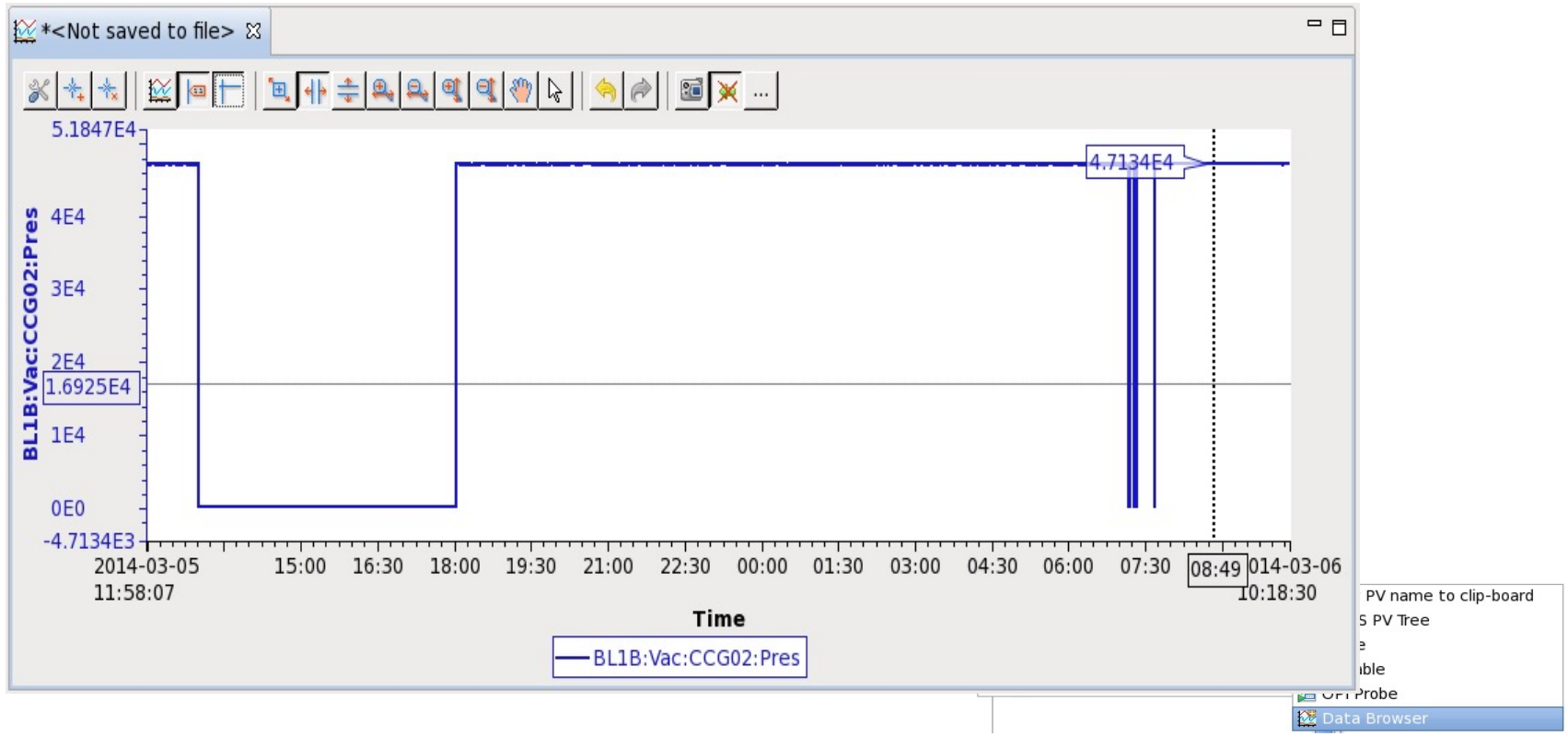
Integration: Alarm…



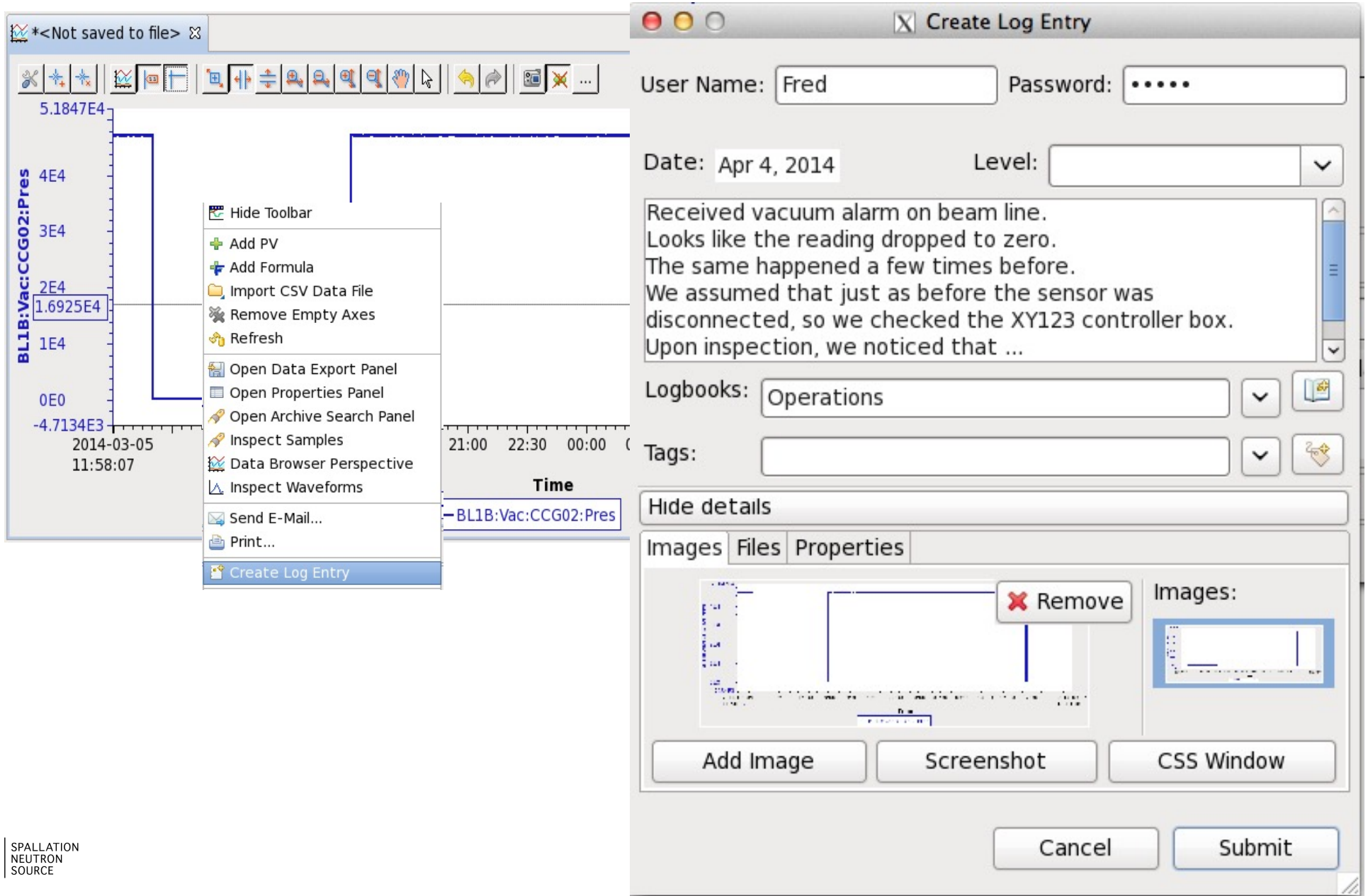
Integration: Alarm…



Integration: Alarm…



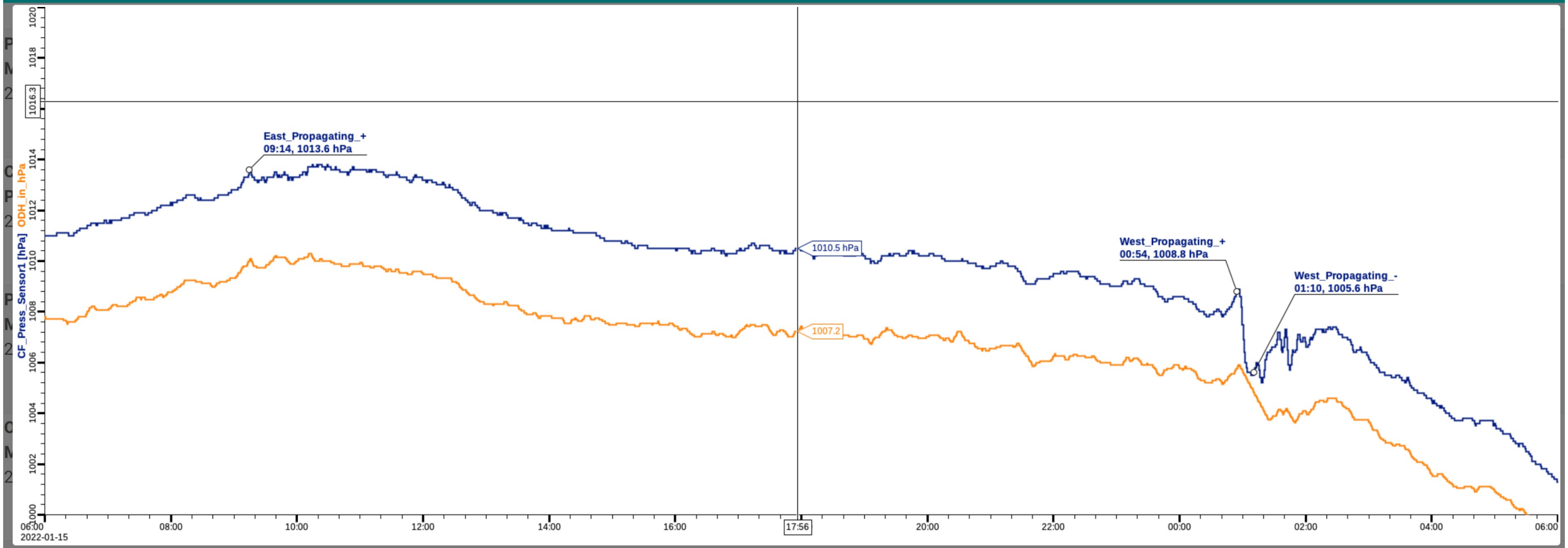
Integration: Alarm…



Integration: From Archive to Logbook

Logbook

Menu



Pressure Transients from Tonga Volcano?
Comments: 37:55.png:
2022-01-18 15:37

Pressure Transients from Tonga Volcano? - Kelly Mahoney

We are actually able to see the global air pressure wave generated by the Tonga-Hunga Ha'apai eruption on some of our atmospheric pressure sensors!
Like official NOAA data, a small pressure wave propagates west to east hitting us a little after 9 am on the 15th and a much larger east to west wave around 1am on the 16th.

- *2022-01-18 15* -

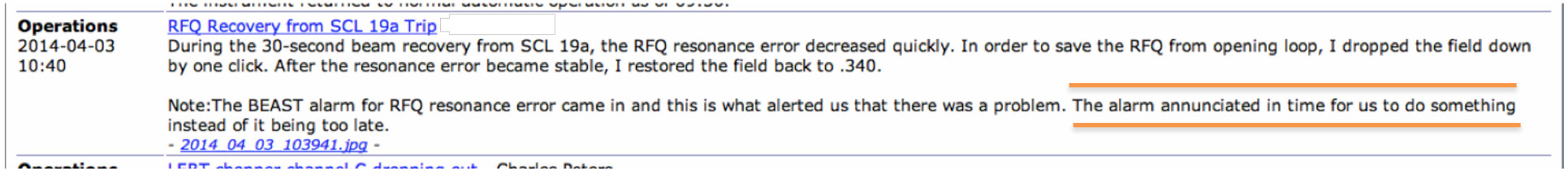
CS-Studio

is a collection of components.

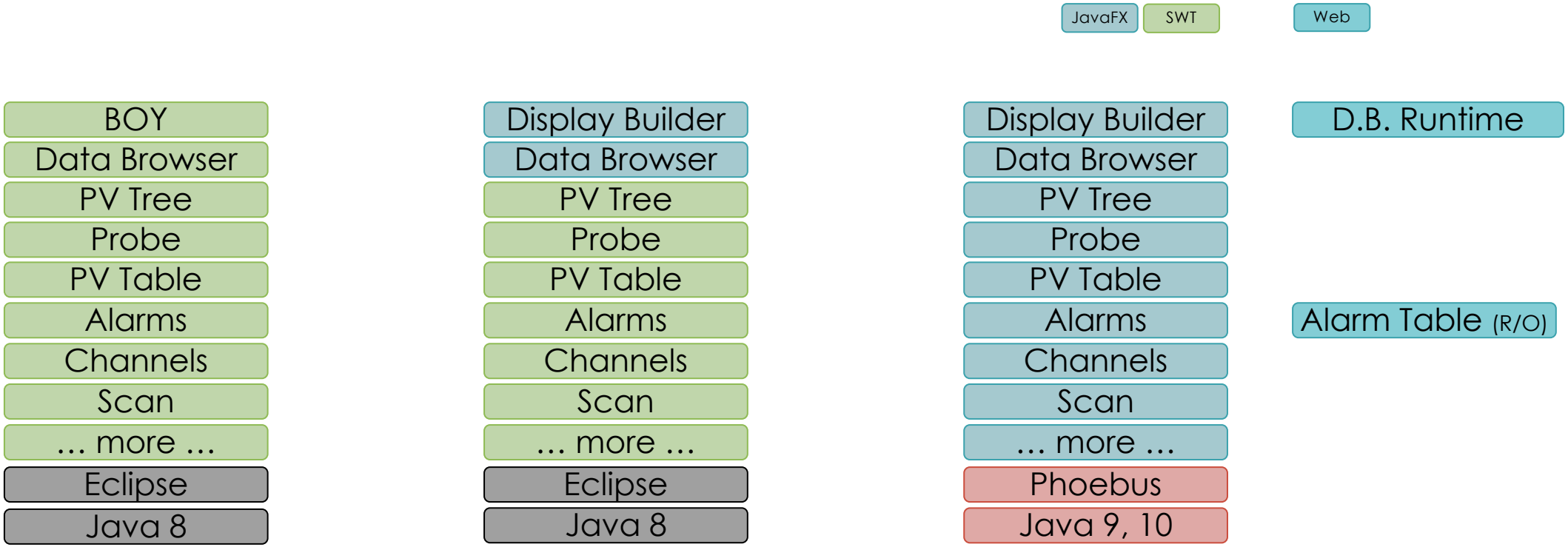
Integrated Workflow:

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

Result:



Evolution of CS-Studio



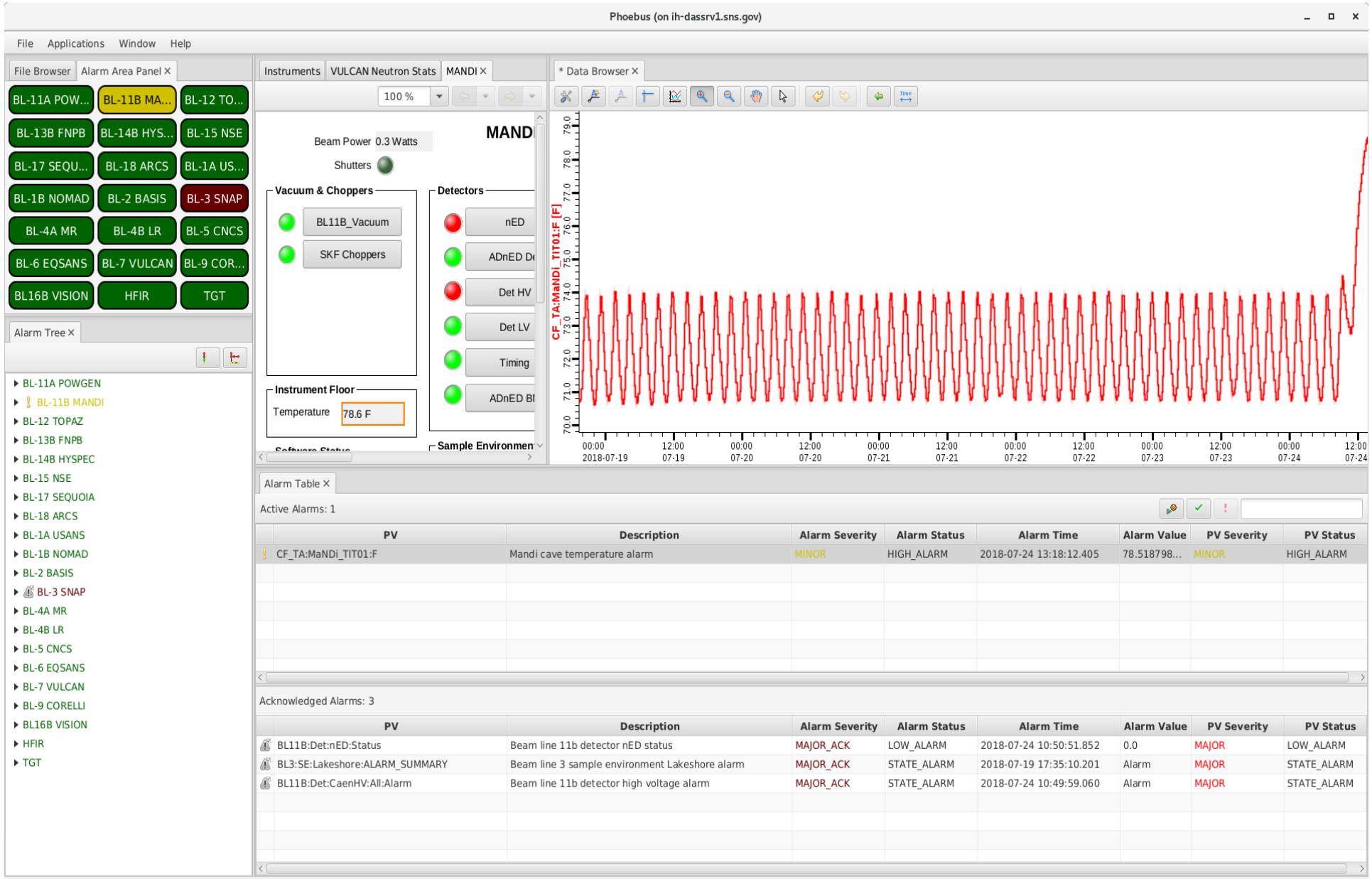
Since ~2010:
Operational at several sites

Since ~2016:
SNS beam lines, planned for ESS

2019:
SNS beam lines
2021:
ESS, ALS, FHI, partially: FRIB, NSLS2

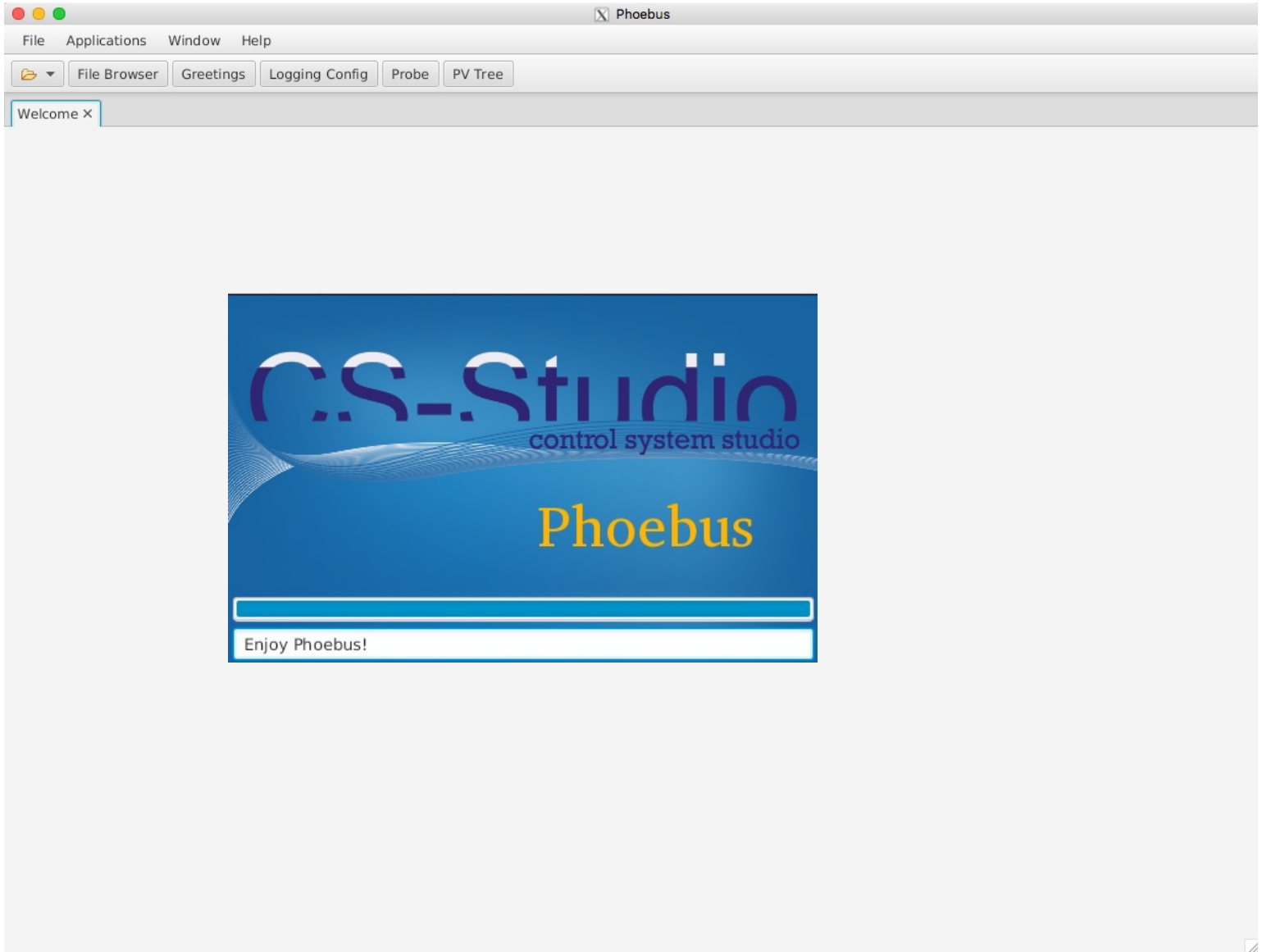
2020:
SNS beam lines

From 2014 to 2018



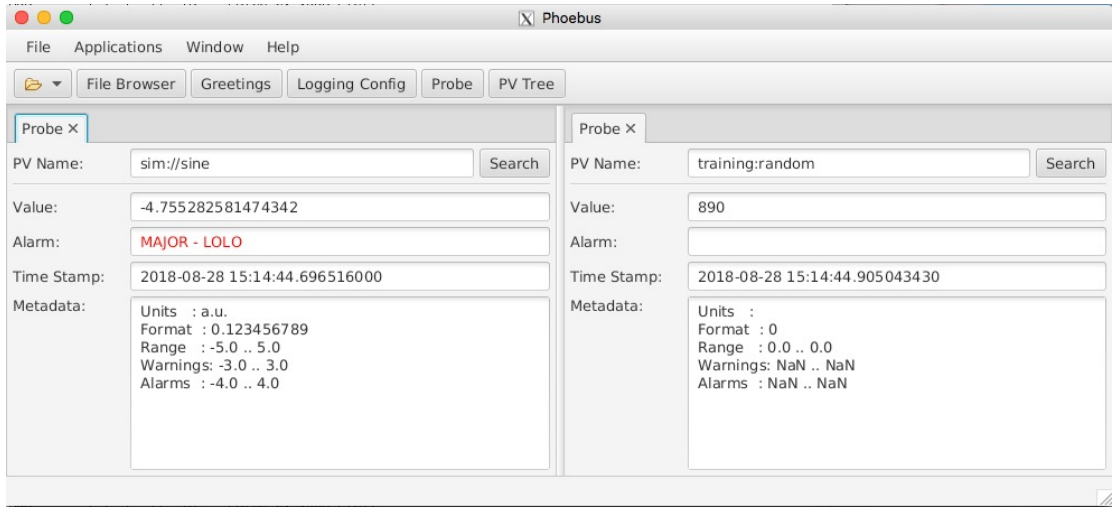
Getting Started with CSS

- Start `css`



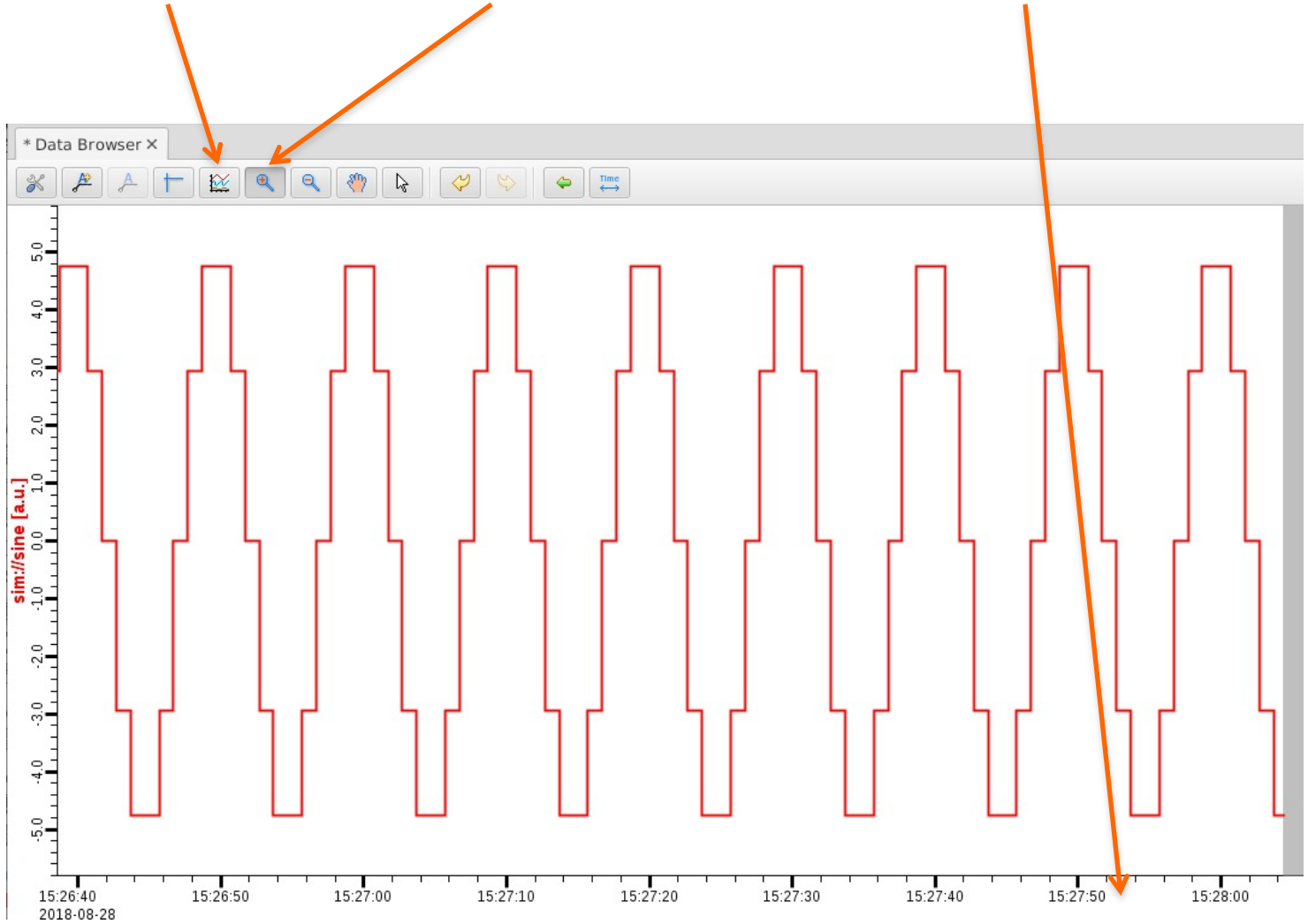
Exercise: Probe

- 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.



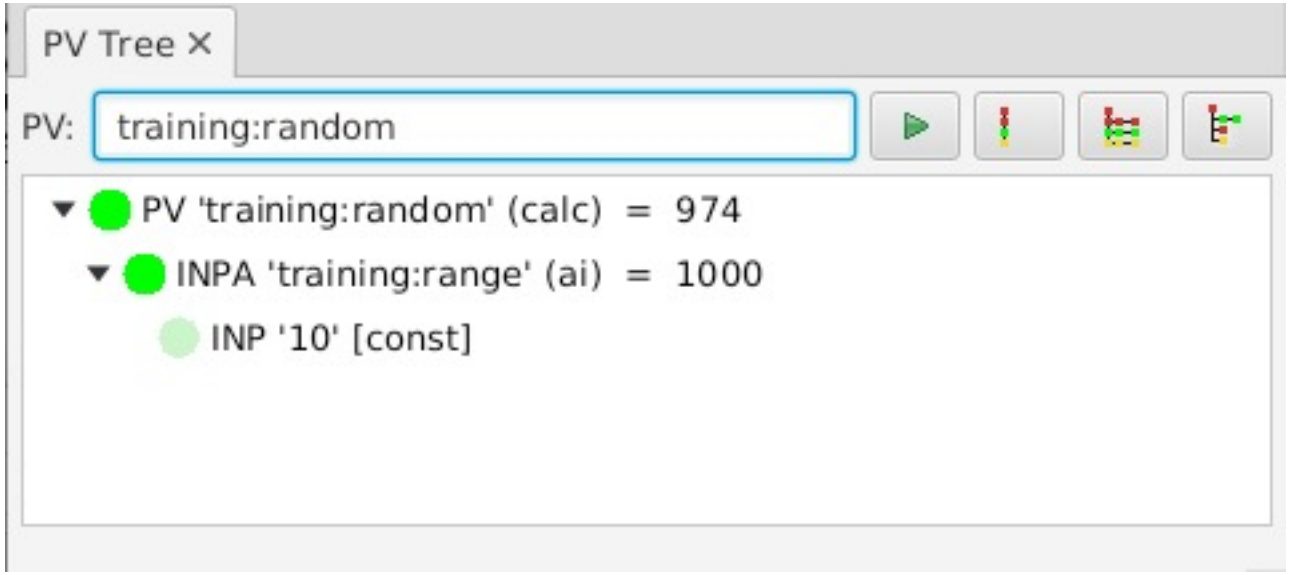
Exercise: Data Browser

- 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”

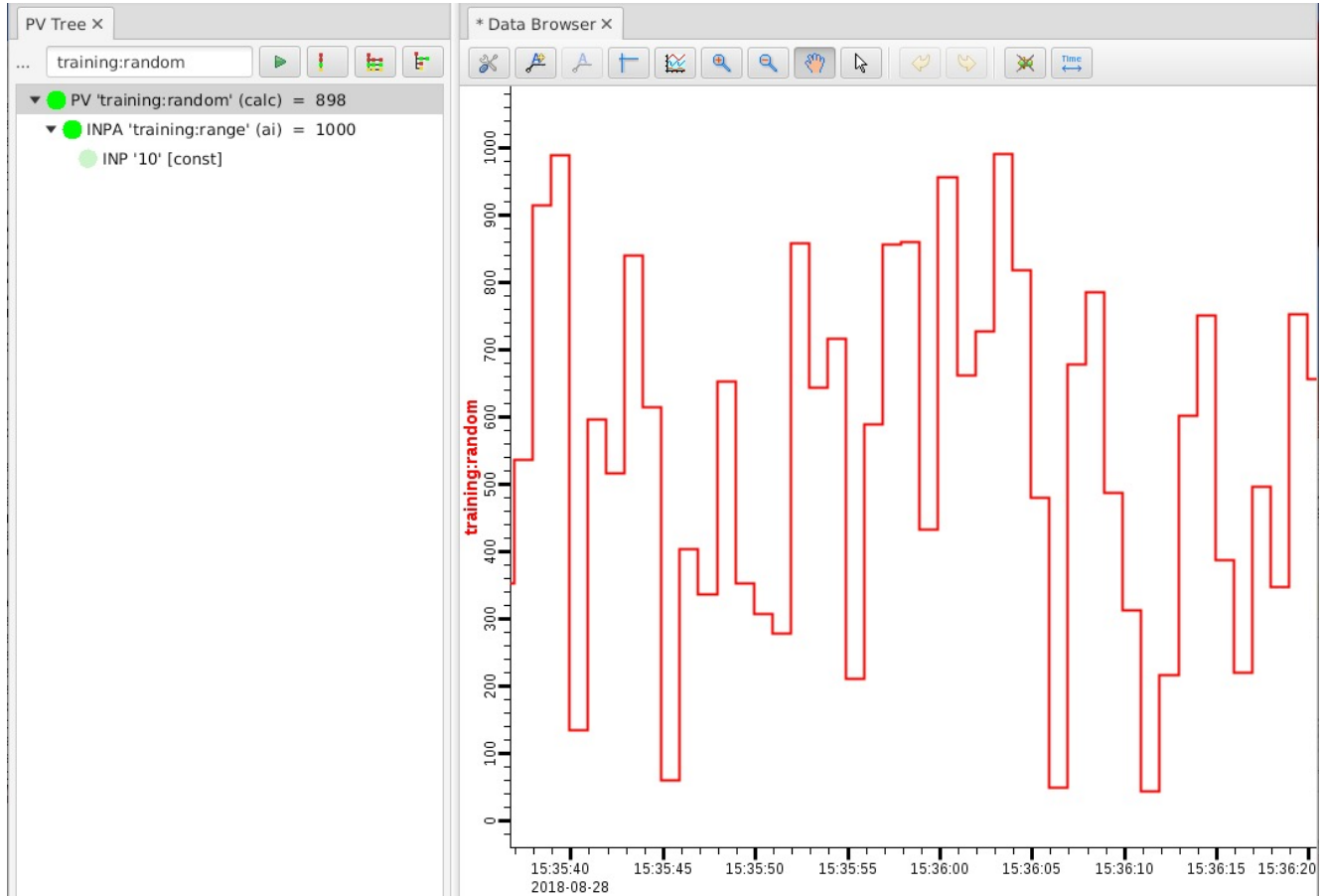


CSS PV Exchange

- 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

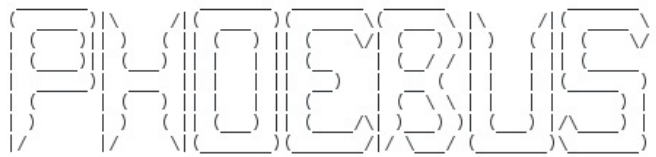
Saved Layout Example

- 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

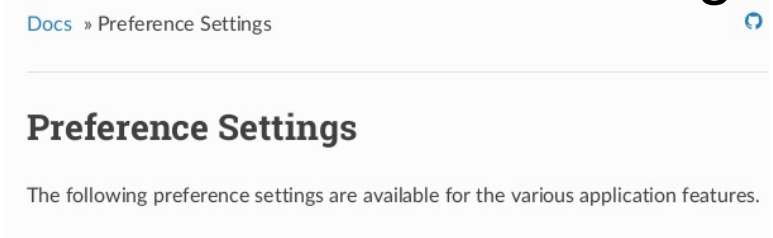
- CSS saves its settings in ~/.phoebus
  - Change that via –Dphoebus.user=/path/to/other/dir on startup
    - Your ‘start’ script could copy certain saved layouts into that dir to share a set of layouts
- For command line settings, run with -help:



```
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
```

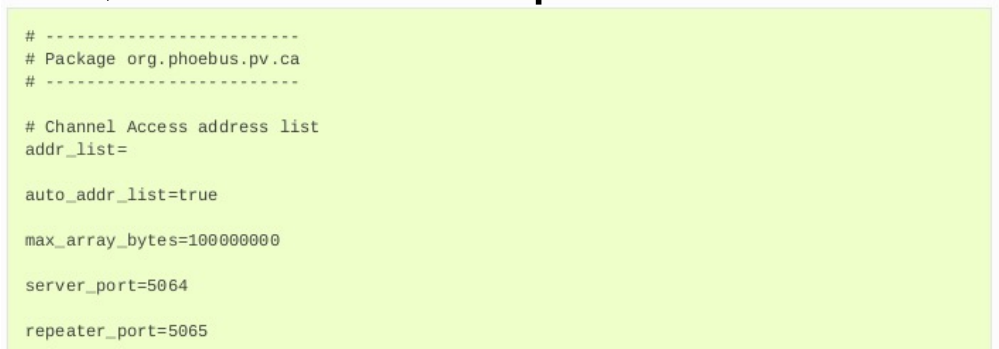
- For details on the ”-settings” file, see online help



Docs » Preference Settings

Preference Settings

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



```
# -------------------------
# Package org.phoebus.pv.ca
# -------------------------

# Channel Access address list
addr_list=

auto_addr_list=true

max_array_bytes=100000000

server_port=5064

repeater_port=5065
```