

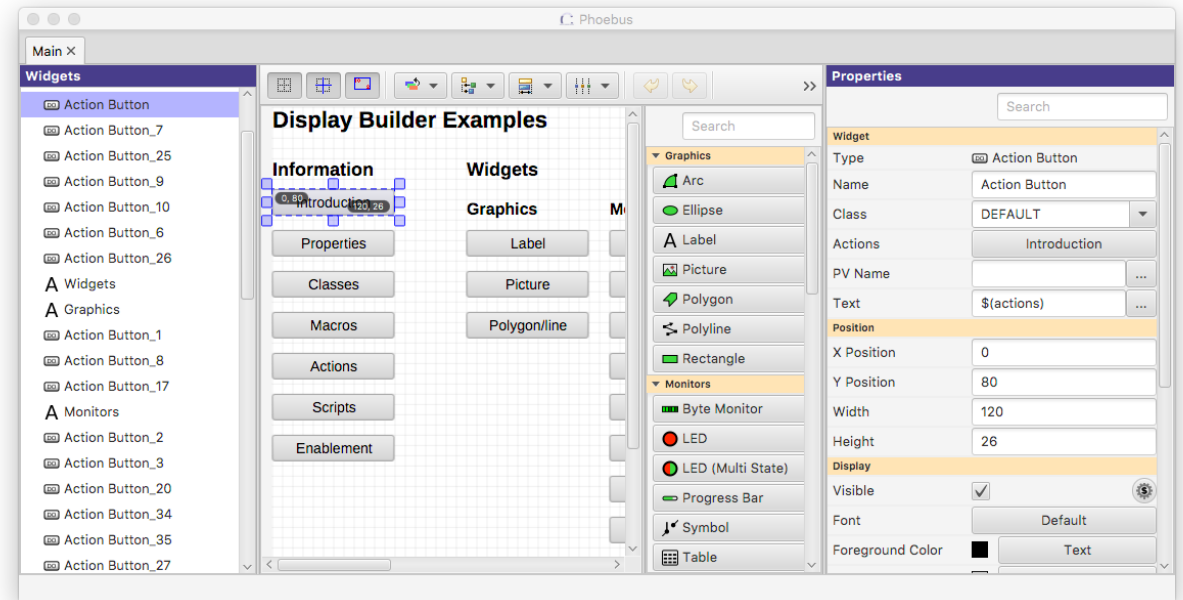
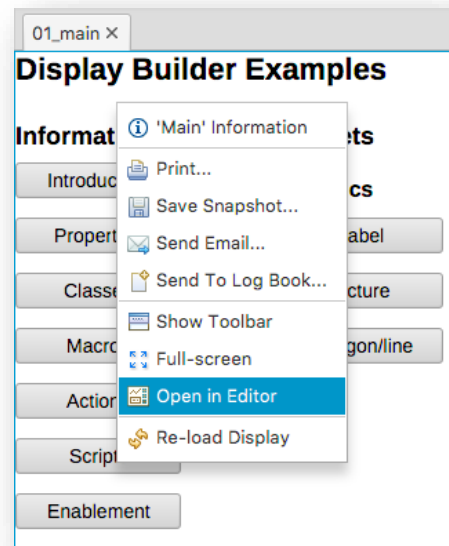
Display Builder Web Runtime

Kay Kasemir

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

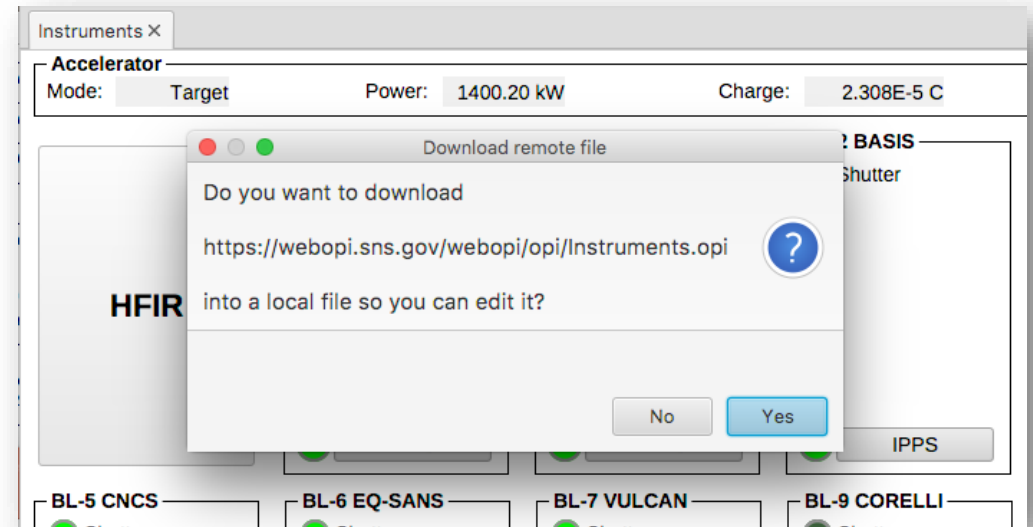
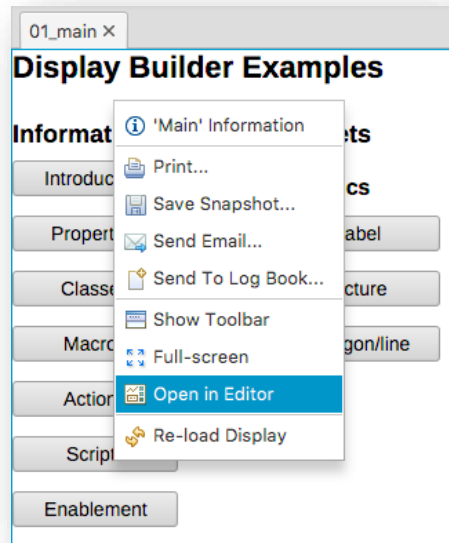
Display Builder in CS-Studio Desktop Tool



- Best support for all widget types and their features
- Includes editor for creating / modifying displays

But: Users need to install the tool, somehow access the display files, and the PV data (Channel Access, PV Access)

Storing Display Files on Web Server

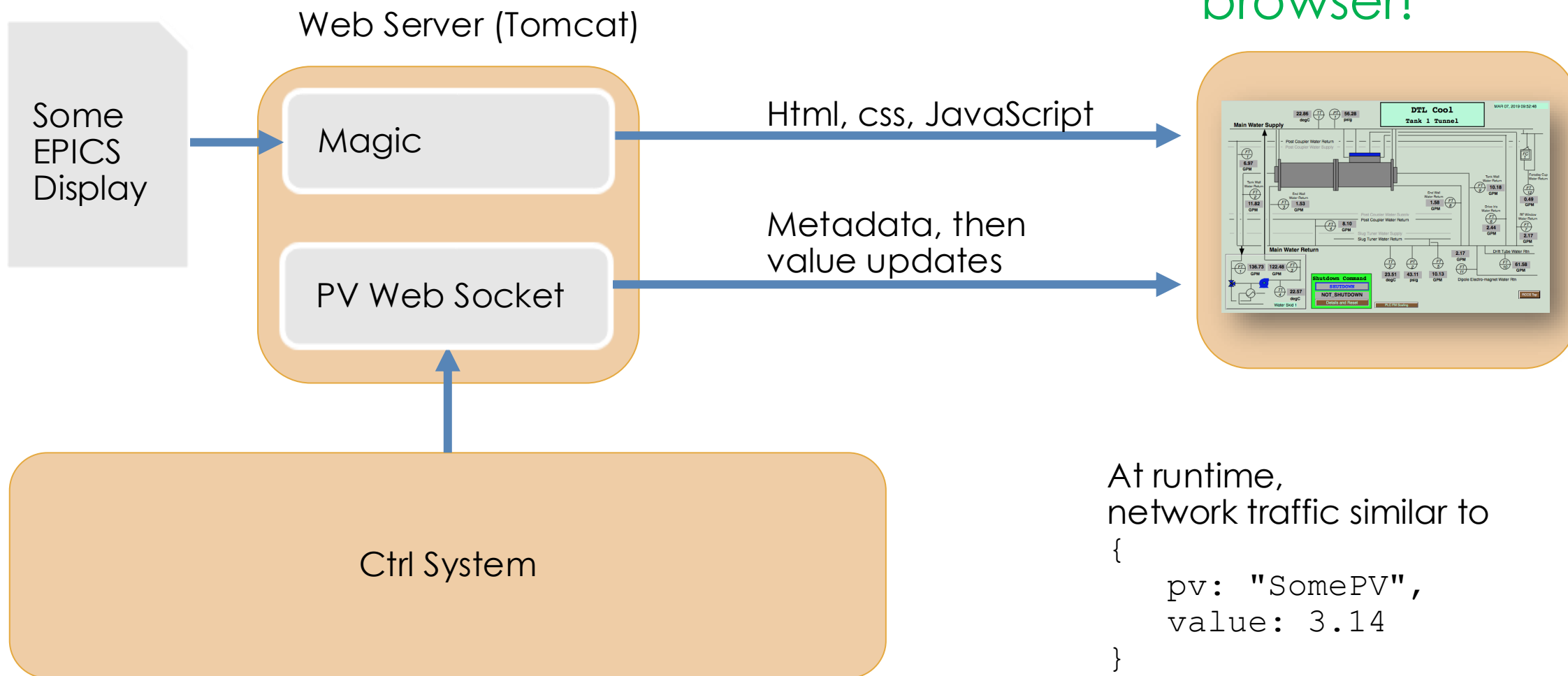


- Useful to make files available outside of control room
- Safe, read-only, always up to date
- .. But still using desktop tool.

To edit, you'll be prompted for download

Display Builder Web Runtime

Client only
needs web
browser!



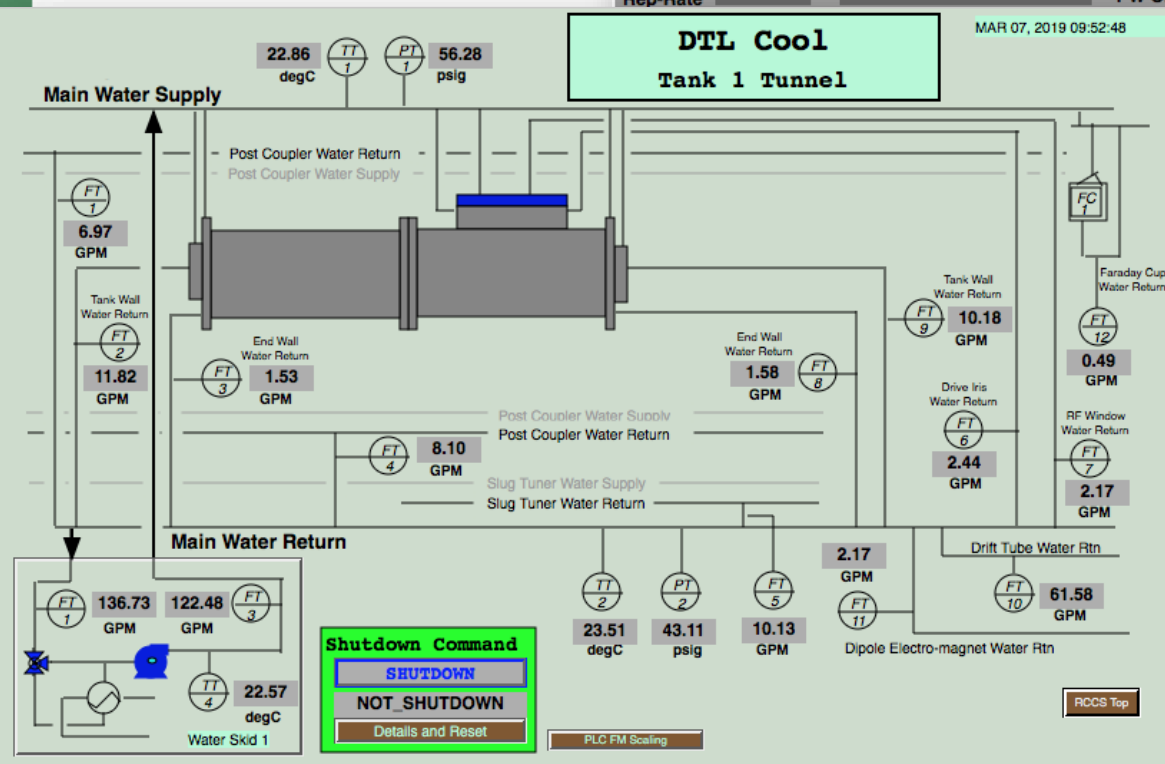
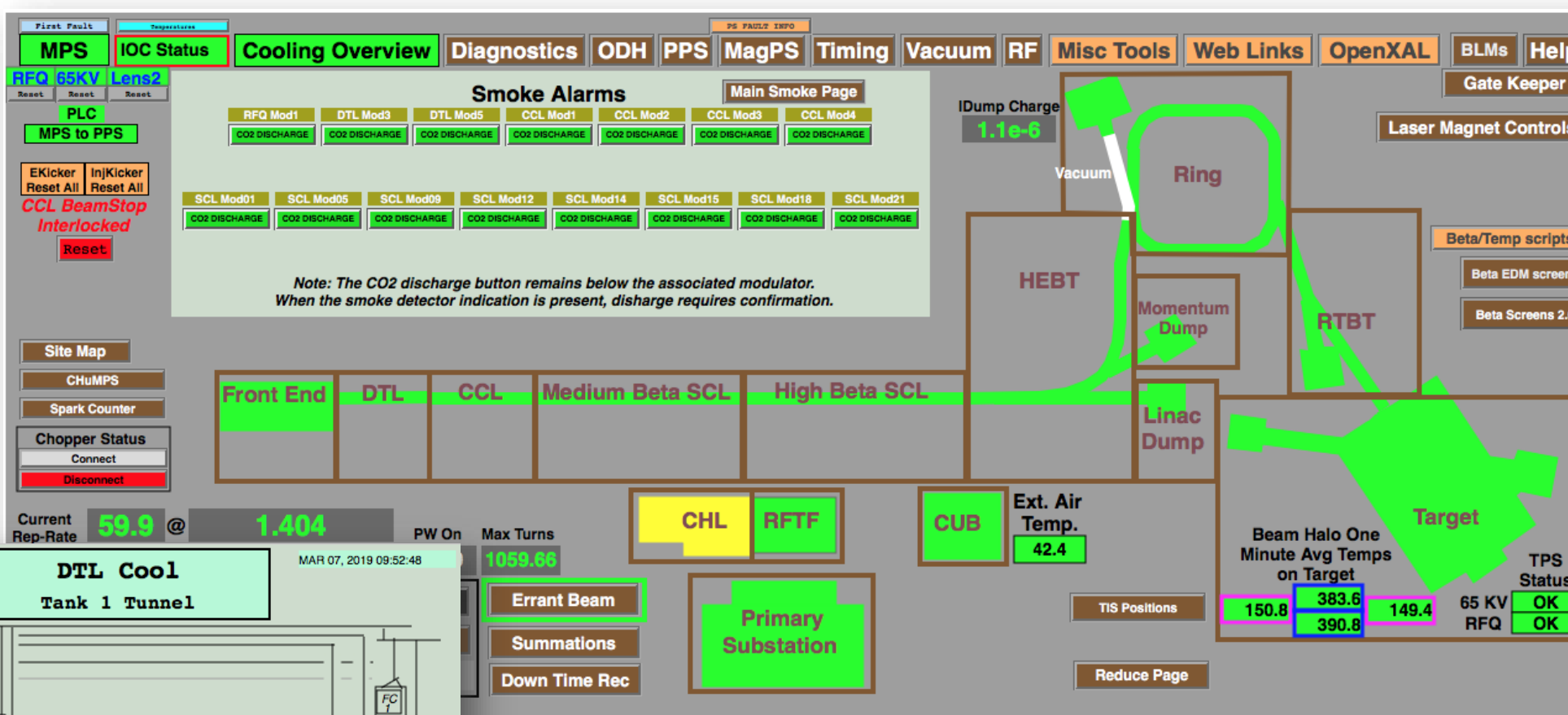
At runtime,
network traffic similar to

```
{  
  pv: "SomePV",  
  value: 3.14  
}
```

Web EDM

Ryan Slominski,
JLab,

2017 EPICS Meeting



Very useful and performant
for EDM displays
and Channel Access IOCs

- Limitations:
- No waveforms (plots, images)

PV Web Socket - <http://localhost:8080/pvws>

- Based on Phoebus Stack
 - VType PV for loc://, sim://, ca://, pva://, ...
 - PV Pooling
 - RxJava Throttling
- Data Packaged as JSON
 - Sends metadata once
 - No separate connections to *.EGU, *.PREC, ...
 - Severity and value on change
 - Arrays packed as Base64-binary
 - JavaScript in client merges updates

Subscribe to PVs

A 'subscribe' JSON message requests updates for one or more PVs.

```
{ "type": "subscribe", "pvs": [ "sim://sine", "loc://x(4)" ] }
```

A 'clear' JSON message cancels updates for one or more PVs.

```
{ "type": "clear", "pvs": [ "sim://sine", "loc://x(4)" ] }
```

Messages

```
{  
  "type": "update",  
  "pv": "SCL_LLRF:IOC01a:Load",  
  "units": "%",  
  "precision": 0,  
  "severity": "NONE",  
  "value": 18.91891891891892  
}
```

Display Builder Web Runtime - <http://localhost:8080/dbwr>

Instruments Data Collection & Scan Status

SNS	Scan State	Progress	Scan Alarm	Run	Run Time	Pause	nED/ADnED	
BL1A USANS	Running	64 %	No Alarm	Run	11154 s	Not Paused		
BL1B NOMAD	Aborted	100 %	No Alarm	Idle	10 s	Not Paused		
BL2 BASIS	Aborted	100 %	No Alarm	Run	276.7 s	Not Paused		
BL3 SNAP	Finished	100 %	No Alarm	Run	6088 s	Not Paused		
BL4A M-REF	Running	18 %	No Alarm	Run	4380.3 s	Not Paused		
BL4B L-REF	Running	40 %	No Alarm	Run	389 s	Not Paused		
BL5 CNCS	Running	7 %	No Alarm	Run	19 s	Not Paused		
BL6 EQ-SANS	Aborted	100 %	No Alarm	Idle	715 s	Not Paused		
BL7 VULCAN	Running	23 %	No Alarm	Run	846 s	Not Paused		
BL9 CORELLI	Finished	100 %	No Alarm	Idle	126 s	Not Paused		
BL10 VENUS								
BL11A POWGEN	Running	87 %	No Alarm	Run	9671 s	Not Paused		
BL11B MANDI	Aborted	100 %	No Alarm	Run	2581 s	Not Paused		
BL12 TOPAZ	Running	80 %	No Alarm	Run	22188.5 s	Not Paused		
BL14B HYSPEC	Aborted	100 %	No Alarm	Run	484 s	Not Paused		
BL16B VISION	Running	5 %	No Alarm	Run	2288 s	Not Paused		
BL17 SEQUOIA	Running	65 %	No Alarm	Run	70 s	Not Paused		
BL18 ARCS	Finished	100 %	No Alarm	Idle	10 s	Not Paused		

Instruments

Accelerator Mode: Target Power: 1383.68 kW Charge: 2.323E-5 C Energy: 1011.448 Mev Rate: 59.9 Hz

HFIR

BL-1A USANS

Shutter

Run Run

Scan Running

Main

T0 Chopper

IPPS

BL-1B NOMAD

Shutter

Run Idle

Scan Aborted

Main

T0 Chopper

Choppers

Vacuum

IPPS

BL-2 BASIS

Shutter

Run Run

Scan Aborted

Main

Vacuum

IPPS

BL-3 SNAP

Shutter

Run Run

Scan Finished

Main

T0 Chopper

IPPS

BL-4A MRef

Shutter

Run Run

Scan Running

Main

Choppers

IPPS

BL-4B LRef

Shutter

Run Run

Scan Running

Main

Choppers

IPPS

BL-5 CNCS

Shutter

Run Run

Scan Running

Main

Choppers

IPPS

BL-6 EQ-SANS

Shutter

Run Idle

Scan Aborted

Main

Vacuum

Choppers

IPPS

BL-7 VULCAN

Shutter

Run Run

Scan Running

Main

Detector

Choppers

IPPS

BL-9 CORELLI

Shutter

Run Idle

Scan Finished

Main

Vacuum

Choppers

T0 Chopper

IPPS

BL-10 VENUS

BL-11A POWGEN

Shutter

Run Run

Scan Running

Main

Vacuum

Choppers

T0 Chopper

IPPS

BL-11B MANDI

Shutter

Run Run

Scan Aborted

Main

Vacuum

Choppers

IPPS

BL-12 TOPAZ

Shutter

Run Run

Scan Running

Main

IPPS

BL-13 FNPB

Shutter

Main

Choppers

IPPS

BL-14B HYSPEC

Shutter

Run Run

Scan Aborted

Main

Choppers

IPPS

BL-15 NSE

Shutter

IPPS

BL-16B VISION

Shutter

Run Run

Scan Running

Main

Vacuum

T0 Chopper

IPPS

BL-17 SEQUOIA

Shutter

Run Run

Scan Running

Main

Vacuum

Choppers

Detector/nED

IPPS

BL-18 ARCS

Shutter

Run Idle

Scan Finished

Main

Vacuum

Choppers

IPPS

Summaries

SE Cage CMF NCL Gateways ODH Instruments Data Archives Vacuum

HFIR

	Scan State	Progress	Scan Alarm	Run	Run Time	Pause	nED/ADnED	ADnED	SMS
HB2B NRSF2	Finished	100 %	No Alarm	Idle	148.3 s	Not Paused			Idle OK
HB2C WAND	Finished	100 %	No Alarm	Idle	5 s	Not Paused			Idle OK
CG1D IMAGING	CG1D:CS:Sca CG1D:CS:Sca CG1D:CS:Sca								

Labels, LEDs, Text Updates
Groups, Embedded displays, Macros

Line and Detector plots

VULCAN Neutron Stats
Favorites

East Detector

ROI Left: 0 Top: 0 Width: 200 Height: 200 Default
 DSpace ROI Start: 1.241 End: 1.205 Default
 Detector ROI: 618110 DSpace: 168122

East Cursor (only available at beamline)
Info

West Detector

ROI Left: 0 Top: 0 Width: 160 Height: 30 Default
 DSpace ROI Start: 1.766 End: 1.831 Default
 Detector ROI: 465727 DSpace: 2716

West Cursor (only available at beamline)
Info

LPSD Detector

ROI Left: 0 Top: 7 Width: 78 Height: 253 Default
 DSpace ROI Start: 3.257 End: 3.468 Default
 Detector ROI: 951542 DSpace: 0

LPSD Cursor (only available at beamline)
Info

Instrument Pole Plot

ROI Left: 11 Top: 24 Width: 23 Height: 30
 Detector ROI: 0
 500.000

Material Pole Plot

ROI Left: 66 Top: 18 Width: 83 Height: 57
 Detector ROI: 1245
 500.000

500.000 500.000 500.000

Summary

Detector ROIs:	2035465	2245 e/s	DSpaces:	170837	Beam Power:	1410847 Watts	Proton Charge:	6E+11 pC
BM1 Counts:	422883	433 e/s	Time-Of-Flight		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		Run time:	###.###
BM2 Counts:	1649309	1817 e/s						

CS-Studio on Desktop vs.

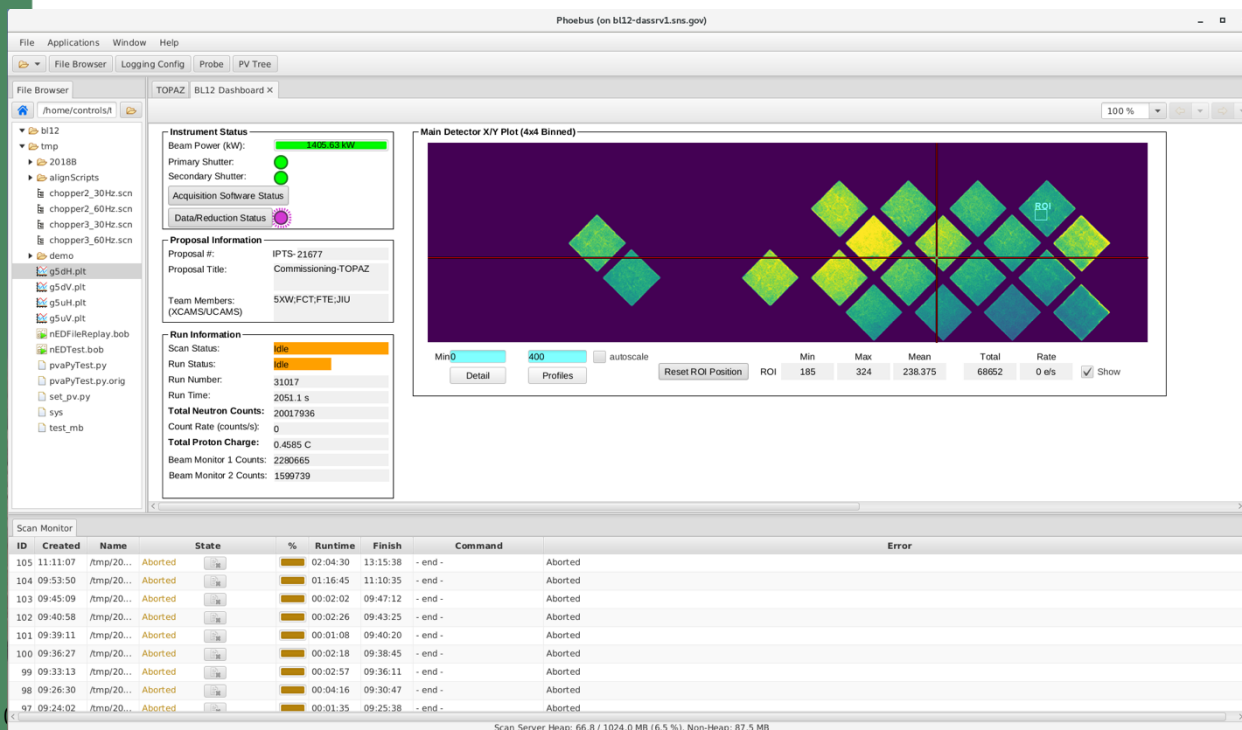
- Integrated Product
- Widgets with full functionality

Web Runtime

- Just Display Runtime
- Most widgets, not full functionality
 - Much simpler plots

You might have to tweak your displays to work for both desktop and web view...

*Still:
Read-only web view of control system is extremely convenient and useful!*



Summary

Display Builder *Web Runtime* offers web access to much of the *Desktop* version

<https://github.com/ornl-epics/pvws>
<https://github.com/ornl-epics/dbwr>

➔ http://your_site/dbwr

1. git clone
2. ant
3. copy *.war to Tomcat
4. Set environment:
EPICS_CA_ADDR_LIST, ..

