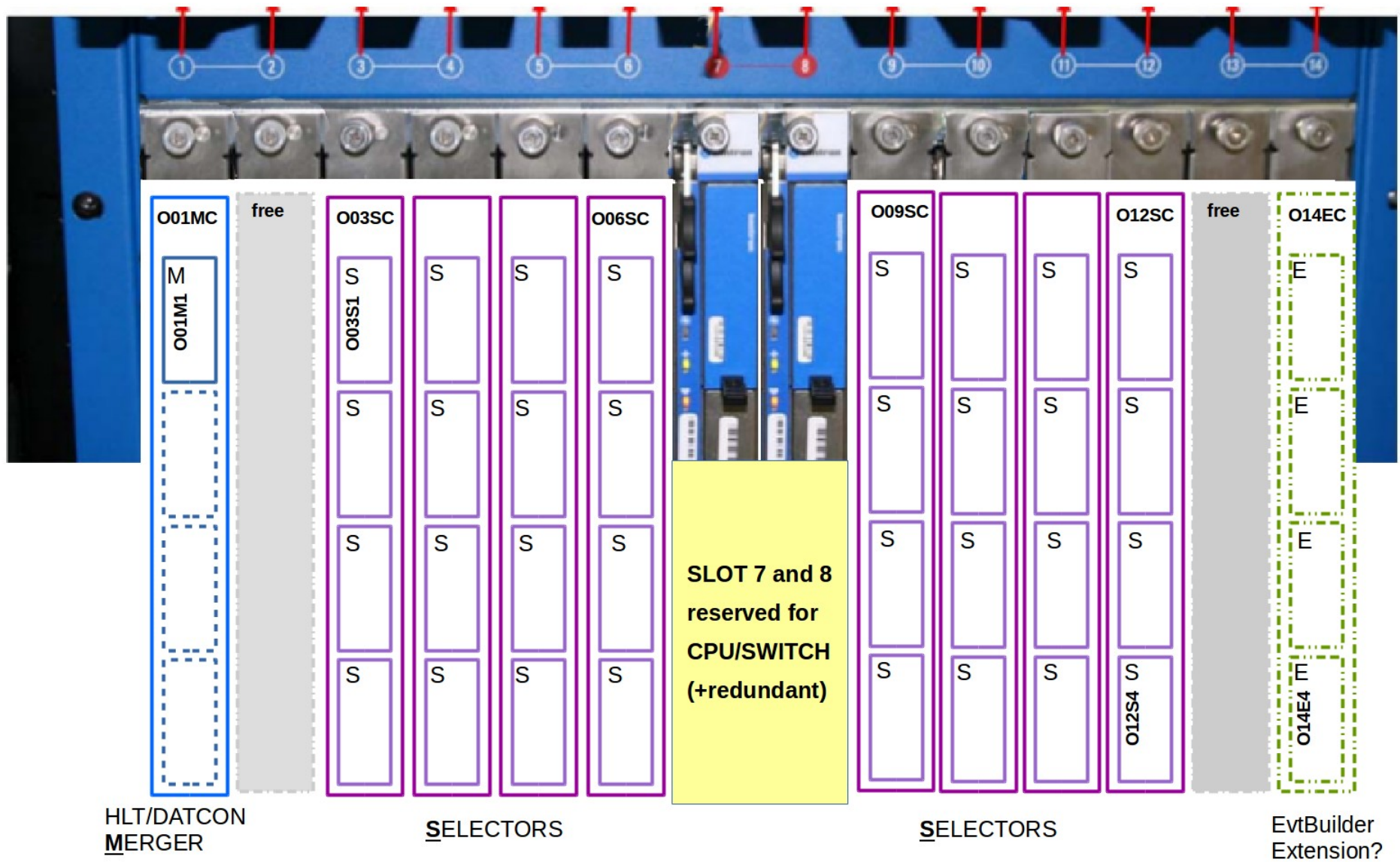


Status, Technical Details and Problems

Remarks

- Firmware not finalized
 - SC and GUI based in parts on plans and expectations
- Keep GUI abstract in a few parts as it is not always defined yet which IOC delivers which PV
- As hardware (and IOC on hardware) are not finalized, SC PVs are „emulated“ on a softIOC. All SC and RC IOC run on the same machine here.
- Screens:
 - mainly expert screens.
 - there is not much the operator or expert can do manually beside „watching“.
 - errors are either not-permanent or require a full reboot (of the whole ONSSEN system).

ATCA Shelf Layout (proposal)



~40-45 Boards, 40-45 IPMI Boards, 42 * locals IOCs / Run Controls

ATCA Shelf Layout (proposal)

ONSEN TOP view: based on hardware/shelf layout.
each board has its own mini-opi which is embedded by containers.
(done by a small java script; read from conf database later)

ONSEN Overview ONSEN Overview

Run Control
Disconnected
Dataflow
Update Shelf

O01M Flow H O01MC Disc O01M1 Disc H	O02S Flow H O02SC Disc O02S1 Disc H O02S2 Disc H O02S3 Disc H O02S4 Disc H	O03S Flow H O03SC Disc O03S1 Disc H O03S2 Disc H O03S3 Disc H O03S4 Disc H	O04S Flow H O04SC Disc O04S1 Disc H O04S2 Disc H O04S3 Disc H O04S4 Disc H	O05S Flow H O05SC Disc O05S1 Disc H O05S2 Disc H O05S3 Disc H O05S4 Disc H	O06S Flow H O06SC Disc O06S1 Disc H O06S2 Disc H O06S3 Disc H O06S4 Disc H	O07S Flow H O07SC Disc O07S1 Disc H O07S2 Disc H O07S3 Disc H O07S4 Disc H	O08S Flow H O08SC Disc O08S1 Disc H O08S2 Disc H O08S3 Disc H O08S4 Disc H	O09S Flow H O09SC Disc O09S1 Disc H O09S2 Disc H O09S3 Disc H O09S4 Disc H	O10 CPU	O11 CPU	O12 EMPTY	O13 EMPTY	O14 EMPTY
----------------------------------------------------	-------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------	------------	------------	--------------	--------------	--------------

Some more status mons should go here

Names defined by macros

but: sizing bugs in CSS

Scripts and Macros

Dynamic Appearance

- Dynamic Next, Prev etc Buttons.
 - Need for dynamic Macros
 - They should be present at gui load time to take effects within Title, Labels, etc
- Top, Prev, Next, (Up?)
 - script, Look-Up, macros as I used them acceptable?
 - (dont talk about layout here)
 - move to database.
- configuration database
- Look-up between Slot/Board and IPMI ID (if not done on IOC level...)

Running a Script Automatically

- Chosen: python (but java works, too)
- Use a widget (...) and set a script to it, triggering on a non-existing local. (eg `loc://LoadWidget`) and set the trigger flag to „trigger even if not connected)

Where to set things

Lock Children

Rules

Scripts

no

no rule attached

../scripts/lut_macros.py

Attach Scripts

Scripts

Icons: +, edit, x, up, down, refresh

../scripts/lut_macros.py

Input PVs Options

Icons: +, x, up, down

#	PV Name
0	loc://LoadWidget

Attach Scripts

Scripts

Icons: +, edit, x, up, down, refresh

../scripts/lut_macros.py

Input PVs Options

- Skip executions triggered by PVs' first value.
- Execute anyway even if some PVs are disconnected.
- Do not execute the script if error was detected.

Running a Script Automatically

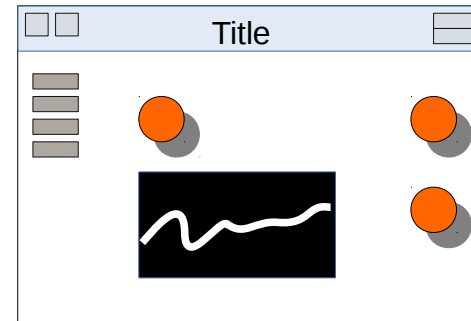
- Works, but... the script is run after the opi has been loaded. Changing Macros now will not affect this GUI anymore.
- But what happens if we now use the script to load the opi?
- We run the script in a grouping (or linking) container and within the script, add an opi to this container.
- (Remark: if you „just“ use the „opt file name“ option, we will load the opi before the macros are set ... like above)
- This works, but has some side effects. We have to set the name of the opi we want to include in the group box... macros!

Schema

templates/basic.opi

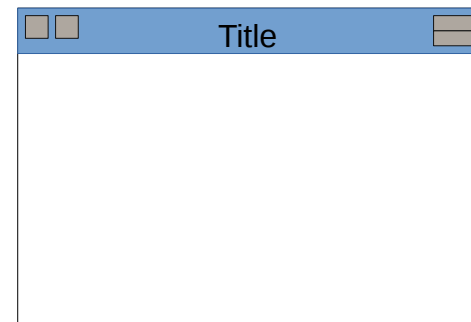
Only one empty container with Trigger script

OPI_FILE



Actual OPI with widgets

Embeds by linking container



Title box including Next and Prev Buttons and logic which re-sets DEVICE

templates/header.opi
or
templates/template.opi

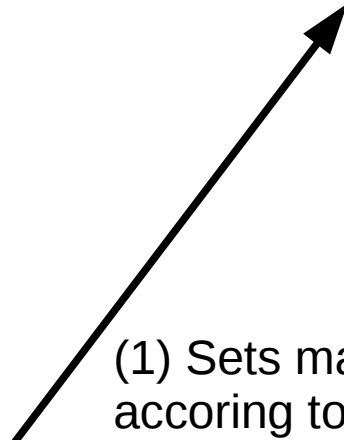
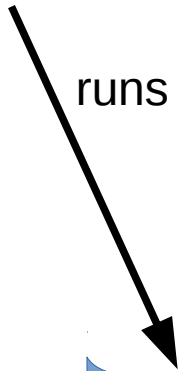
Macros:
DEVICE
OPI_FILE

runs

(1) Sets macros according to DEVICE and (2) adds OPI_FILE to container

scripts/lut_macro.py

Read from database?



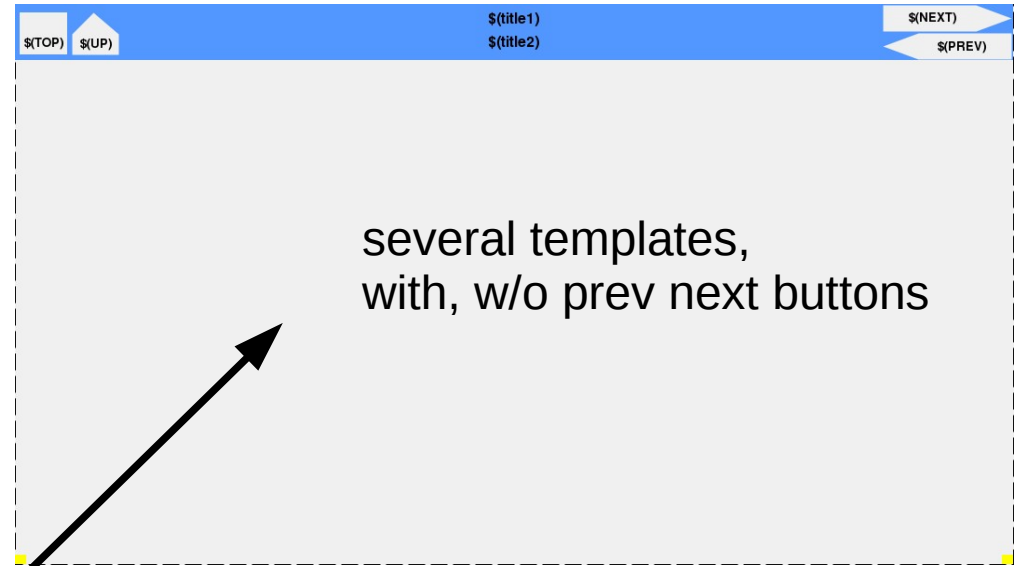
Dynamic Screens

- basic.opi
 - empty, contains script

(green flash at loading...
just for entertainment)

Loads
OPI_FILE
by script

- template.opi



- example.opi



template.opi
embedded as
background
container

- open dynamic screen:
 - load „basic.opi“
 - OPI_FILE=
 - (DEVICE=)

Python script code (excerpts):

```
from org.csstudio.opibuilder.scriptUtil import PVUtil, WidgetUtil
```

```
device=display.getMacroValue('DEVICE')
if device==None:
    print( 'no display DEVICE')
    device=widget.getMacroValue('DEVICE')
if device==None:
    print( 'no widget DEVICE')
    device="test"
```

```
m=SetMacros(device)
```

→ Next slide

```
opi=display.getMacroValue('OPI_FILE')
if opi==None :
    print( 'no display opi file ')
    opi=widget.getMacroValue('OPI_FILE')
if opi==None :
    print( 'no widget opi file ')
    opi="../opi/example.opi"
```

```
linkingContainer = WidgetUtil.createWidgetModel("org.csstudio.opibuilder.widgets.linkingContainer")
linkingContainer.setPropertyValue("opi_file", opi)
linkingContainer.setPropertyValue("auto_size", True)
linkingContainer.setPropertyValue("zoom_to_fit", True)
linkingContainer.setPropertyValue("height", 600)
linkingContainer.setPropertyValue("width", 1072)
linkingContainer.setPropertyValue('macros', m)
widget.addChildToBottom(linkingContainer)
```

Or it will scale itself somehow...

Python script code (excerpts):

```
devicelist = {  
    'test': { 'IPMI': 'test'},  
    '001M1': { 'IPMI': 'I123', 'Input': ('HLT','DC'), 'Output': ('002S1','002S1') },  
    '002S1': { 'IPMI': 'I124', 'Input': ('001M1',''), 'Output': ('EvtB',''), 'Next': '002S2',  
'Prev': '002S2'},  
    '002S2': { 'IPMI': 'I125', 'Input': ('001M1',''), 'Output': ('EvtB',''), 'Next': '002S1',  
'Prev': '002S1'},  
    '002S3': { 'IPMI': 'I126', 'Next': '002S1', 'Prev': '002S2'},  
}
```

```
def SetMacros(devname):  
    m=display.getPropertyValue('macros')  
    if devname in devicelist:  
        d=devicelist[devname]  
  
        m.put('PREV', devname)  
        m.put('NEXT', devname)  
  
        if 'Prev' in d:  
            m.put('PREV',d['Prev'])  
        if 'Next' in d:  
            m.put('NEXT',d['Next'])  
  
        if 'IPMI' in d:  
            m.put('IPMIID',d['IPMI'])  
  
        display.setPropertyValue('macros', m)  
    else:  
        print( '%s not exist' % devname)  
  
    return m
```

→ Replace by
Database!



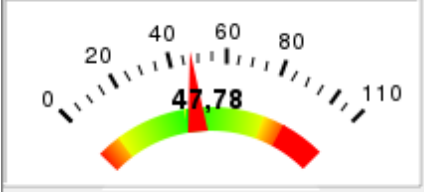
Problems

- Scaling... somehow autoscaling takes place even so it should not... looks ugly and takes time
- Title: I cannot change the title (name of the opi) in css (yet?). Now its always „ONSEN“
- CSS has some „unpredictable“ behaviour if scripts are used. Crashes, displays messed up, editor not working anymore etc.
- Got better with last update

Example Screens

Board Selector O02S1

FPGA Core Temperature



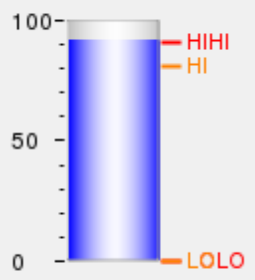
Aux Voltage 2.5 V



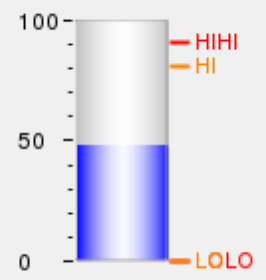
Core Voltage 1.0 V



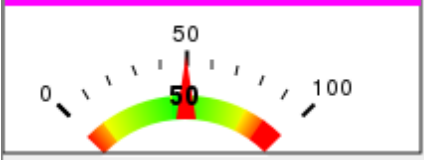
OS Memory Usage



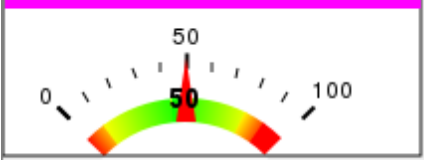
OS CPU Load



Disconnected



Disconnected



Disconnected



Disconnected



Disconnected



Disconnected



Disconnected



Board Selector O02S2

Trigger IN (Merger)

1,1E8 Trgs	8733,5 Trig/s
7,3E8 Words	1,2E5 Words/s

Data IN (DHH)

1,1E8 Evts	1,3E4 Evts/s
1,4E8 Words	3,6E7 Words/s

Data OUT (EB)

1,1E8 Evts	2,1E4 Evts/s
1,1E9 Words	9,9E6 Words/s

109742343,0 Trgs

734790634,0 Words

109880036,0 Evts

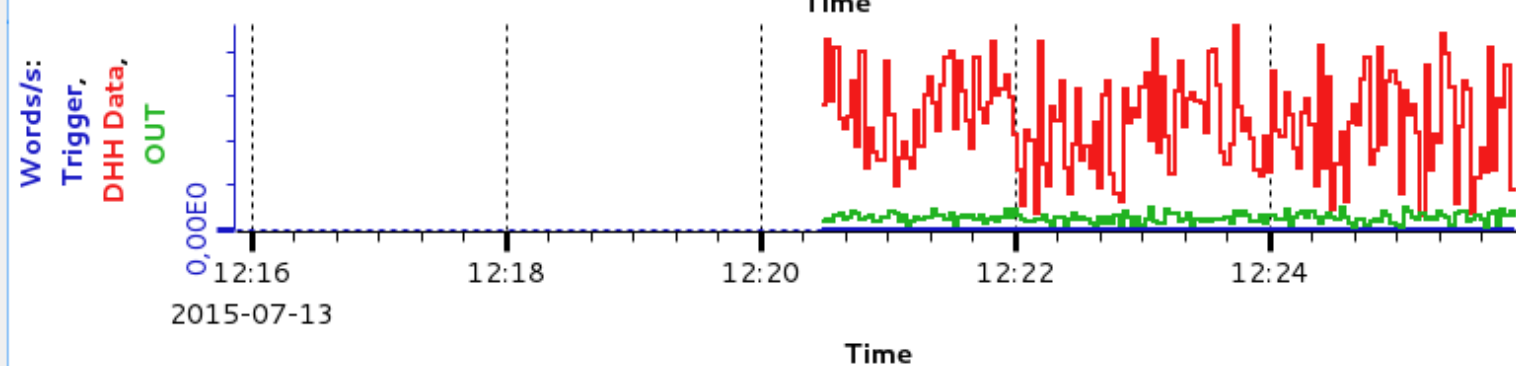
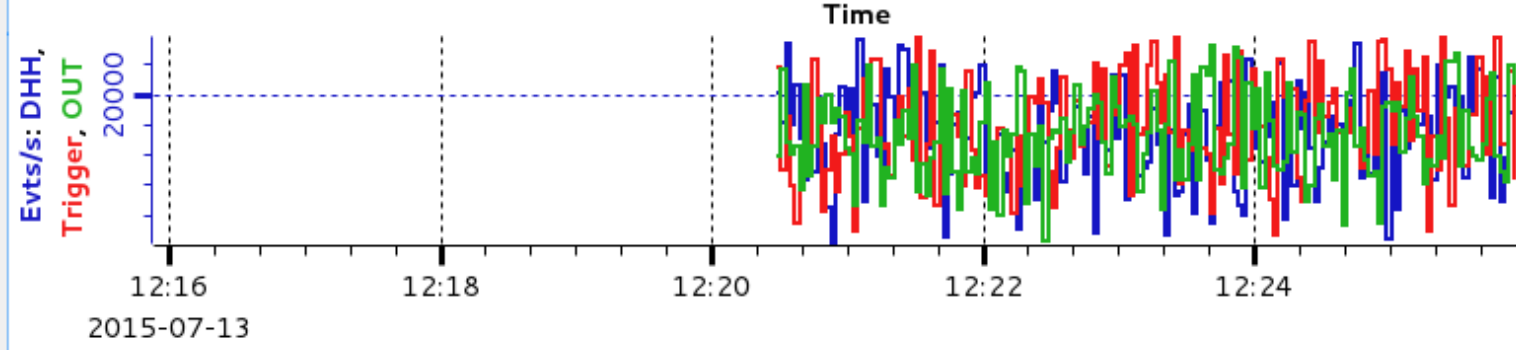
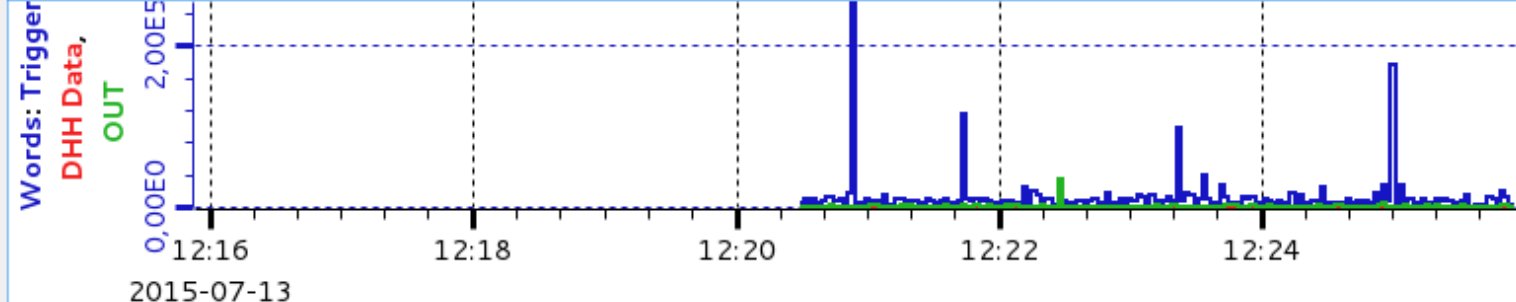
226892397,0 Words

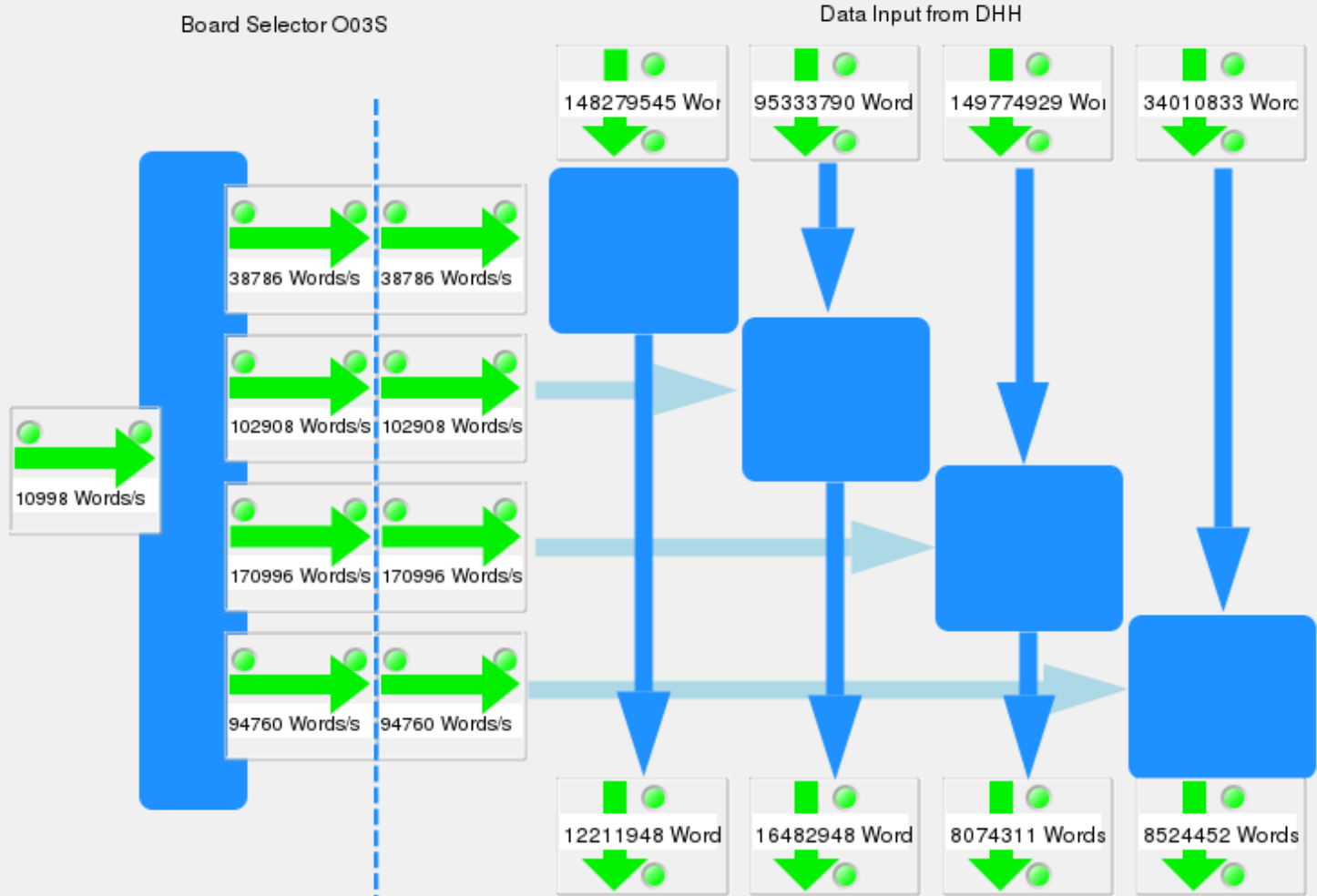
109933245,0 Evts

4768586,0 Words

Show RC

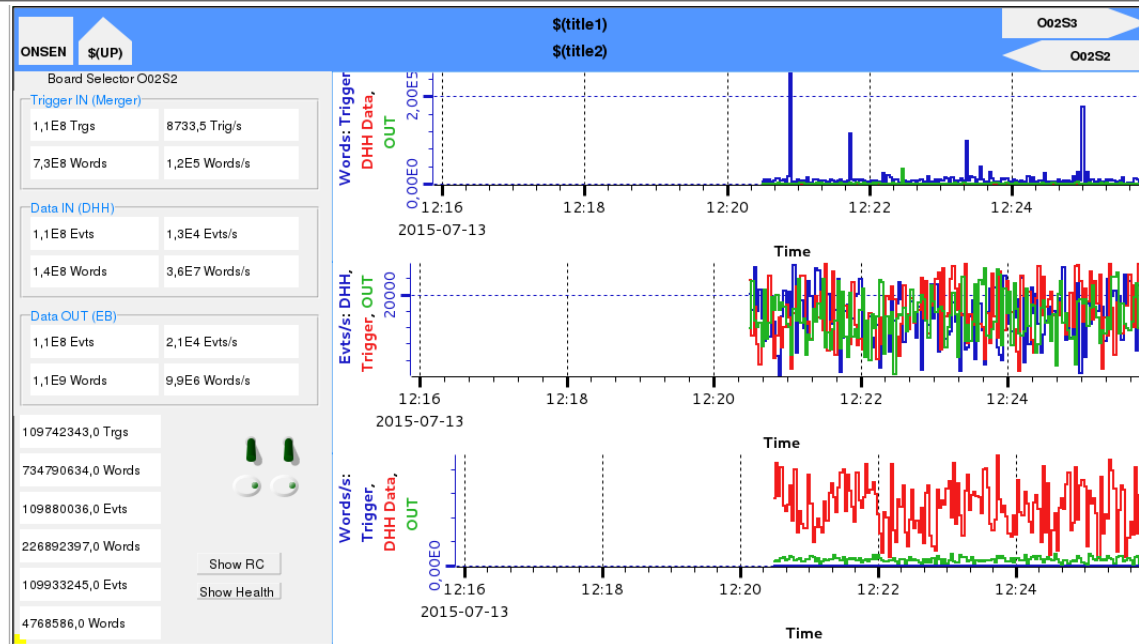
Show Health





Misc. Discussion

Plots



- Plotting a lot of graphs gets messy as panel size is limited.
- *Overview* hard to do for O(40) boards
- Looking for ideas (plot min, max, average?)

Common Macros(?)

- DEVICE ... current Device, used for config database lookup and in PVs
- DEVNAME ... current Device, human readable
- DEV[A...Z] ... Child devices
- PREV, NEXT, TOP – device names (by script)
- PN_OPI, TOP_OPI (filenames for Prev, Next, Top)
- PXD?, USER, user?, ONSEN?
-
- ONSEN (setup) specific:
 - CARRIER ... current Carrier (slot) name (excl type, Oxx); used in PVs
 - TYPE ... Firmware Type (one letter, M,S); used in Pvs
 - CARRTYPE ... Carrier mit Typ z.B. O02S, O01M
 - TYPENAME ... Firmware Type, human readable
 - INPUT[A-Z], OUTPUT[A-Z] ... Receives data from, sends data to

Interaction with Other Systems

- Interface to HLT SC?
 - Data w/o ROI selection and (DATCON) ROIs in data stream
 - for efficiency studies and monitoring
 - (our idea: set flag in HLT ROI header 1/1000 event or so)
 - Itoh and Nakao want to do that on the trigger level, not on the HLT; request to discuss that at B2GM
- → Fine with me.