Phoebus

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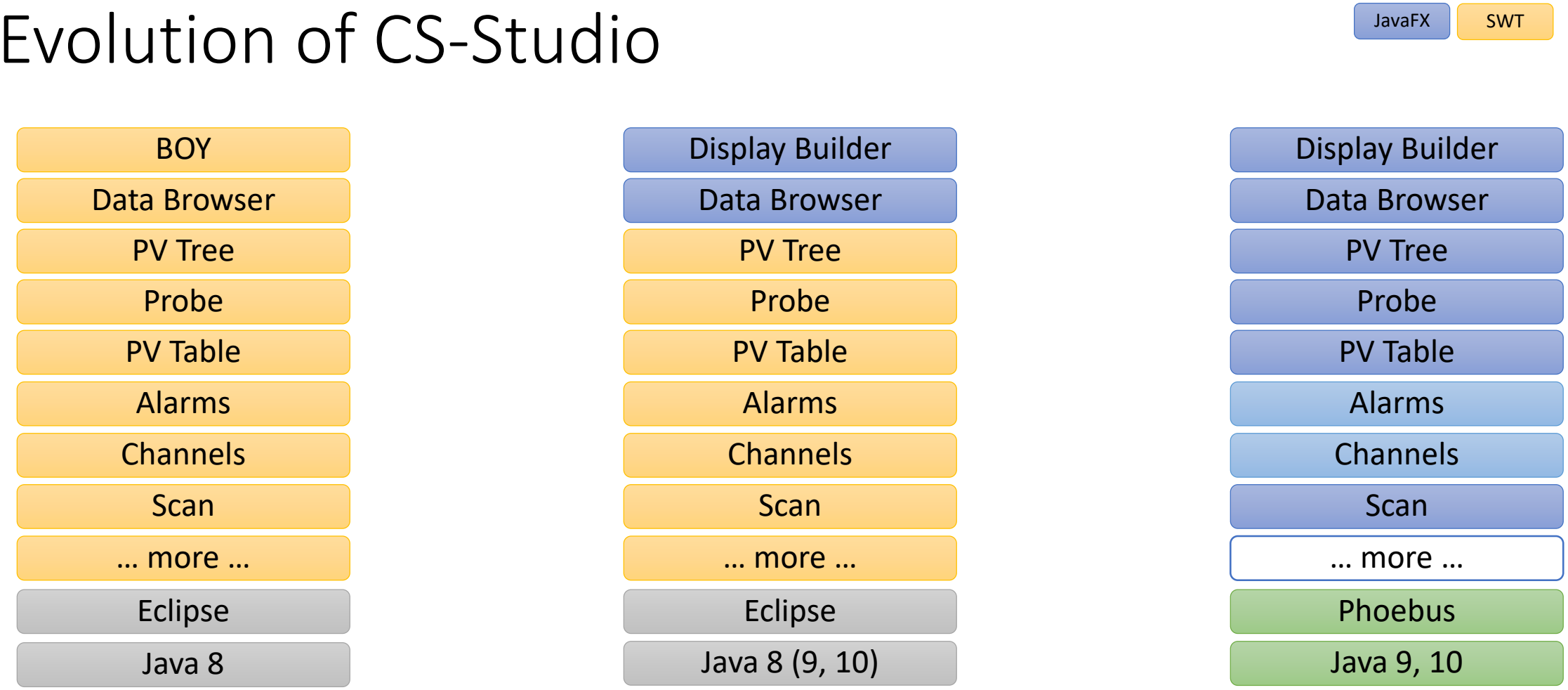
Key CS-Studio Feedback, Developers & Users

✓Useful Applications

✓Nice Integration

- Fragile, long build process (>30 minutes!)
- Hard to create site-specific “Product”
- Awkward, haphazard window & workspace environment

Evolution of CS-Studio



Since ~2010:
Operational at several sites

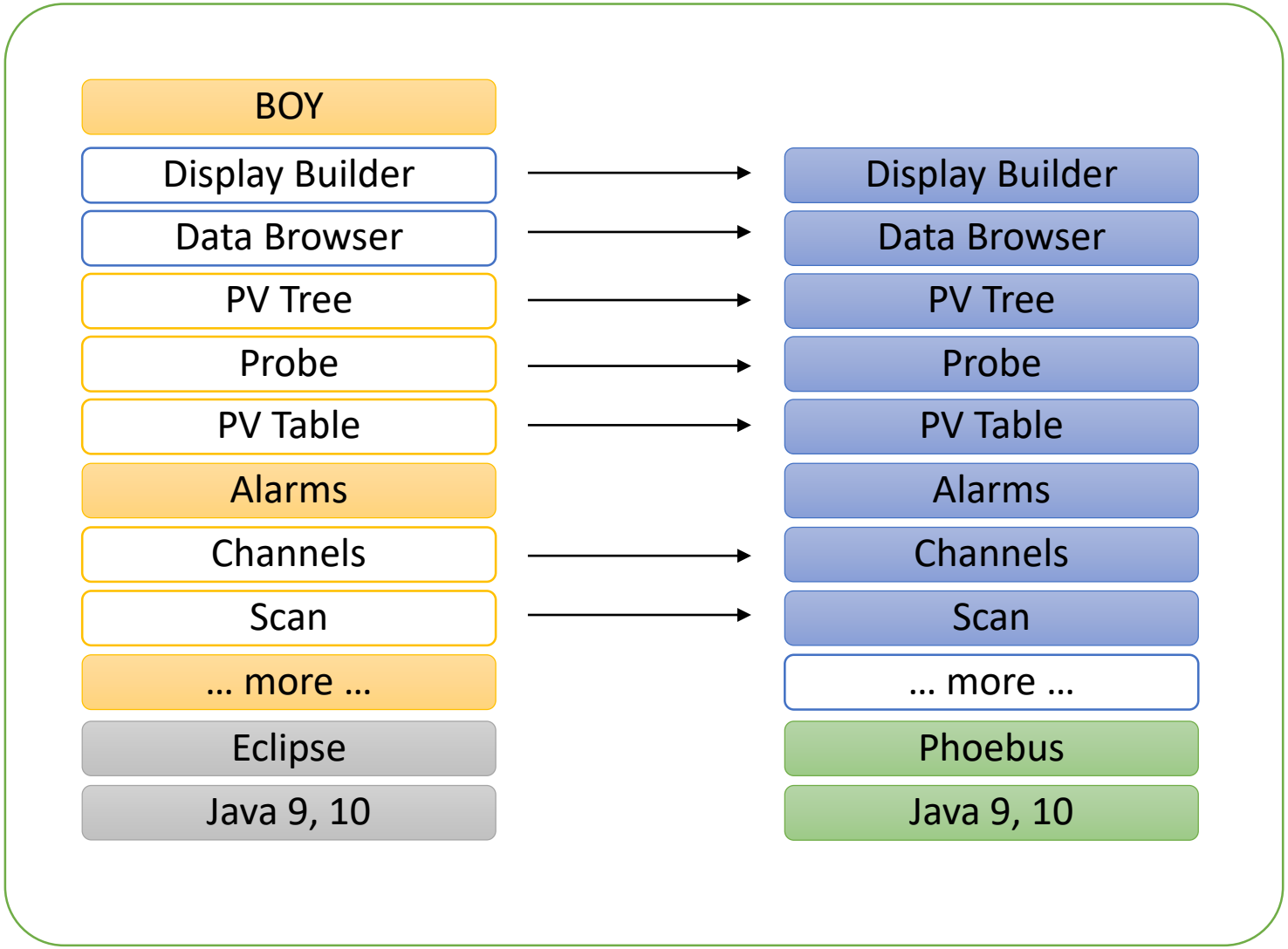
Since ~2016

First release
end of 2018

Combined Product

One download

Invoking certain functions in CS-Studio/RCP will start that component in CS-Studio/Phoebus



CS-Studio: Since ~2006 based on eclipse

- Great at the time:
  - Build Setup
  - Module System
  - Preferences
  - Extensibility
  - Graphics … but there are now (better) alternatives

- Strong ties to IDE
  - Awkward layout constraints for control system user interface
  - “Workspace” that’s different from the file system
  - Odd menu entries that we don’t need

From Eclipse to Phoebus

• Tycho/Maven build setup	→	Maven or ant
• OSGi bundles	→	Jar files, maybe later Java 9 modules
• RCP Extension Points	→	Java Services
• RCP Preferences	→	Java Preferences
• SWT	→	JavaFX
• Workspace	→	File System
• RCP Workbench	→	Phoebus “Docking”

“Phoebus”

- eclipse shadowed Sun microsystems

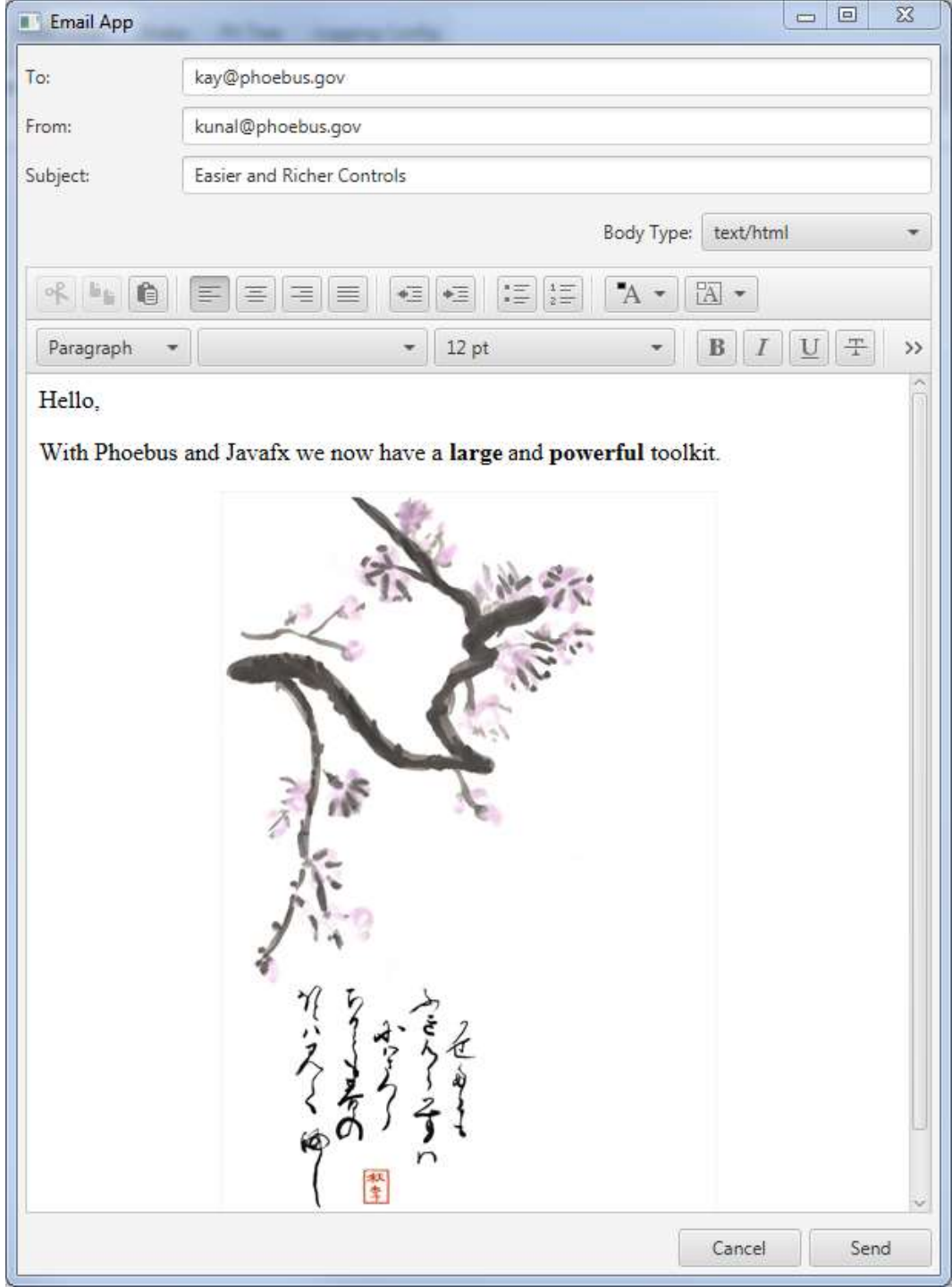
- Phoebus (Greek for “bright”)
  = Apollo as God of Light

SWT vs. JavaFX

SWT used to be better than AWT

AWT/Swing caught up,
SWT now only used by Eclipse

➔ JavaFX is the latest Java-based UI



Building..

CS-Studio on Eclipse

- Maven/tycho
- Network dependencies
- Full rebuild takes >30 minutes
- Monthly cannot-build-at-all problems
- Must use Eclipse to develop

CS-Studio on Phoebus

✓Maven or ant

✓Can build from git clone + 1 ZIP

✓Full rebuild takes ~20 seconds (!)

✓Can (& still want to) use Eclipse to develop, but also Netbeans, VI, ..

Startup Times

- CS-Studio on Eclipse: 8 secs
  (details depend on what's being restored)

- Open files from command line:
  Only display files.

  Not always finding the running instance because needs to locate window.

- Phoebus: 4 secs
  (for a similar collection of panels)

- phoebus.sh -resource ..
  Open display files,
  or probe, PV Table, .. with PVs.

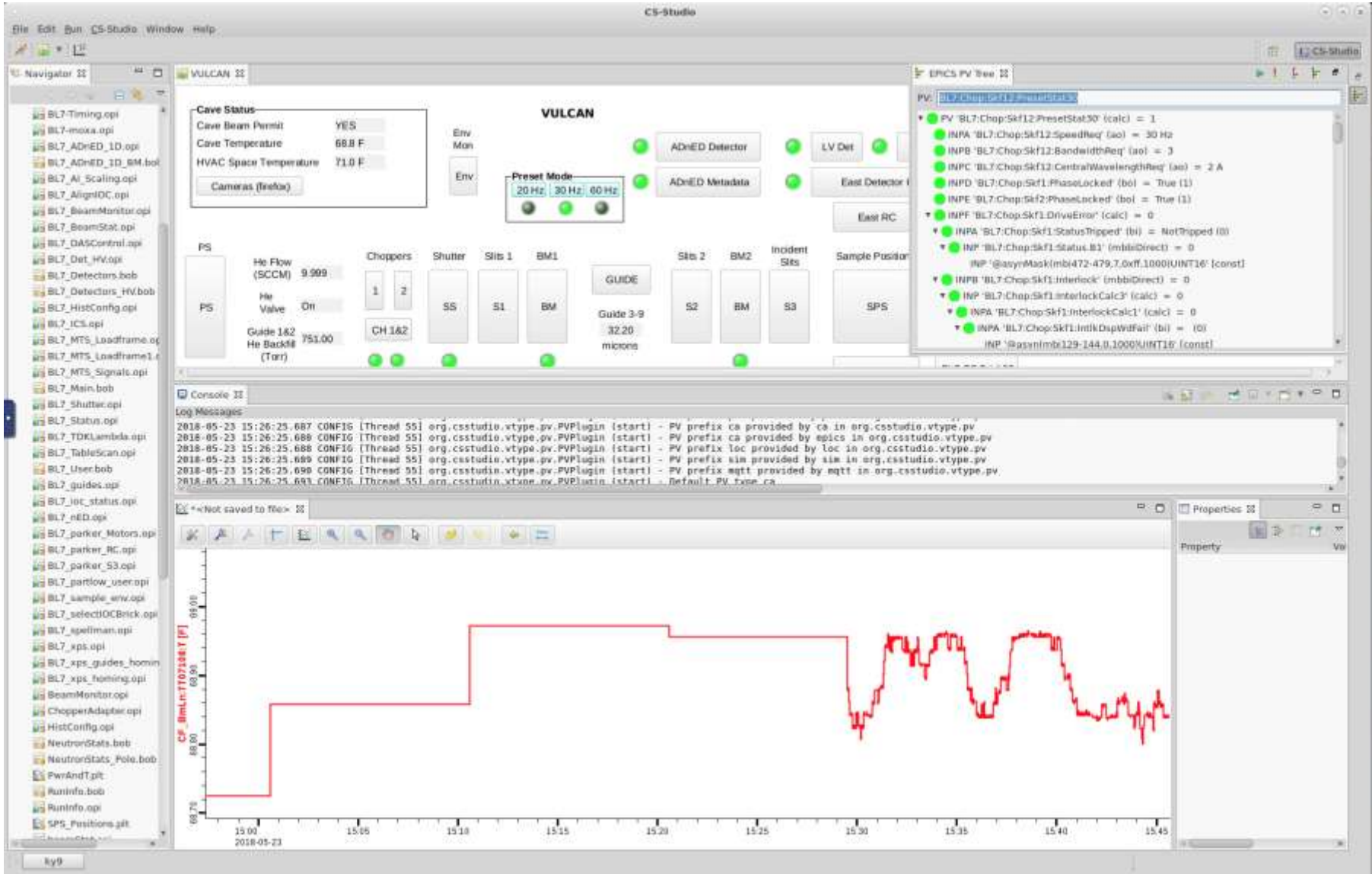
  Succeeds because connects to TCP port.

Eclipse: Little control where new panels open

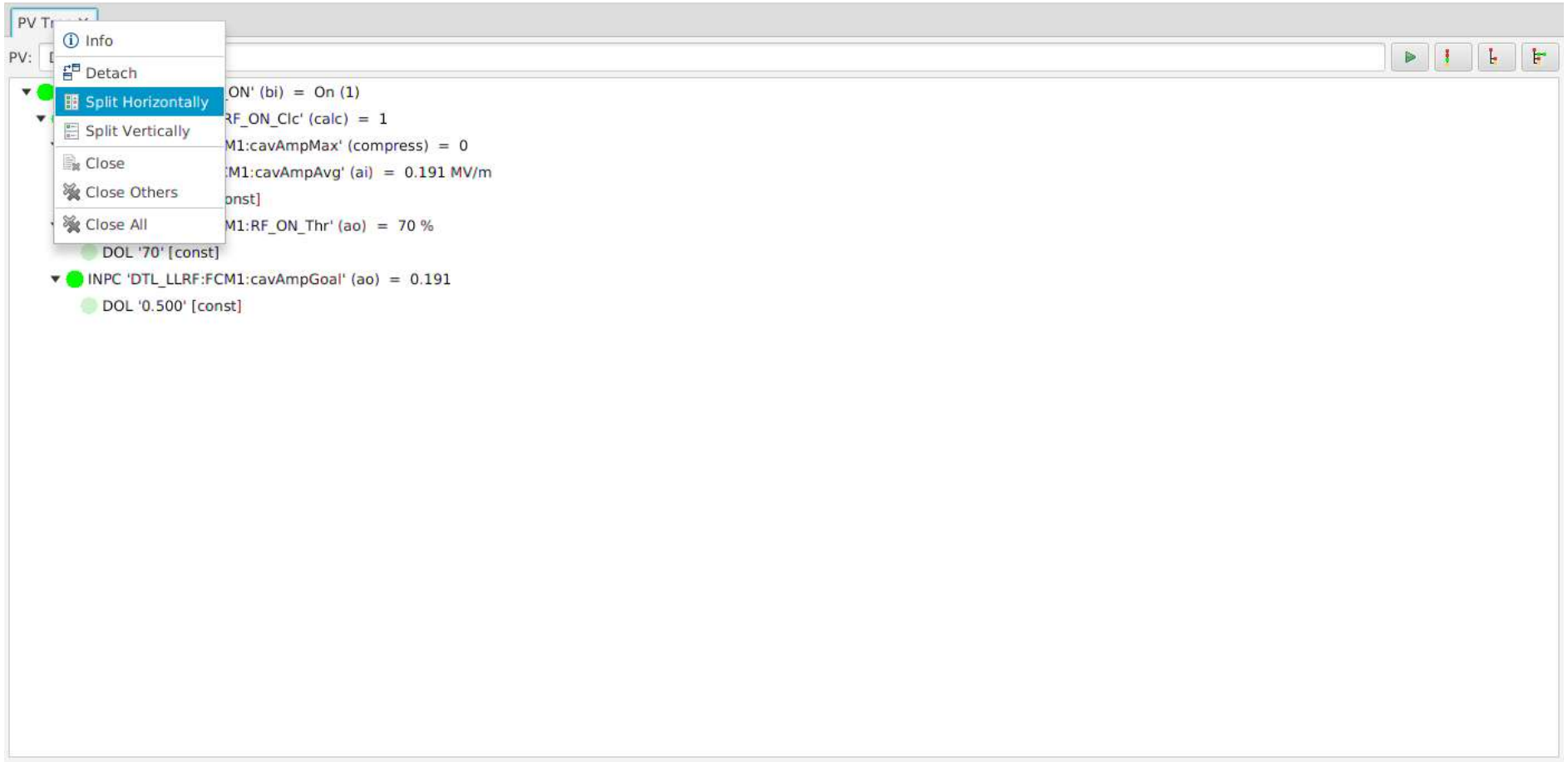
Floating ‘Quick view’ panels?

Console in middle?

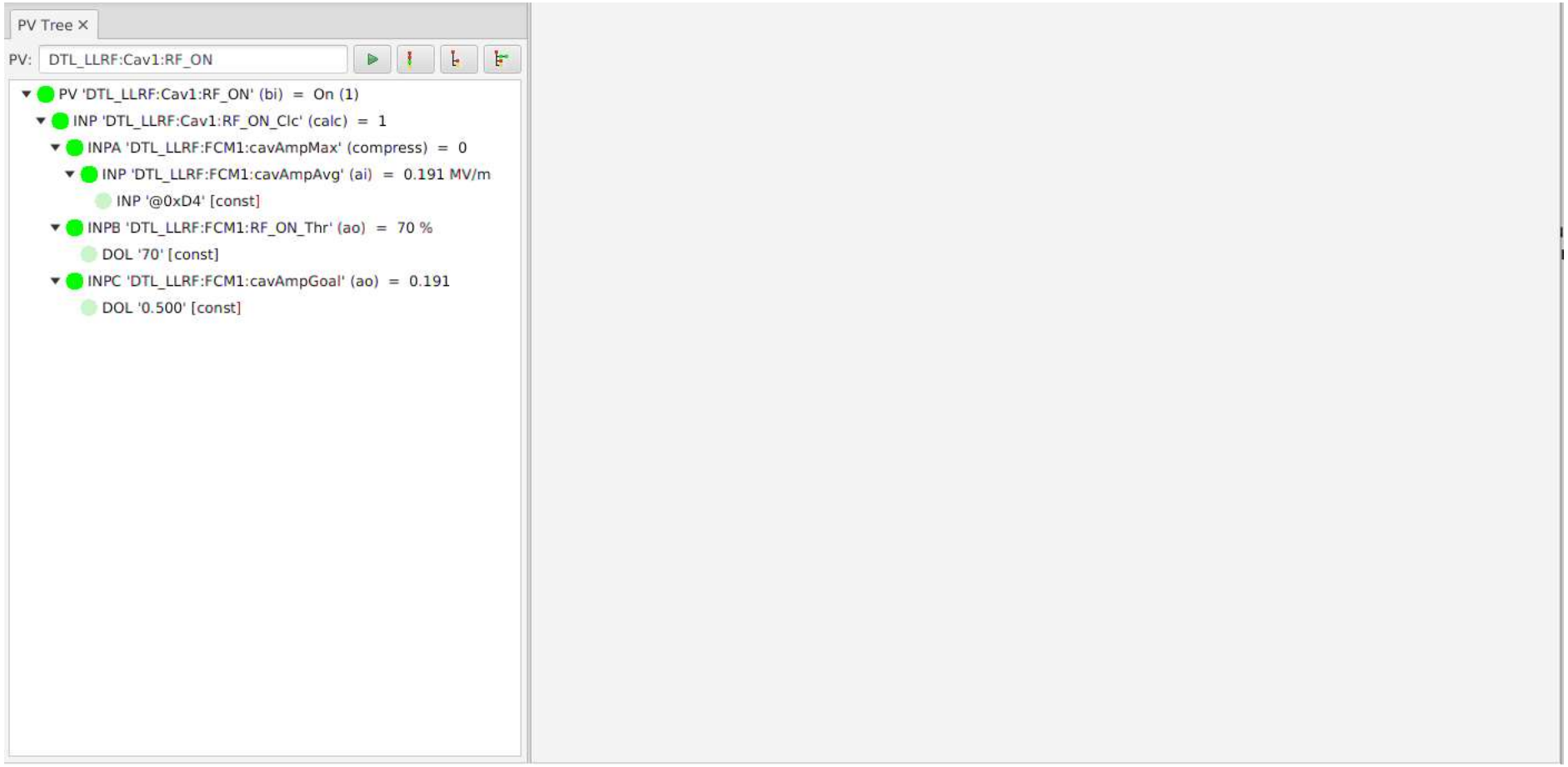
Empty Properties?



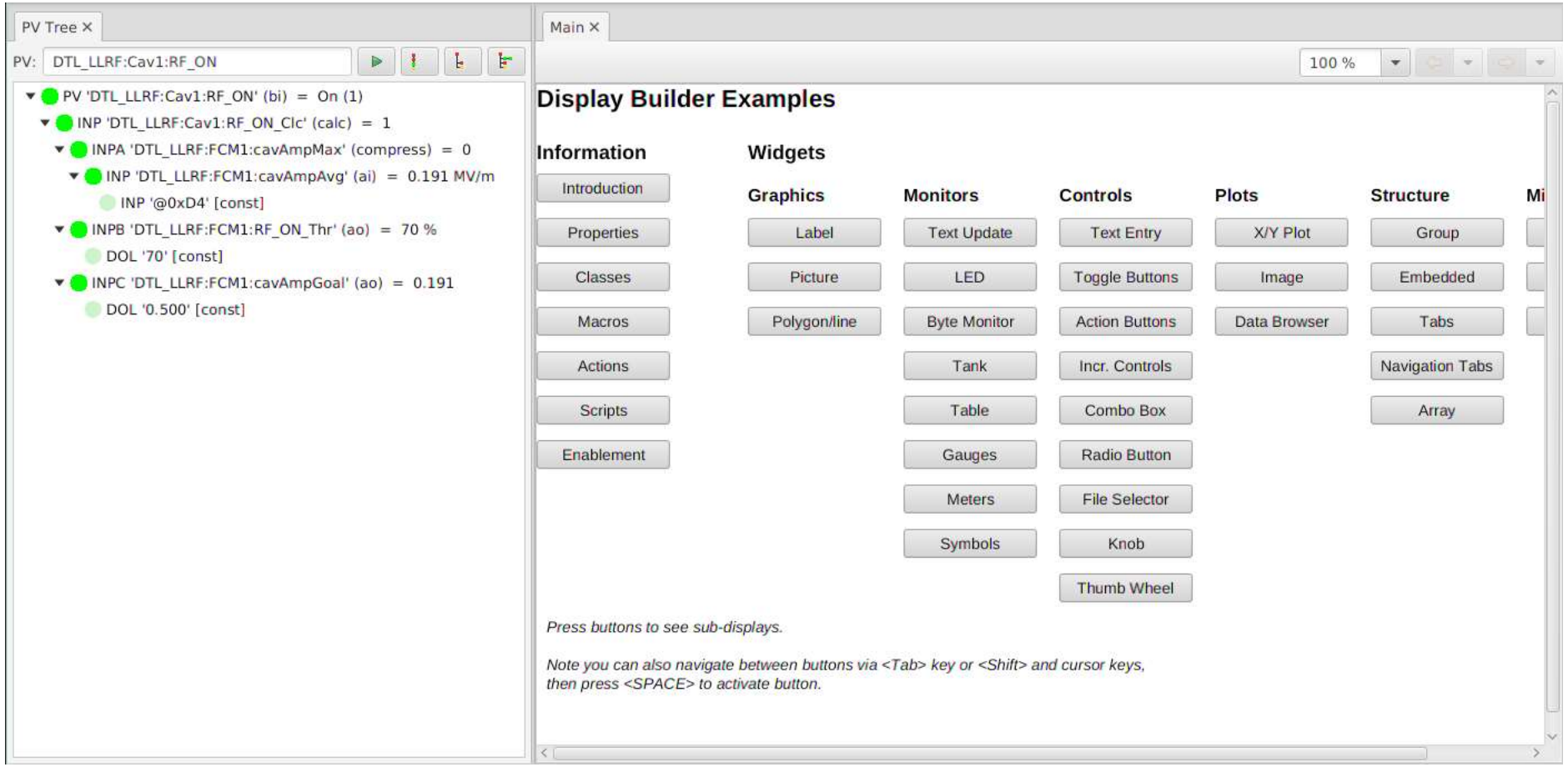
Docking: Like Tabs in web browser, plus “split” and “detach”



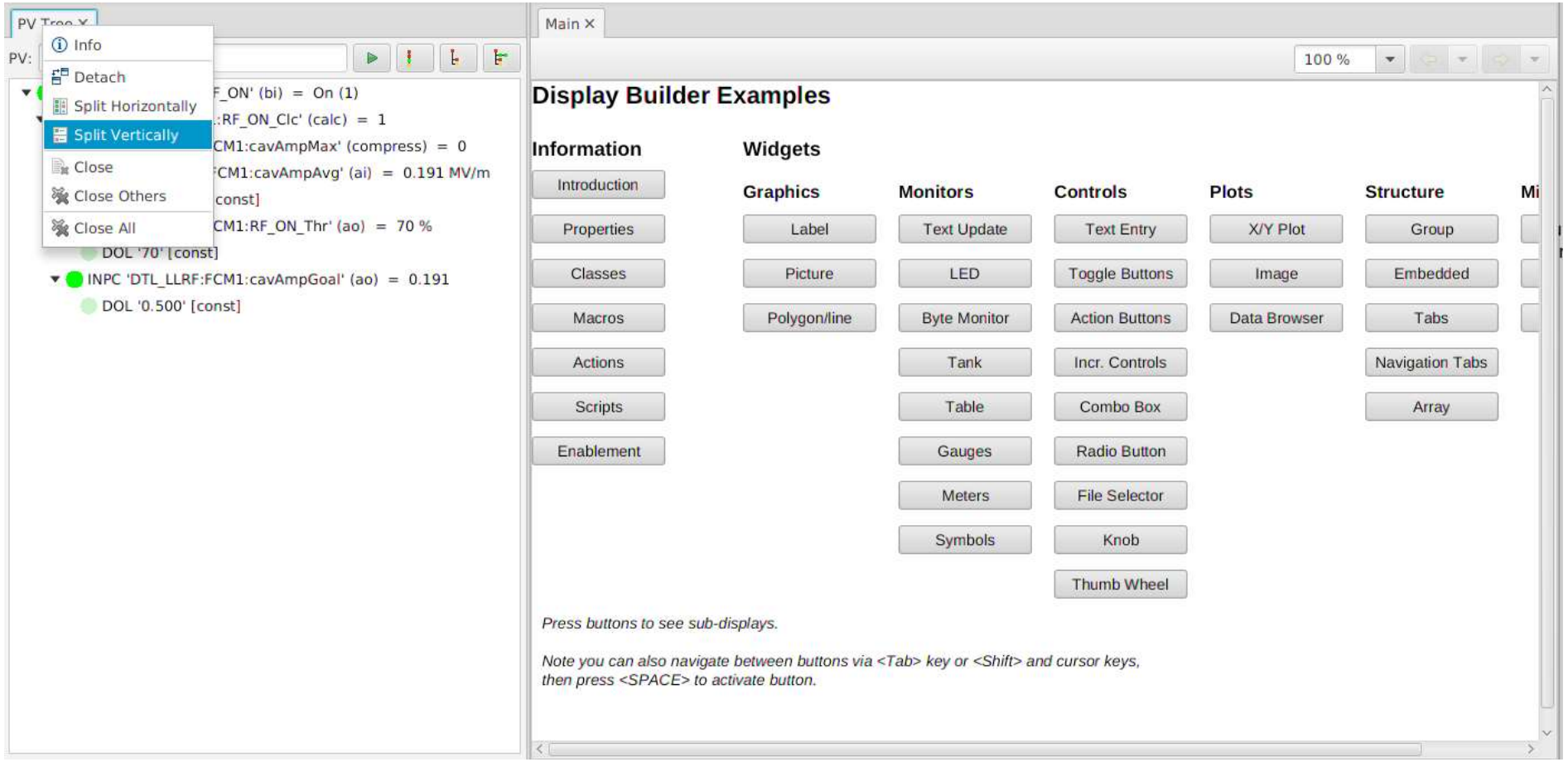
Window with horizontal Split



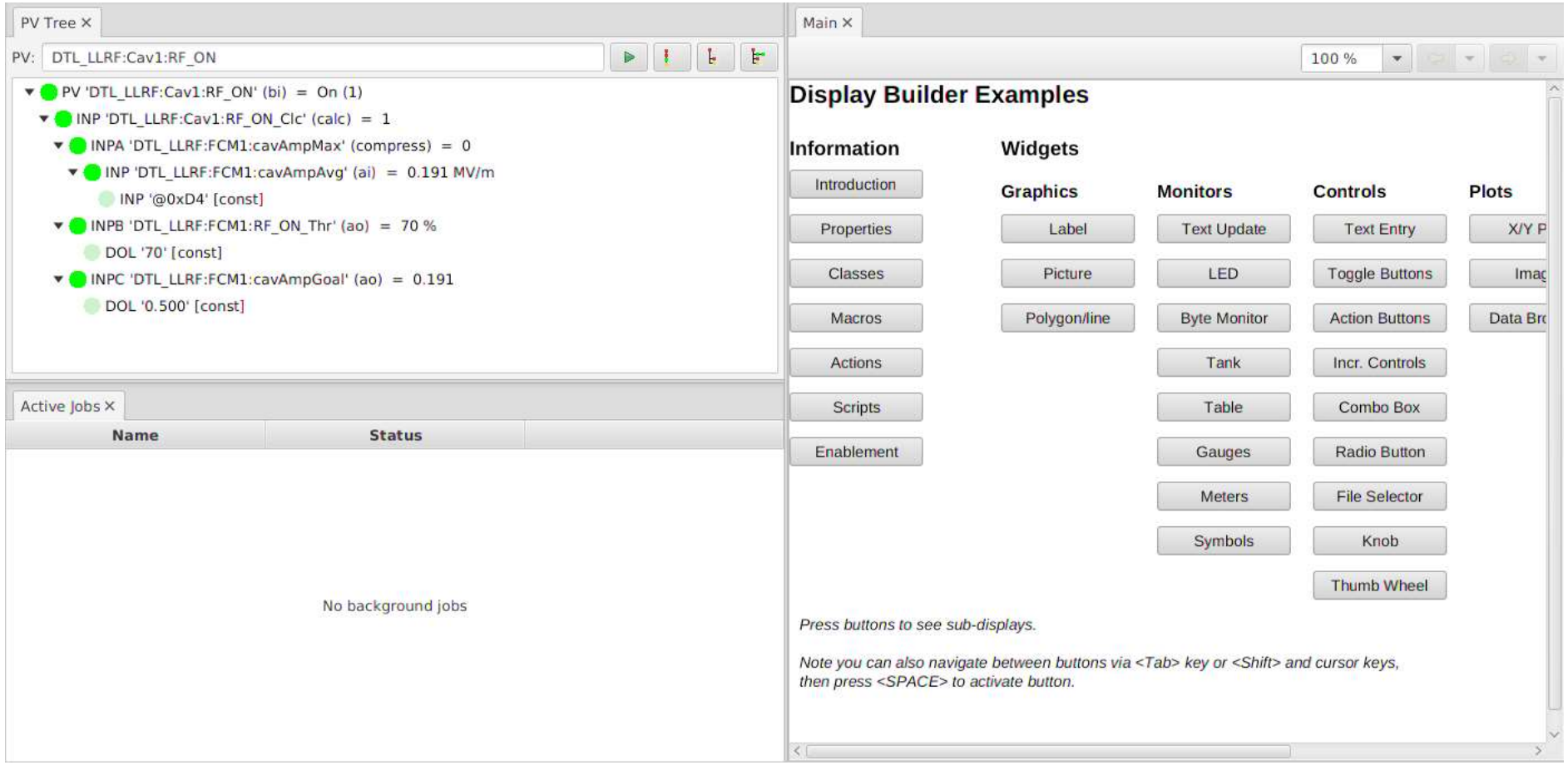
.. Added tab to new section



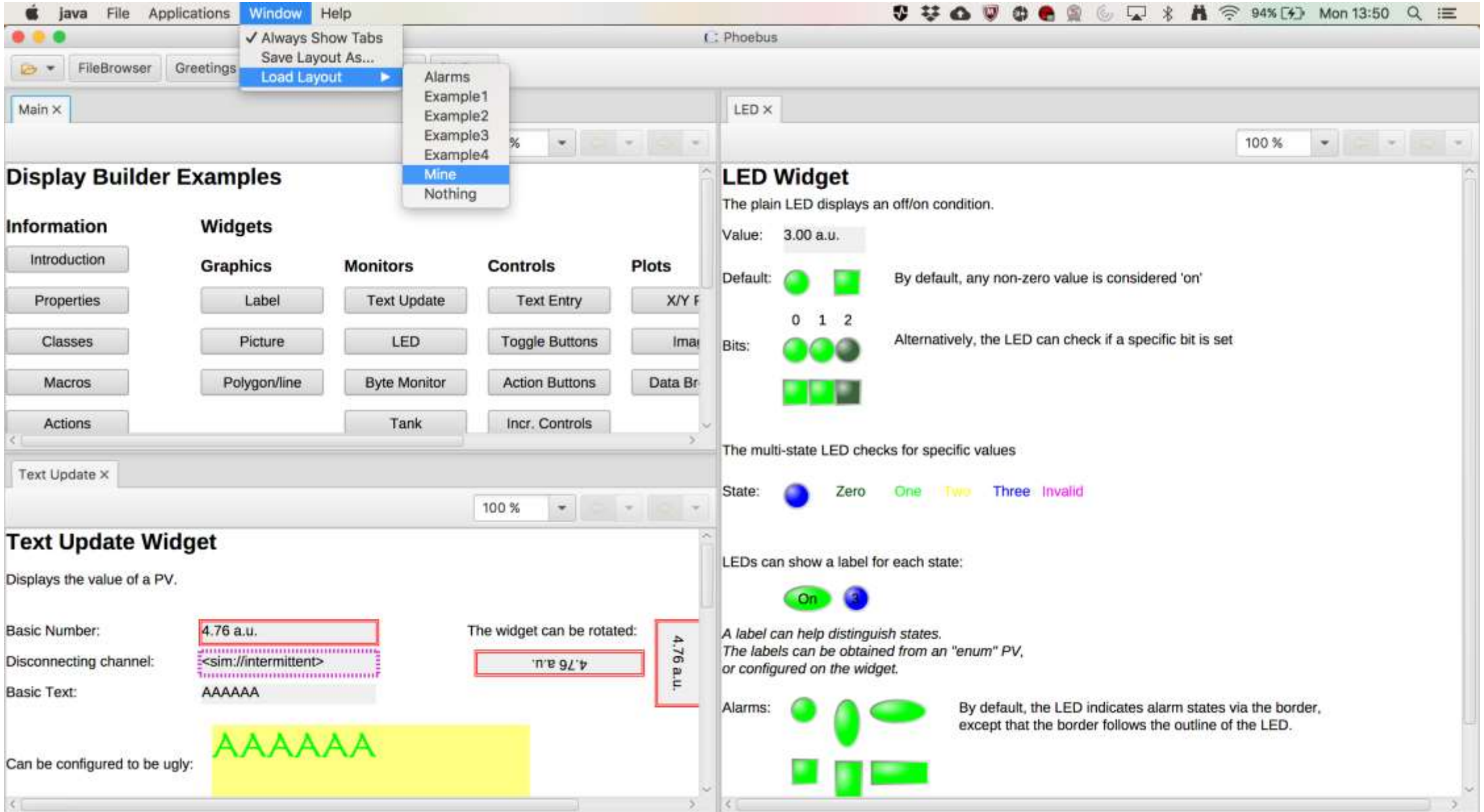
Can split further…



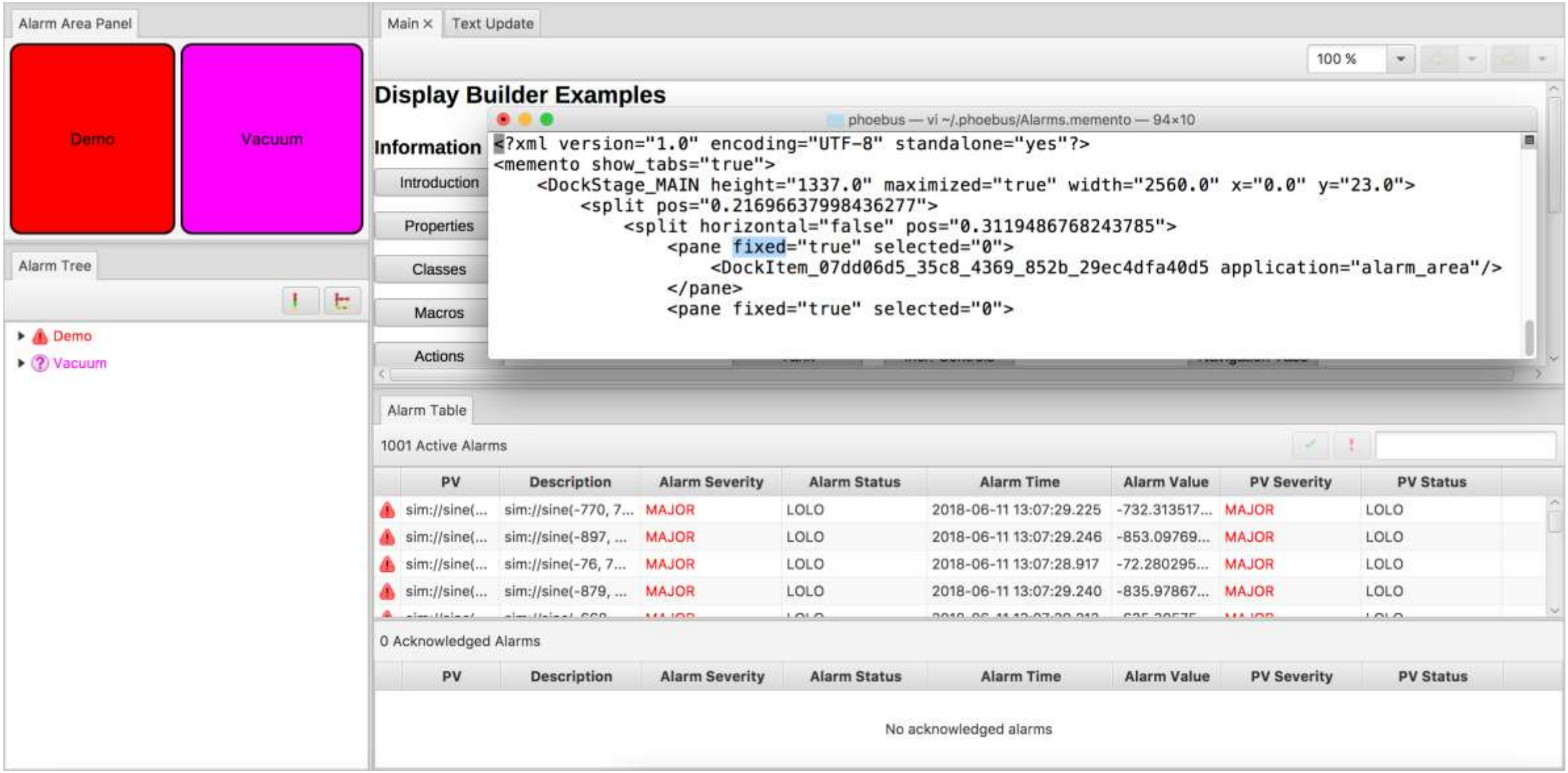
Added another tab



Save and Re-Load Layouts



Fixed Layout Sections

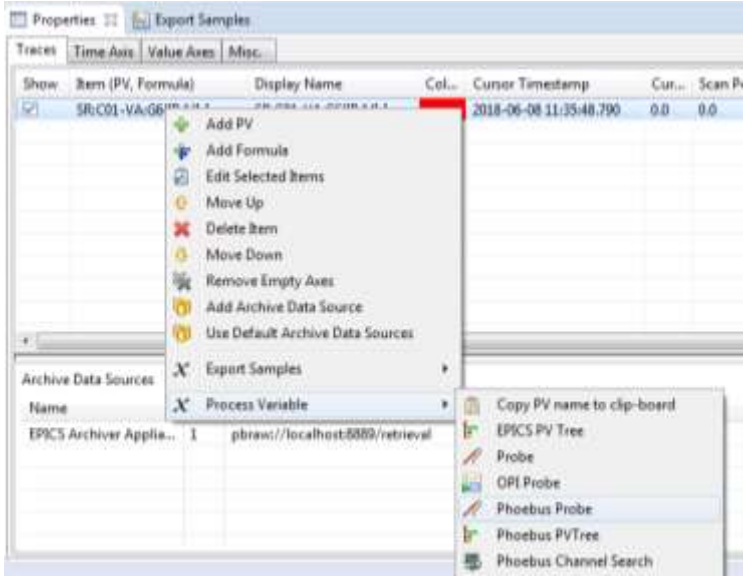


Open Tools from Command Line

```
-resource /path/to/file
-resource file:/path/to/file
-resource http://my.site/path/to/file
-resource file:/path/to/file?app=display_runtime&
          MACRO1=value+1&MACRO2=abc
-resource pv://?SomePV&app=probe
-resource pv://?SomePV&OtherPV&app=pv_table
```

- First call will start phoebus
- Follow-up calls can open resource in existing window
- Used to integrate RCP-based CS-Studio

- Opens that file with the default application.
- Same, but makes the 'file' schema specific.
- Reads web link, opens with default application.
- Opens file with 'display_runtime' app passing macros.
- Opens the ‘SomePV’ with 'probe'.
- Opens two PVs PV with 'pv_table’.



Progress

Completed

- ✓ Probe
- ✓ PV Tree
- ✓ PV Table
- ✓ File Browser (basic)
- ✓ Data Browser
- ✓ Display Builder
- ✓ Scan UI
- ✓ Scan Server
- ✓ .. and infrastructure:
  - ✓ Autocomplete, Macros, ..
  - ✓ Build & Development Environment

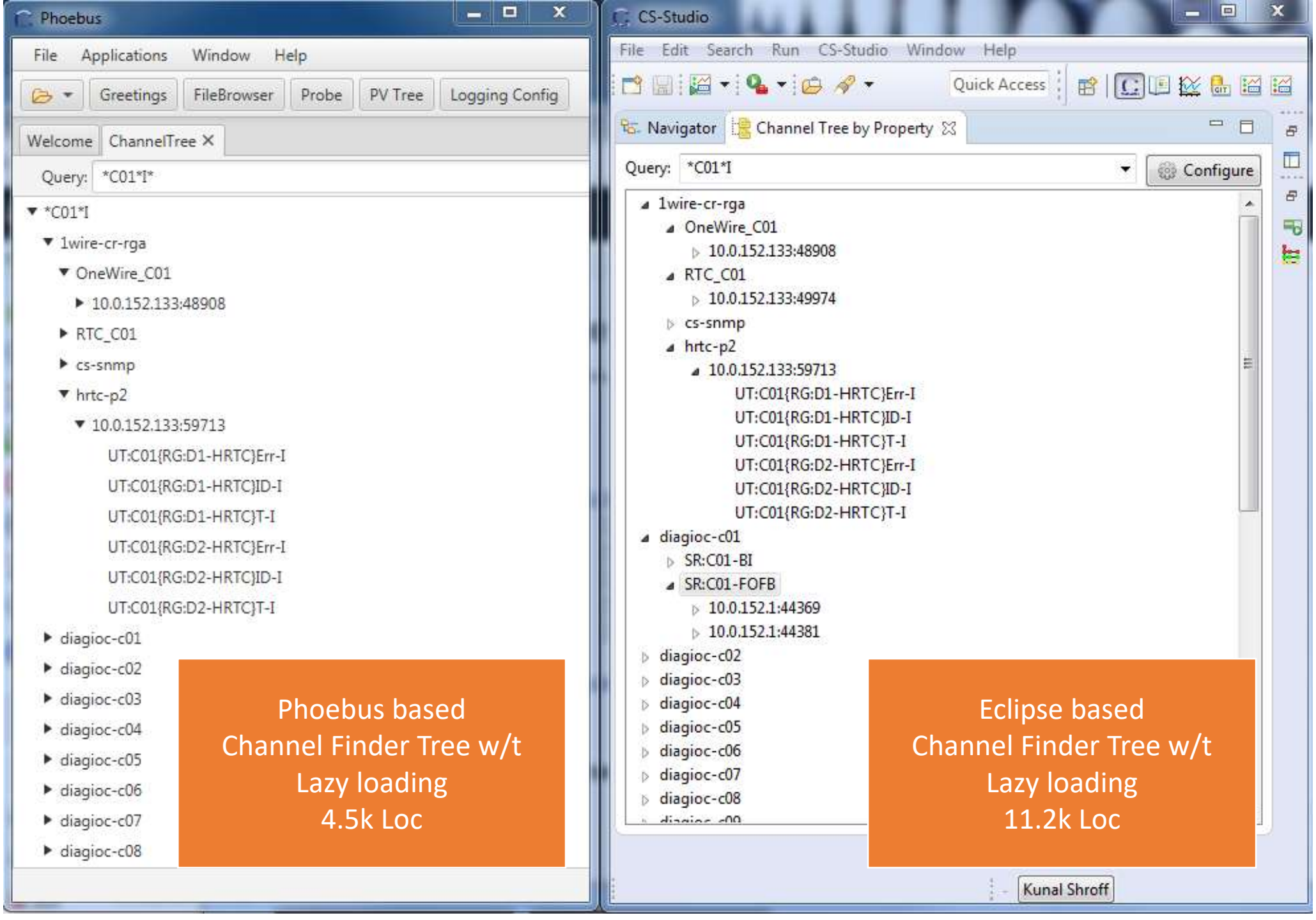
99% compatibility with existing
PV Table, Display Builder, Data Browser
configuration files

Plan (end of 2018)

- ❑ Alarm UI (required for SNS beam lines)
- ❑ Channel Finder UI
- ❑ Logbook Support
- ❑ CS-Studio/Eclipse integration

Also planned, but not essential

- ❑ File Browser (better)
- ❑ Archive Engine


Phoebus
File
Applications
Window
Help
Greetings
FileBrowser
Probe
PV Tree
Logging Config
Welcome
ChannelTree
Query:
*C01*I*
*C01*I
1wire-cr-rga
OneWire_C01
10.0.152.133:48908
RTC_C01
cs-snmp
hrtc-p2
10.0.152.133:59713
UT:C01{RG:D1-HRTC}Err-I
UT:C01{RG:D1-HRTC}ID-I
UT:C01{RG:D1-HRTC}T-I
UT:C01{RG:D2-HRTC}Err-I
UT:C01{RG:D2-HRTC}ID-I
UT:C01{RG:D2-HRTC}T-I
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diagioc-c02
diagioc-c03
diagioc-c04
diagioc-c05
diagioc-c06
diagioc-c07
diagioc-c08
Phoebus based
Channel Finder Tree w/t
Lazy loading
4.5k Loc
CS-Studio
File
Edit
Search
Run
CS-Studio
Window
Help
Quick Access
Navigator
Channel Tree by Property
Query:
*C01*I
Configure
1wire-cr-rga
OneWire_C01
10.0.152.133:48908
RTC_C01
10.0.152.133:49974
cs-snmp
hrtc-p2
10.0.152.133:59713
UT:C01{RG:D1-HRTC}Err-I
UT:C01{RG:D1-HRTC}ID-I
UT:C01{RG:D1-HRTC}T-I
UT:C01{RG:D2-HRTC}Err-I
UT:C01{RG:D2-HRTC}ID-I
UT:C01{RG:D2-HRTC}T-I
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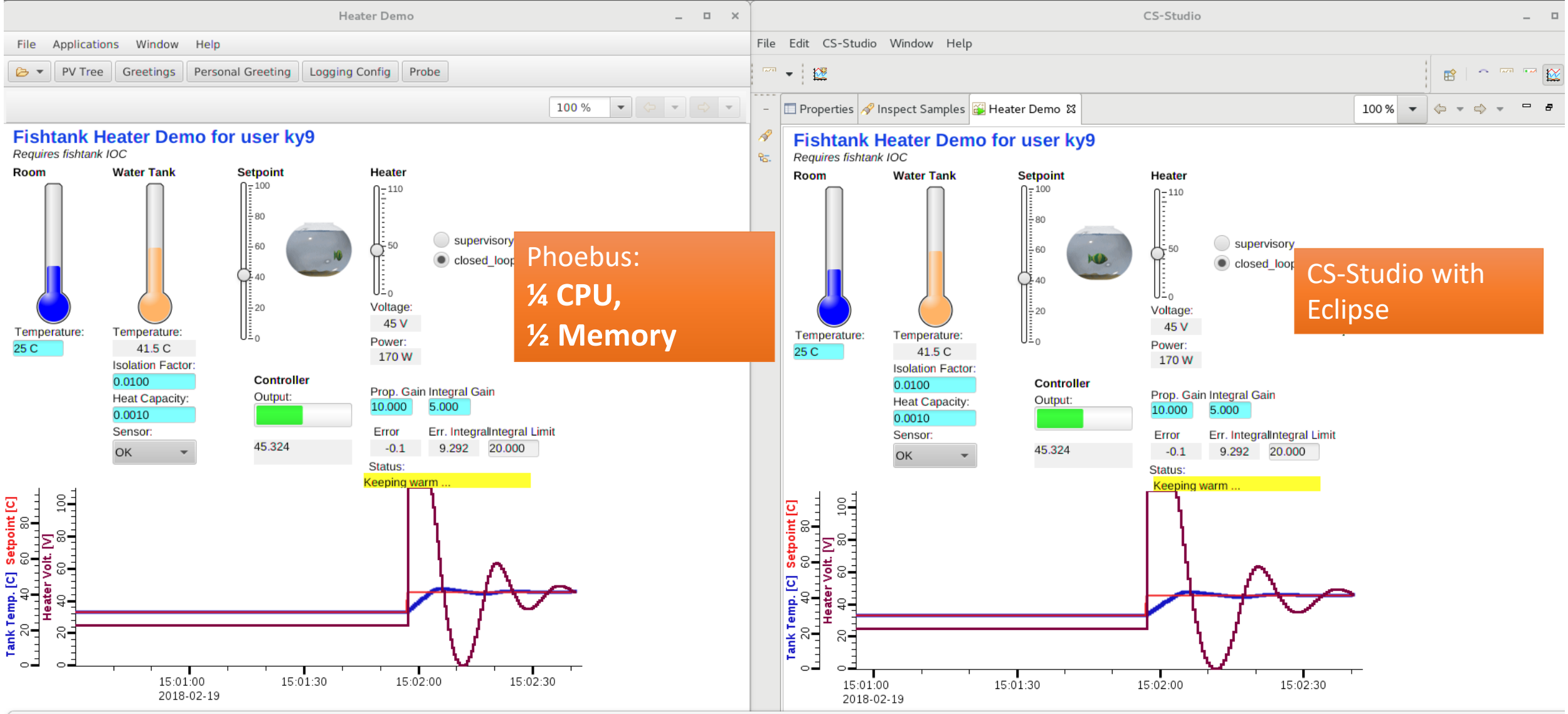
SR:C01-BI
SR:C01-FOFB
10.0.152.1:44369
10.0.152.1:44381
diagioc-c02
diagioc-c03
diagioc-c04
diagioc-c05
diagioc-c06
diagioc-c07
diagioc-c08
Eclipse based
Channel Finder Tree w/t
Lazy loading
11.2k Loc
Kunal Shroff




```
ky9@diane:~/git/org.csstudio.display.builder/org.csstudio.display.builder.model/examples/fishtank
File  Edit  View  Search  Terminal  Help
top - 15:02:40 up 7 days, 15:44,  3 users,  load average: 0.87, 1.14, 0.93
Tasks: 275 total,   2 running, 273 sleeping,   0 stopped,   0 zombie
%Cpu(s):  7.4 us,  1.1 sy,  0.0 ni, 90.6 id,  0.9 wa,  0.0 hi,  0.0 si,  0.0 st
KiB Mem : 16172032 total,  3128668 free,  7447444 used,  5595920 buff/cache
KiB Swap:  8191996 total,  8191996 free,        0 used.  7494792 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR S  %CPU %MEM     TIME+ COMMAND
28473 ky9       20   0 7197228 1.399g  52256 S  41.9  9.1   1:53.73 /opt/jdk1.8.0_121/bin/java -Dosgi.requiredJavaVersion=1.8 -XX:+UseG1GC -XX:+UseStringDeduplication -Dosgi.requiredJavaVersion=1.8 -Xms256m -
28380 ky9       20   0  9.967g 646620  68068 S  10.6  4.0   1:00.10 /opt/jdk-9/bin/java -Dfile.encoding=UTF-8 -classpath /home/ky9/git/phoebus/dependencies/target/lib/py4j-0.10.2.1.jar:/home/ky9/git/phoebus/a
```

Phoebus

The next version of CS-Studio

- ✓Simpler, faster development setup
- ✓Simpler, more obvious panel layout
- ✓On track for 1st release end of 2018

- Display Builder
- Data Browser
- PV Tree
- Probe
- PV Table
- Alarms
- Channels
- Scan
- … more …
- Phoebus
- Java 9, 10