Cornell University
Laboratory for
Elementary-Particle Physics

A Cursory Overview of Pixel Online Software for the DAQ Tutorial

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Contents:

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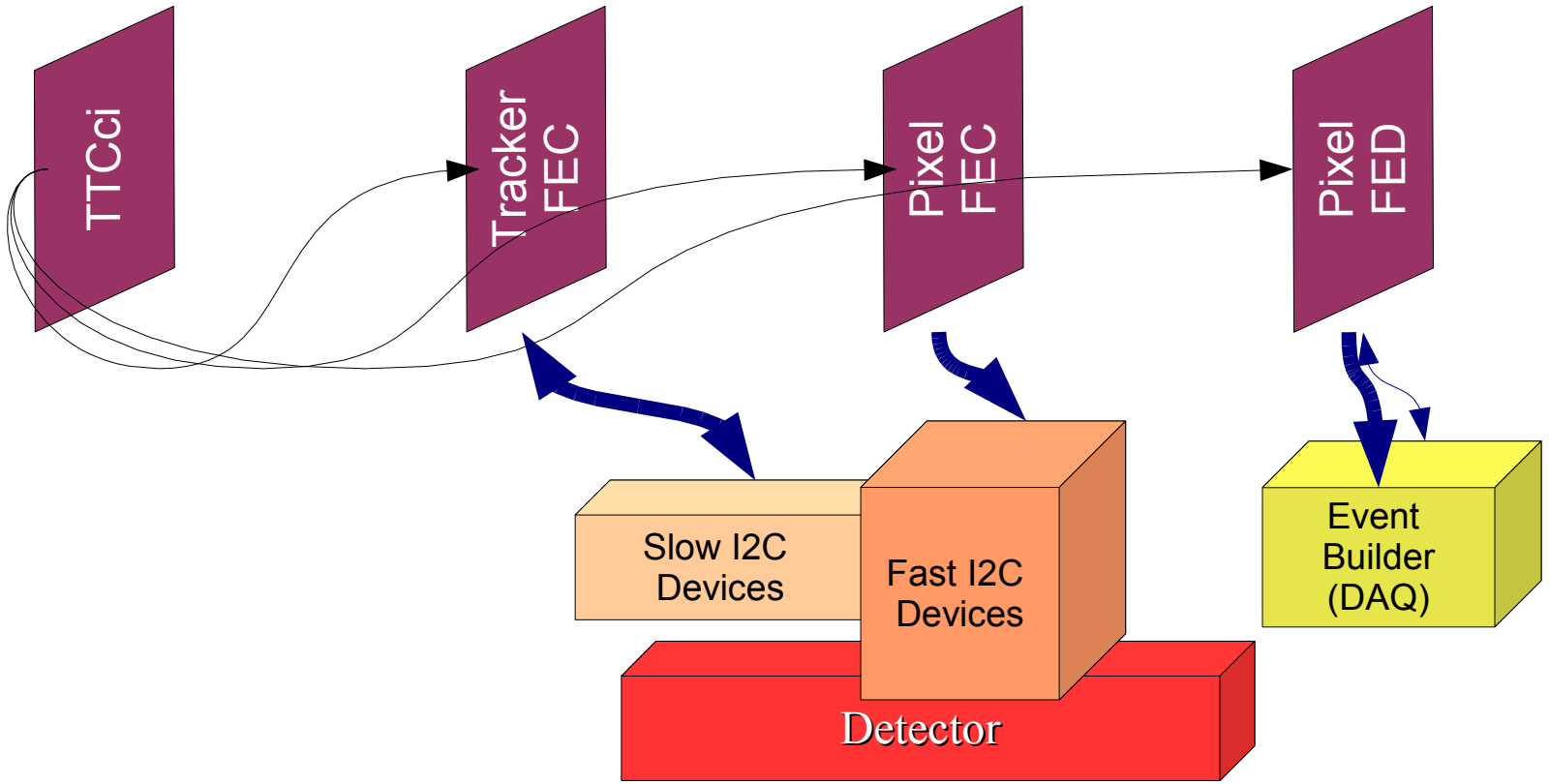
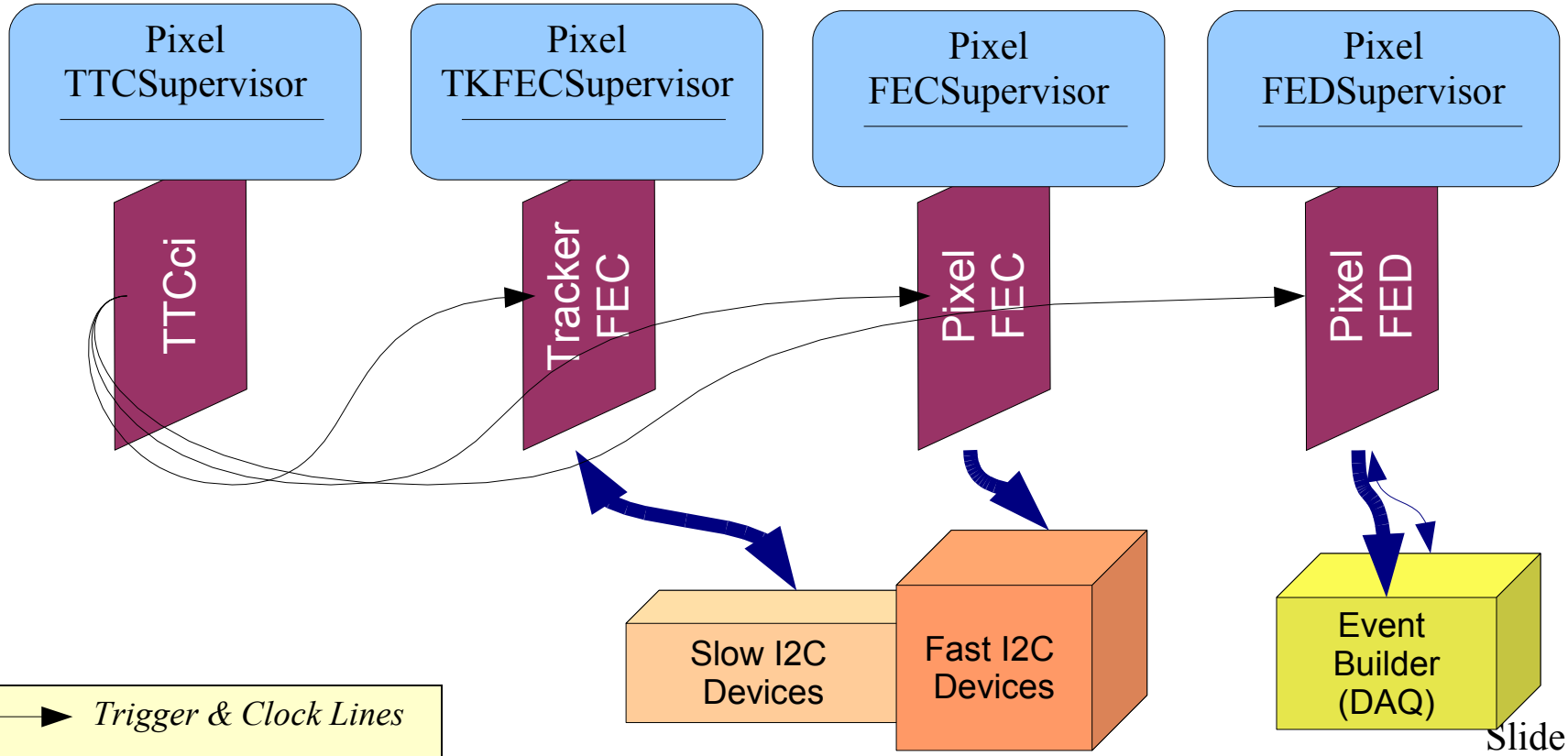
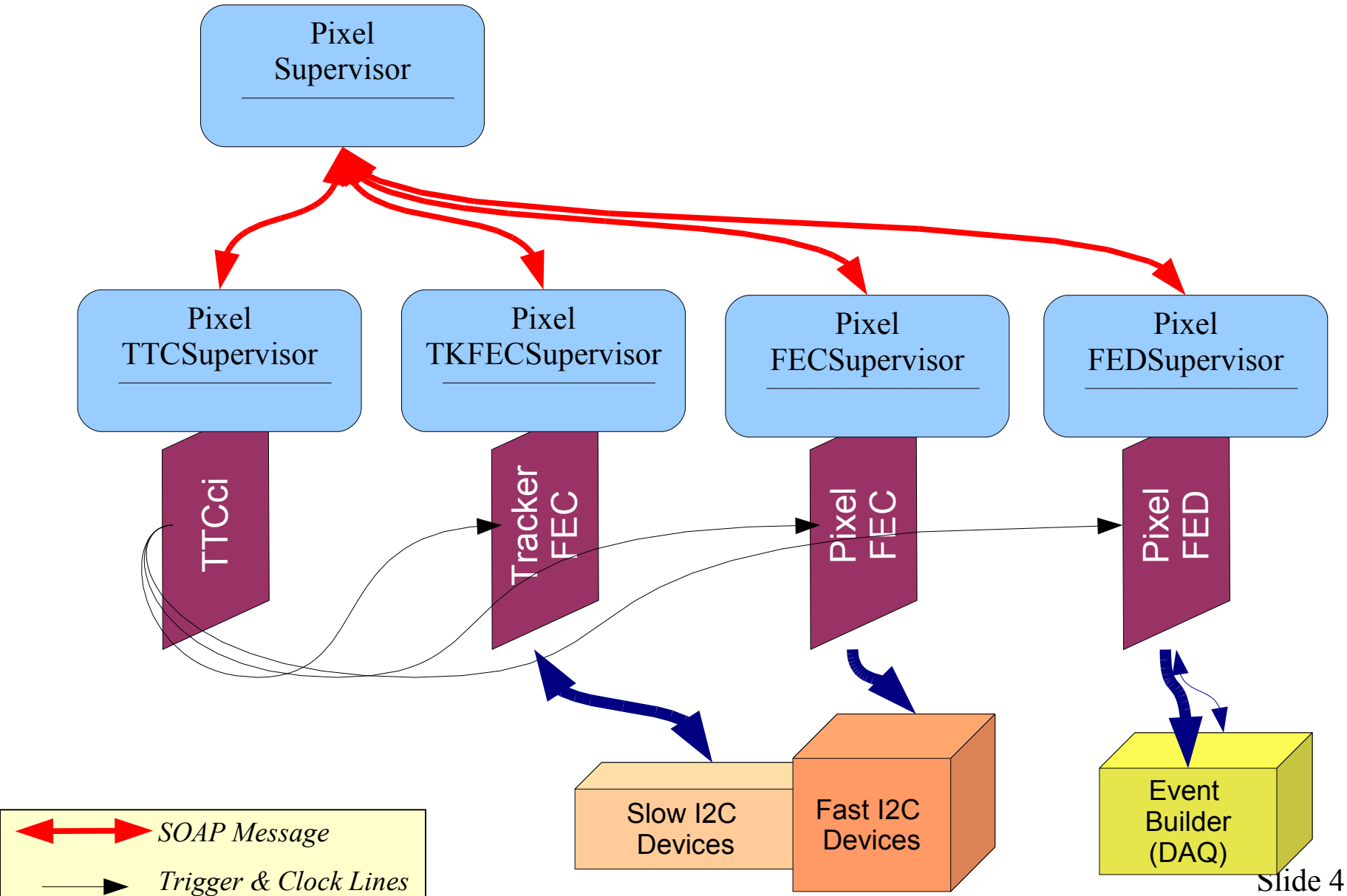
Generic Pixel XDAQ Topology – I



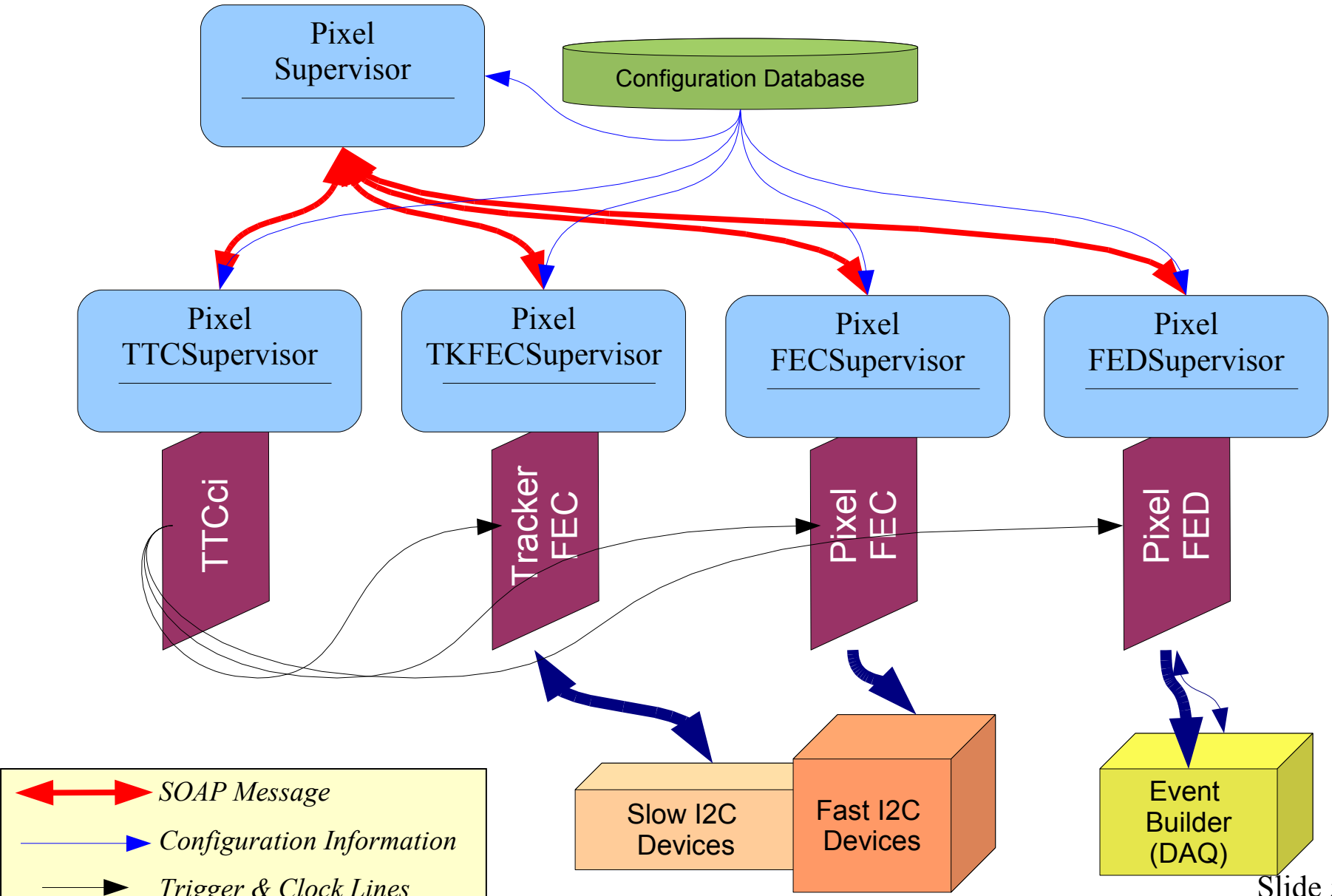
Generic Pixel XDAQ Topology - II



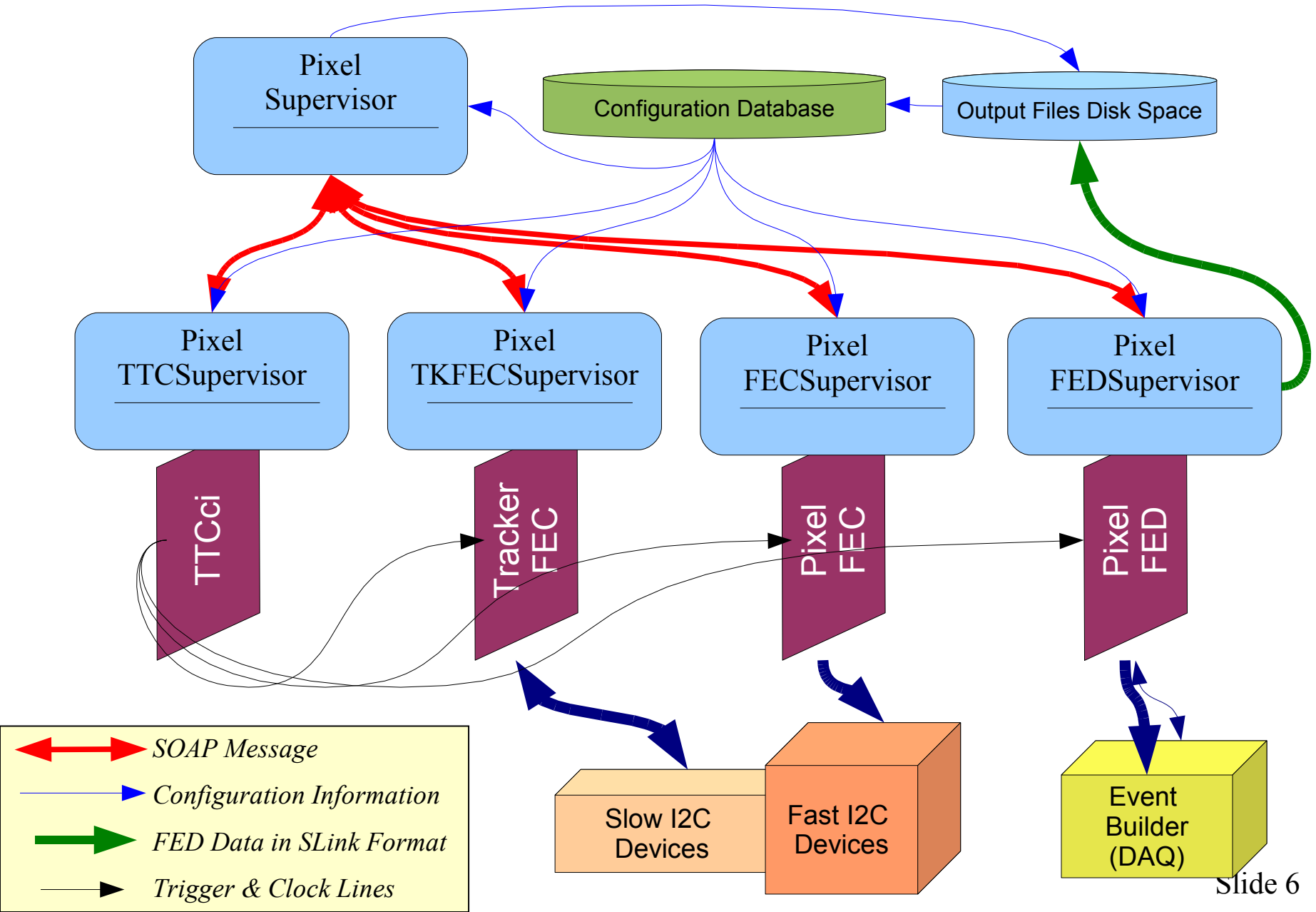
Generic Pixel XDAQ Topology - III



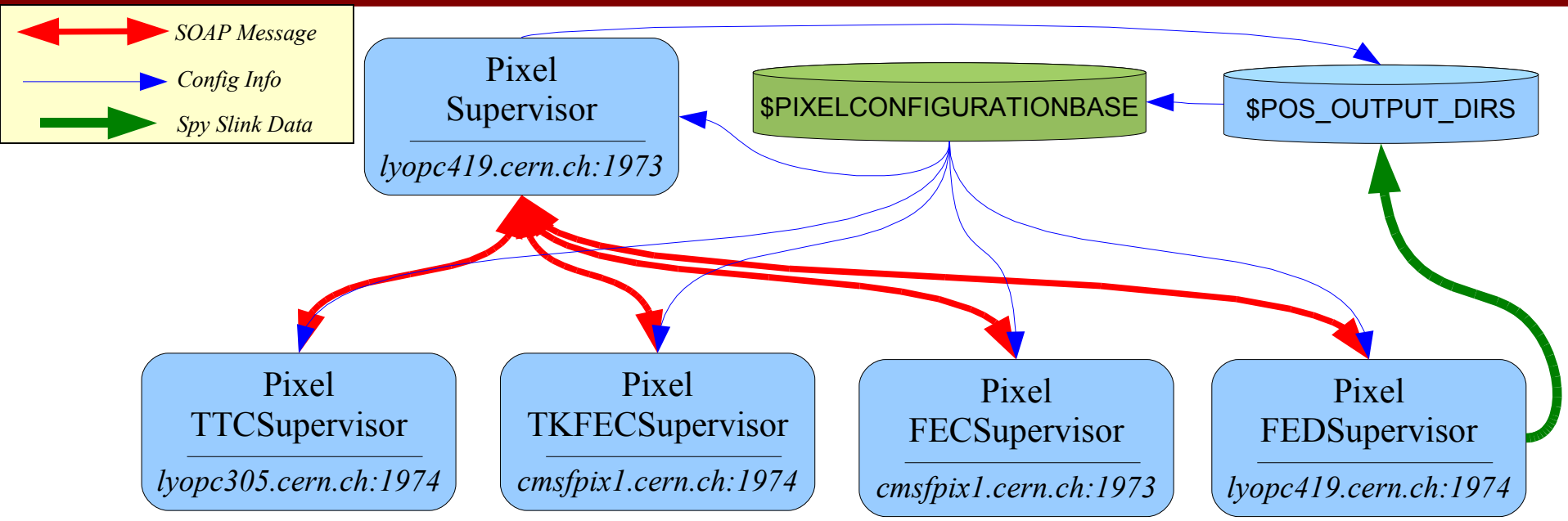
Generic Pixel XDAQ Topology - IV



Generic Pixel XDAQ Topology - V



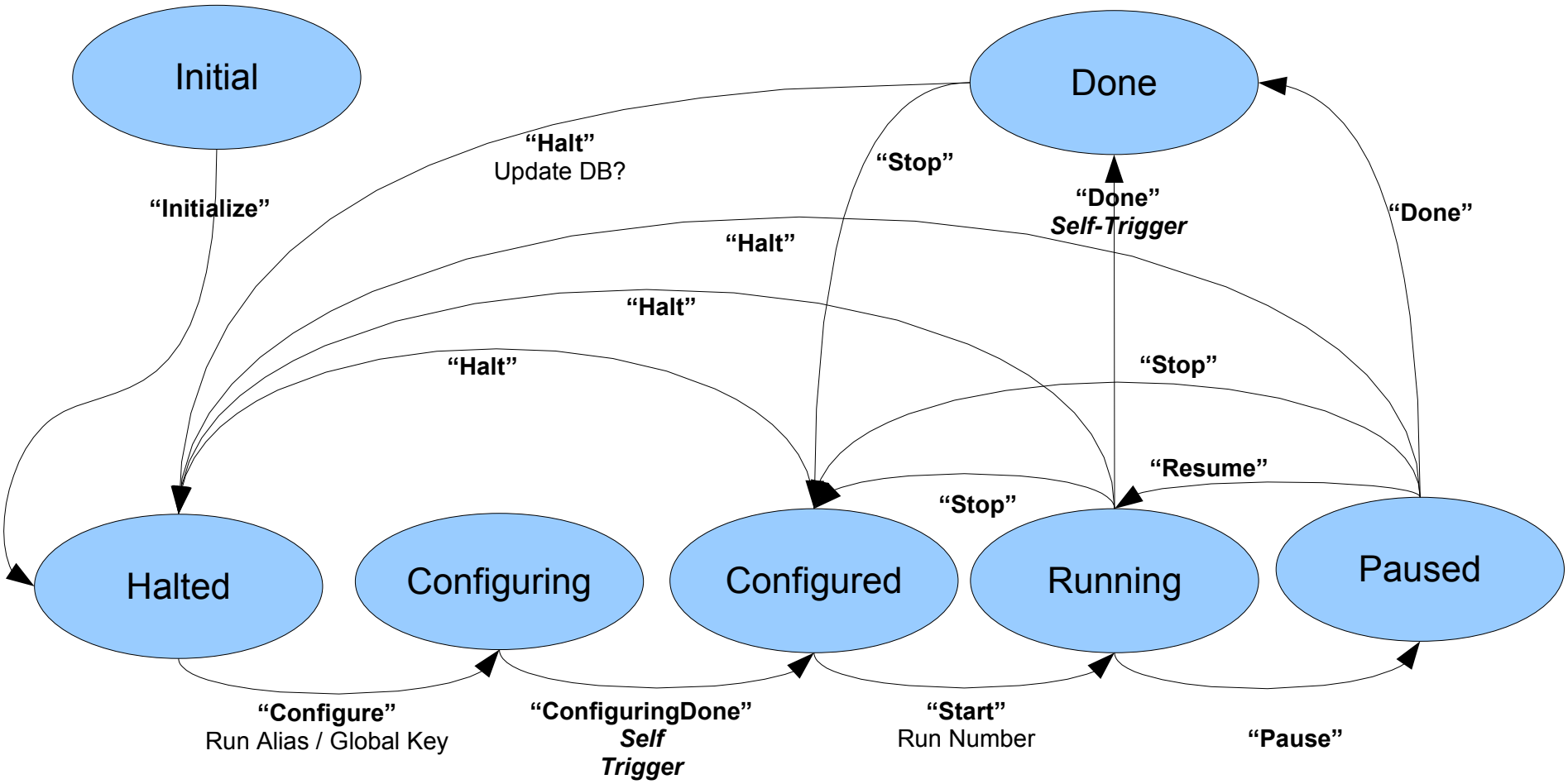
Pixel XDAQ Topology Specific for the Pilot Run Detector



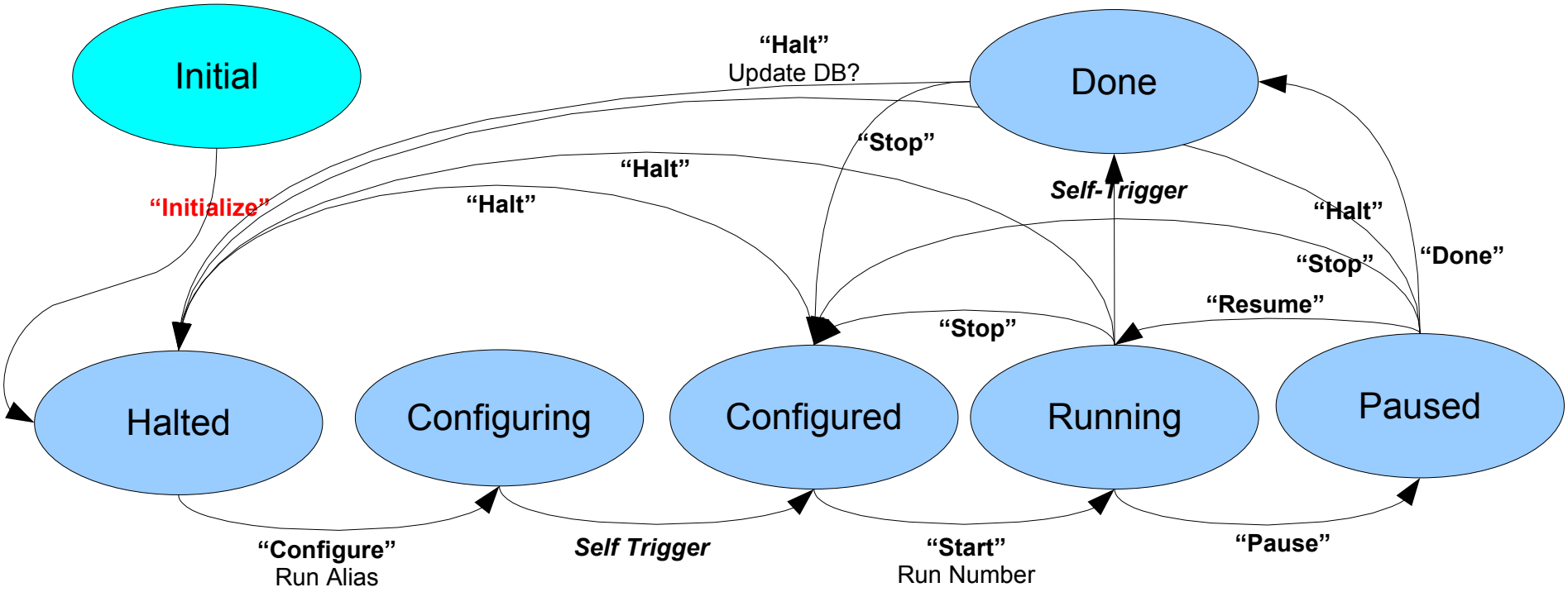
- Source the file `/FpixDAQ/DAQ/build/setenv.txt`
- Run the following processes:

```
lyopc419.cern.ch:$BUILD_HOME/pixel/PixelRun/run_PixelSupervisor.sh
lyopc419.cern.ch:$BUILD_HOME/pixel/PixelRun/run_PixelFEDSupervisor.sh
lyopc305.cern.ch:$BUILD_HOME/pixel/PixelRun/run_PixelTTCSupervisor.sh
cmsfpix1.cern.ch:$BUILD_HOME/pixel/PixelRun/run_PixelTKSupervisor.sh
cmsfpix1.cern.ch:$BUILD_HOME/pixel/PixelRun/run_PixelFECSupervisor.sh
```

PixelSupervisor's Finite State Machine

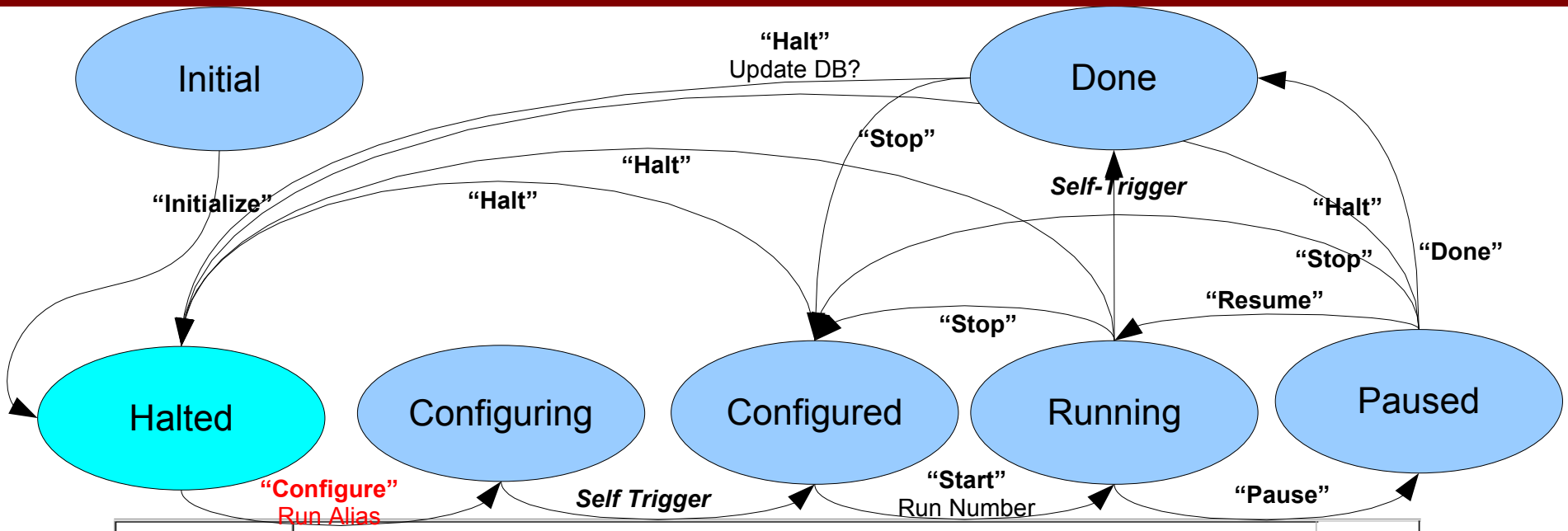


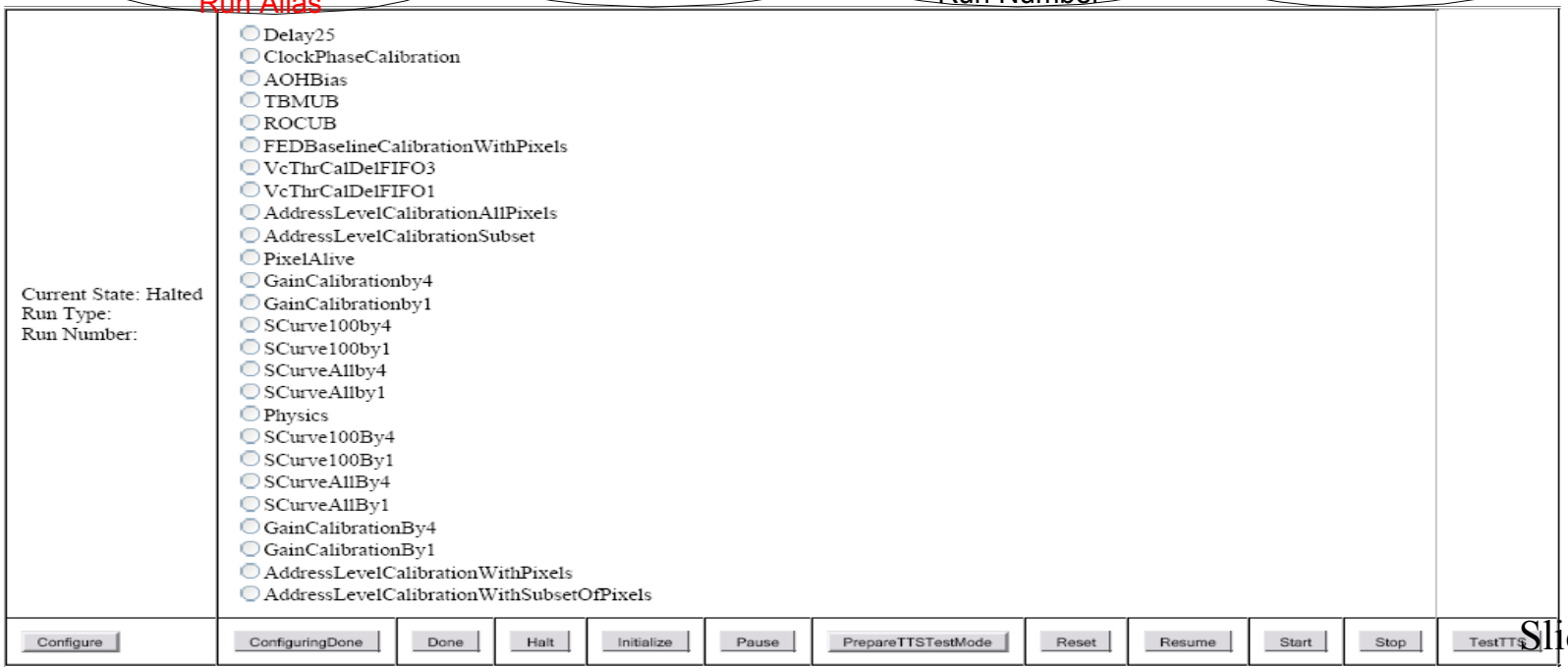
PixelSupervisor – Initial State



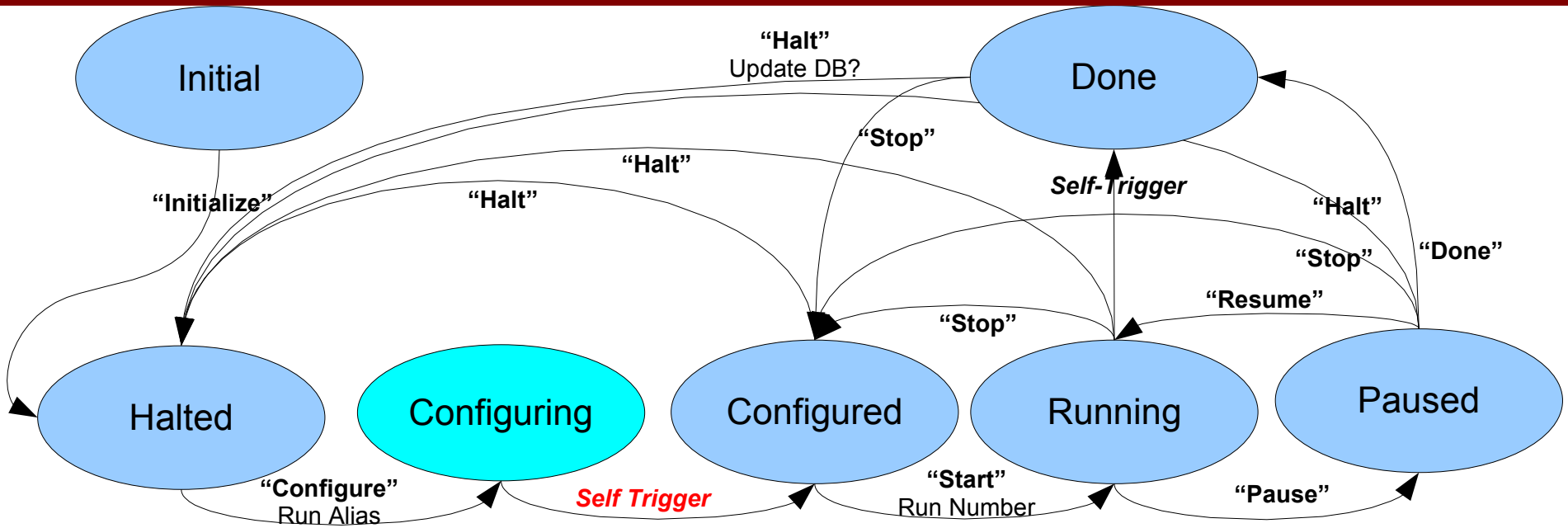
Current State: Initial Run Type: Run Number:											
Configure	ConfiguringDone	Done	Halt	Initialize	Pause	PrepareTTSTestMode	Reset	Resume	Start	Stop	TestTTS

PixelSupervisor – Halted State





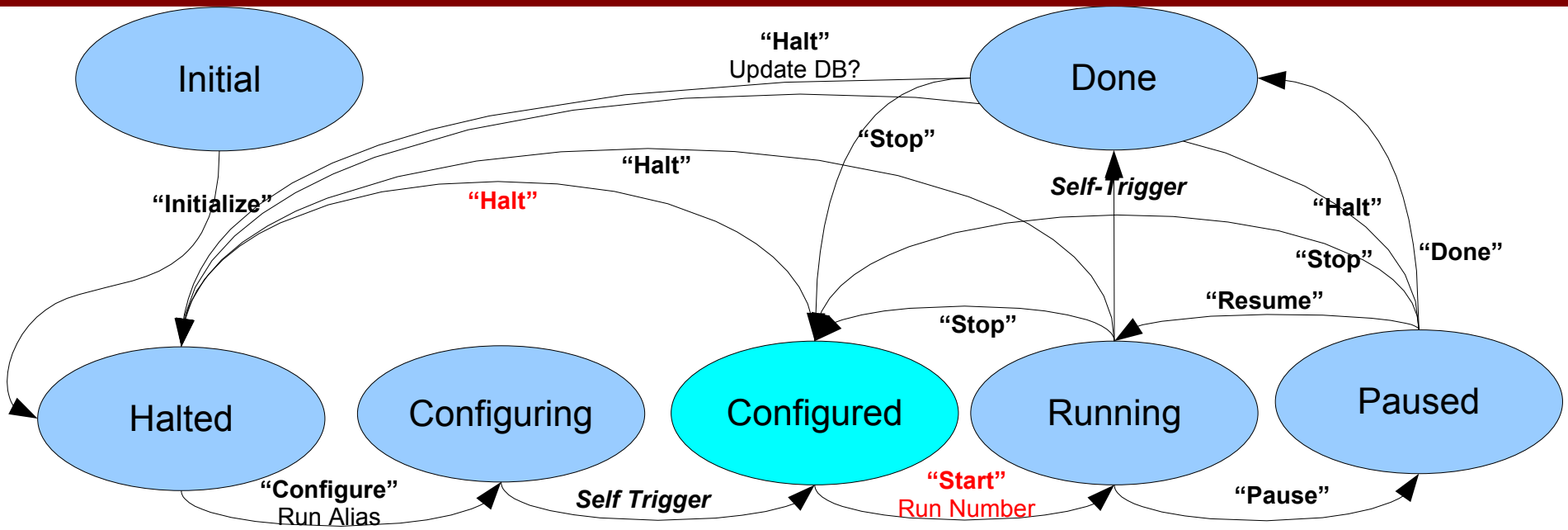
PixelSupervisor – Configuring State

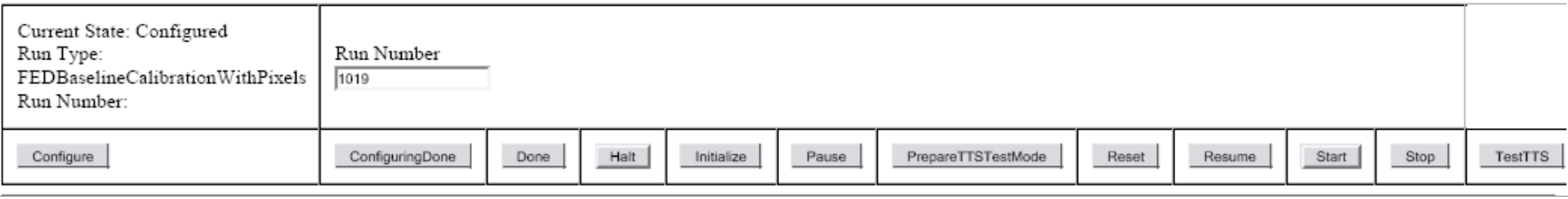


Current State: Configuring Run Type: FEDBaselineCalibrationWithPixels Run Number:	0% complete

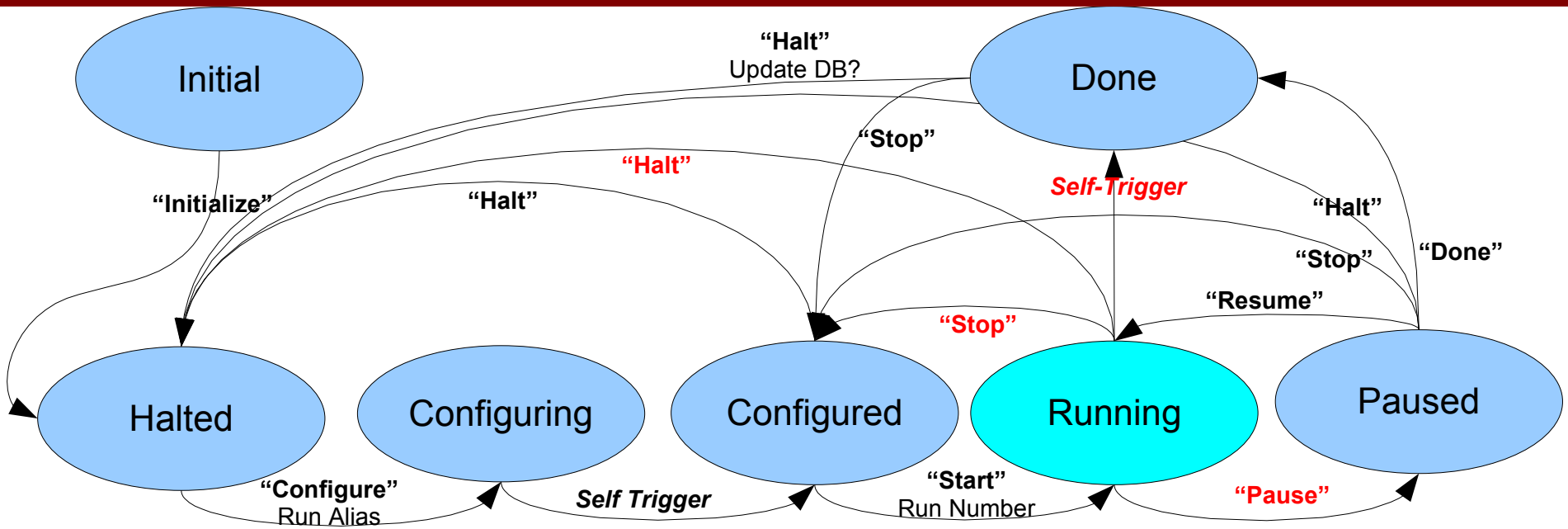
Configure	ConfiguringDone	Done	Halt	Initialize	Pause	PrepareTTSTestMode	Reset	Resume	Start	Stop	TestTTS

PixelSupervisor – Configured State



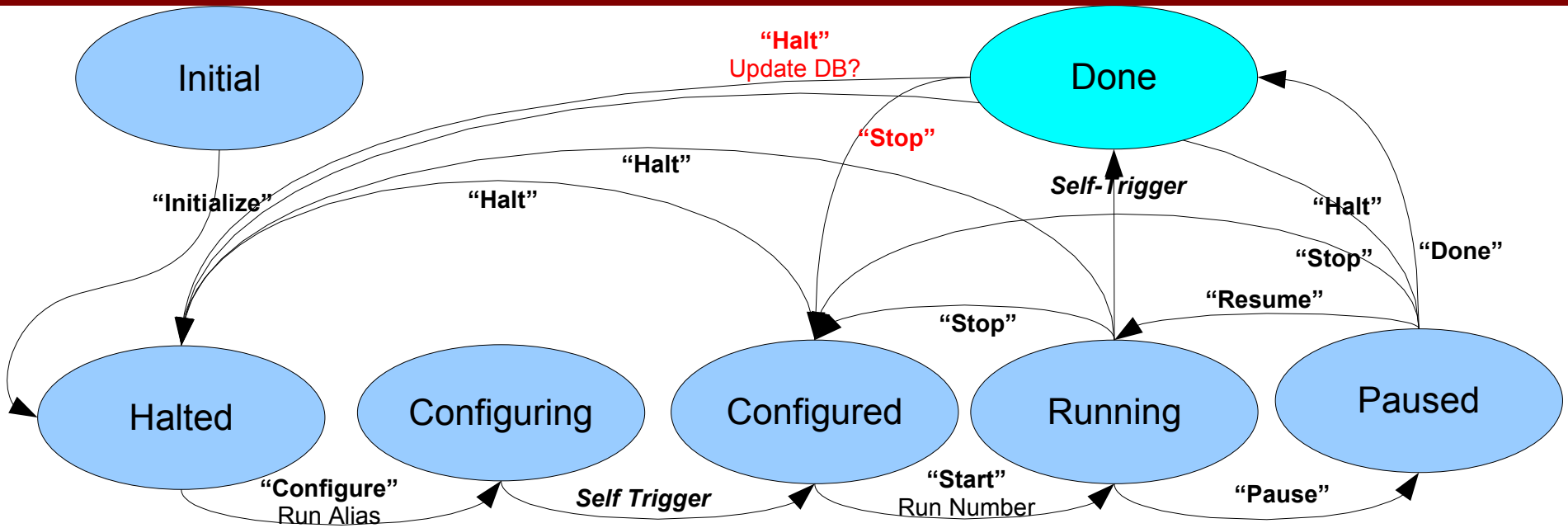


PixelSupervisor – Running State



Current State: Running Run Type: FEDBaselineCalibrationWithPixels Run Number: 1019											
Configure	ConfiguringDone	Done	Halt	Initialize	Pause	PrepareTTSTestMode	Reset	Resume	Start	Stop	TestTTS

PixelSupervisor – Done State

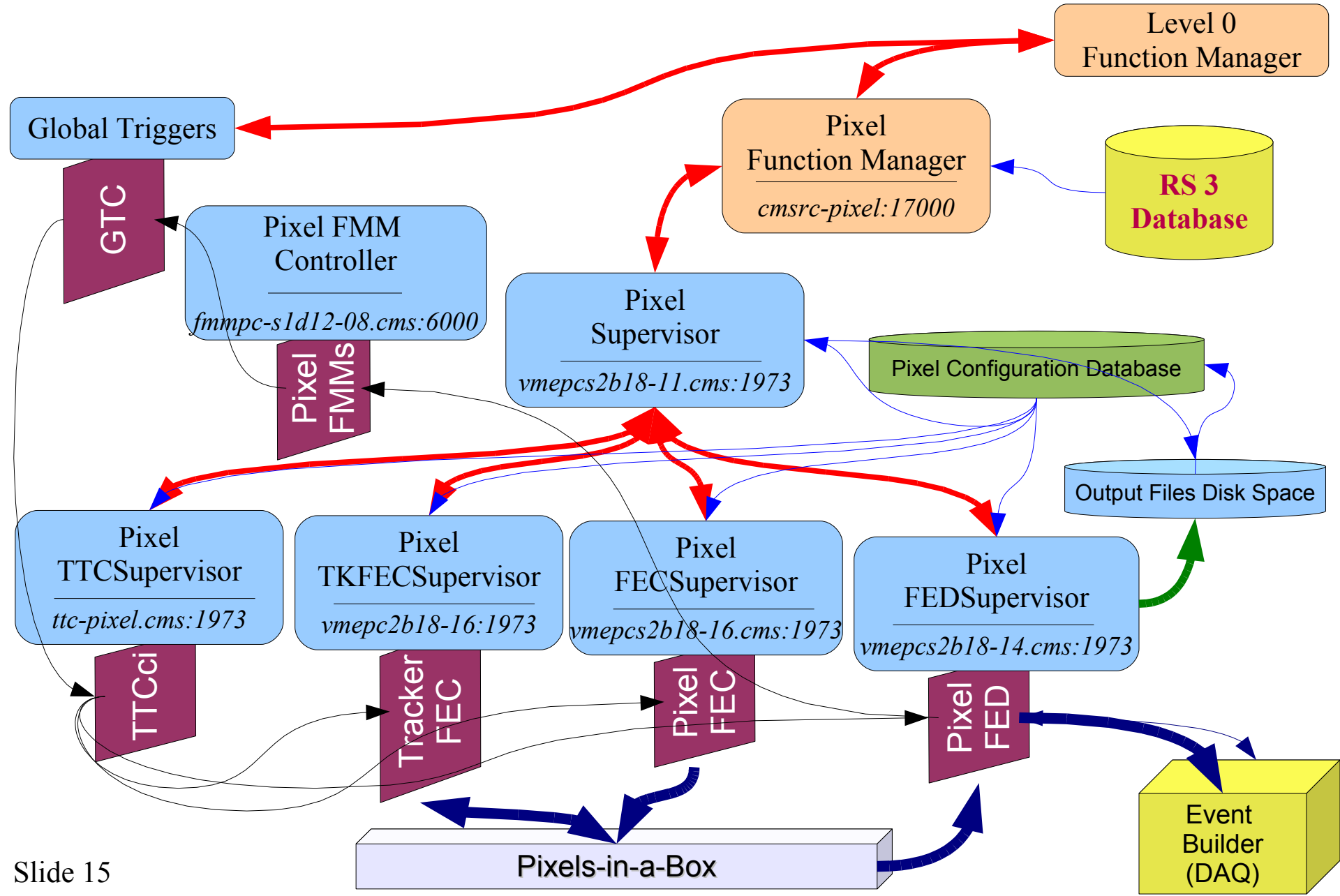


Current State: Done
Run Type:
FEDBaselineCalibrationWithPixels
Run Number: 1024

The current calibration:FEDBaselineWithPixels produced the following configuration data:
Insert data for:fedcard (•) Yes, ( ) No
Update the any of the following aliases:
Default: (•) Yes, ( ) No

Configure	ConfiguringDone	Done	Halt	Initialize	Pause	PrepareTTSTestMode	Reset	Resume	Start	Stop	TestTTS

Pixel XDAQ & RCMS Topology at Point 5



A Pixel Shifter's Job at Point 5

- The first power up is done in two steps manually.
- Keep an eye on the currents being drawn through the CAEN power supply.
- Make sure that a Tomcat Server with *PixelFunctionManager* is running on

  http://cmsrc-pixel.cms:17000/rcms/gui/servlet/RunGroupChooserServlet/
- Central Run Control can communicate with *PixelFunctionManager* to spawn *PixelSupervisor*, *PixelTKFECSupervisor*, *PixelFECSupervisor(s)*, *PixelFEDSupervisor(s)* and *PixelTTCSupervisor(s)*. None of these XDAQ processes need to be started or maintained by the Pixel Shifter!
- When Central Run Control is taking data, keep an eye on:
  - The *PixelFMMController* http://fmmpc-s1d12-08.cms:11100/ to make sure we're throttling the central trigger with sTTS BUSY and WARN signals for significant amounts of time,
  - FED Baseline Drifts to make sure no channel requires corrections > 30 ADC,
  - Error Data coming from the FEDs to make sure Timeout other errors don't occur,
  - Available disk-space at $POS_OUTPUT_DIRS
- Maintain a pixel log.