SVD slow control

FADC CTRL and SVDQM

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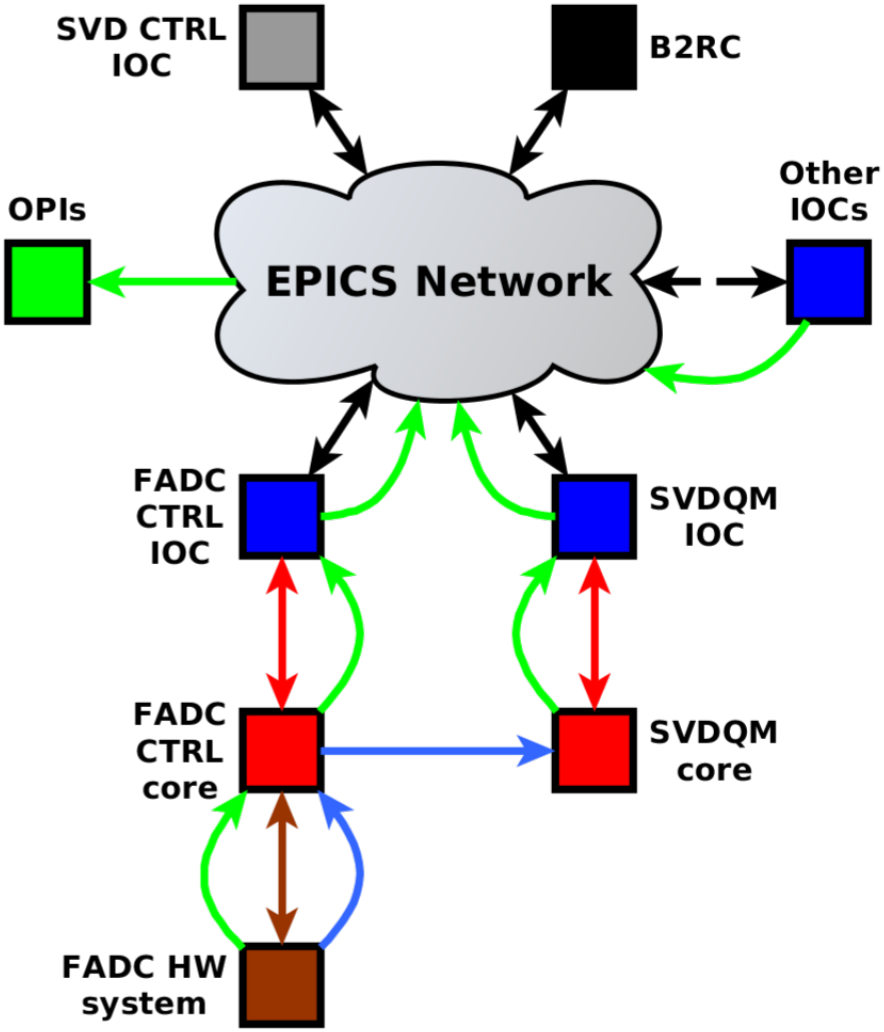
Overview

SVD slow control



- **OPI/CSS:** Presents data from the epics network to the user.
- **Epics Net.:** Contains data from all connected IOCs.
- **Epics IOC:** Provides/broadcasts data for the epics network (PVs).
- **C++ Interfaces:** Provides IOCs with updates and processes the given request.

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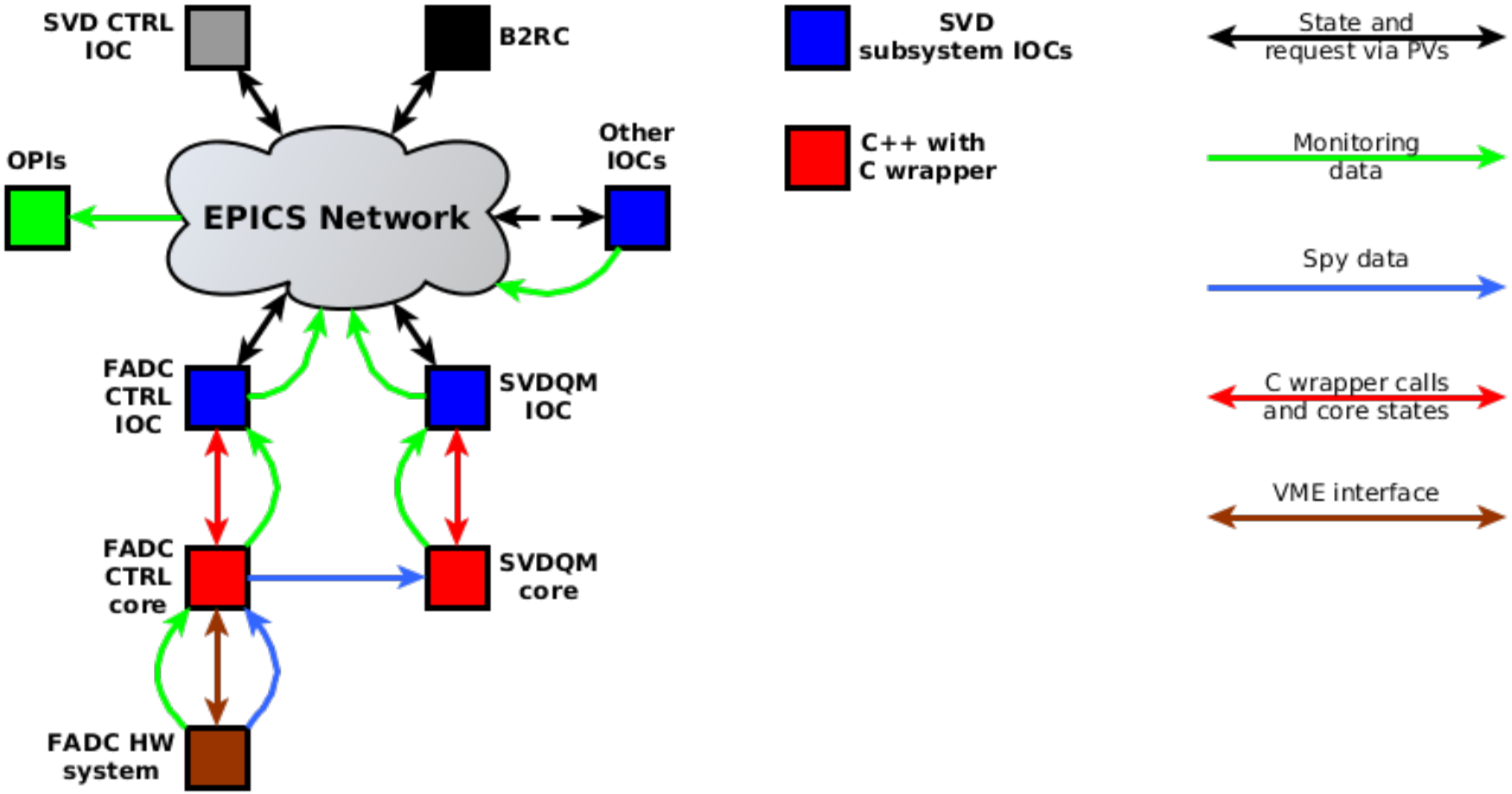
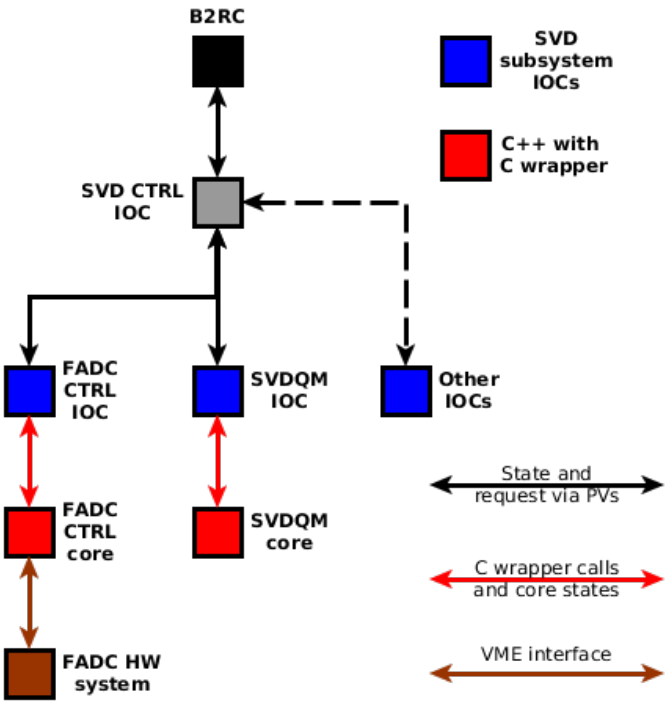
Overview

Data flow



Overview

Ctrl flow/hierachy of FADC CTRL and SVDQM



Control flow/hierachy:

- Request propagation: top to bottom.
- Error/state propagation: bottom to top.

Internally, each subsystem IOC is driven by a finite state machine consisting of:

- **AcceptingRequest:** configure, start, stop, abort
- **WaitProccessed:** Waits until core has processed the request
- **Updating:** Copy the results from the core to the corresponding PVs. Remap core state to IOC state.

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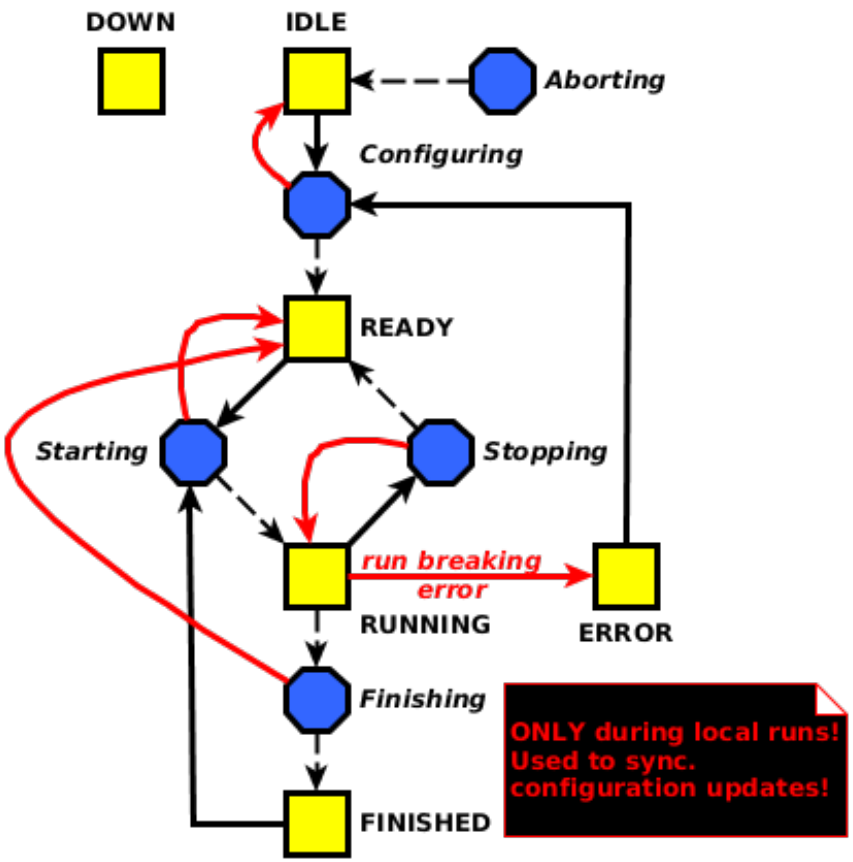
State machine

Stable states



"Stable" states (accepting requests):

- **DOWN:**
  Not all required PVs are connected during startup of the system.
- **IDLE:**
  Configuration has to be fetched and (re)applied.
- **READY:**
  The system is configured and ready to go.
- **RUNNING:**
  The system is taking spy data.
- **ERROR:**
  A run breaking error has occured during RUNNING.

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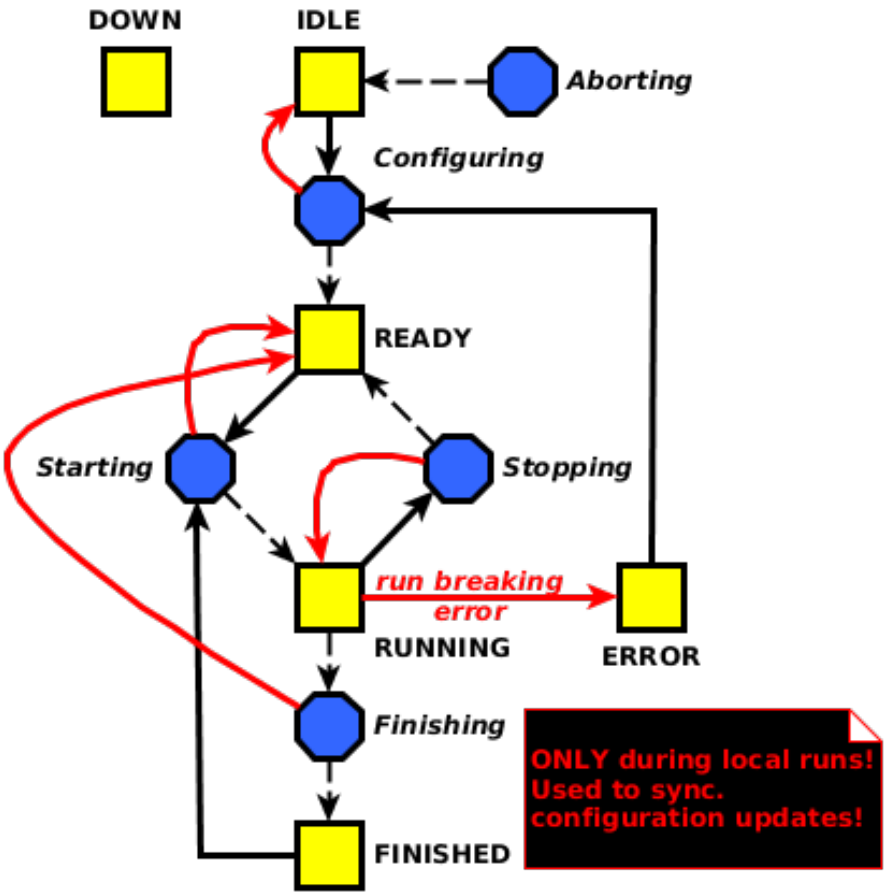
State machine

Intermediate states



"Intermediate" states (busy performing request):

- **Configuring:**
  Applying configurations.
- **Starting:**
  Start aquisition/evaluation of spy data.
- **Stopping:**
  Stopping aquisition/evaluation.
- **Aborting:**
  Go from any stable state -except from DOWN- to IDLE.

After finishing the task, the request PV is set to "PROCESSED" and the state goes depending on the success to the desired one.

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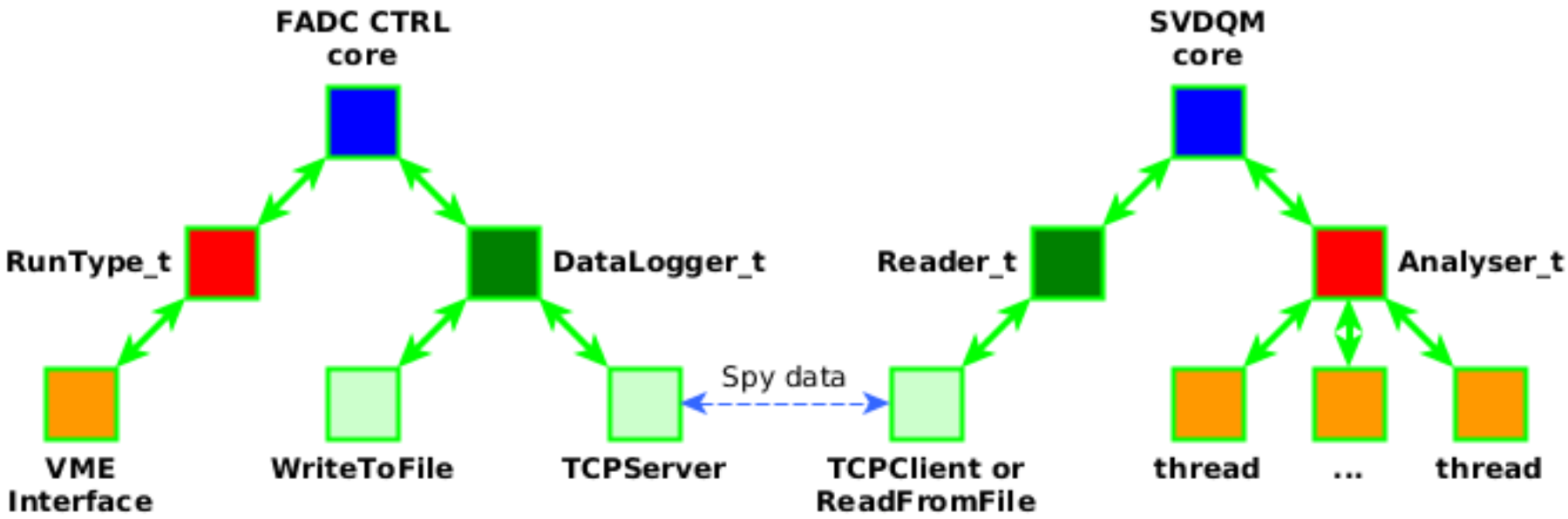
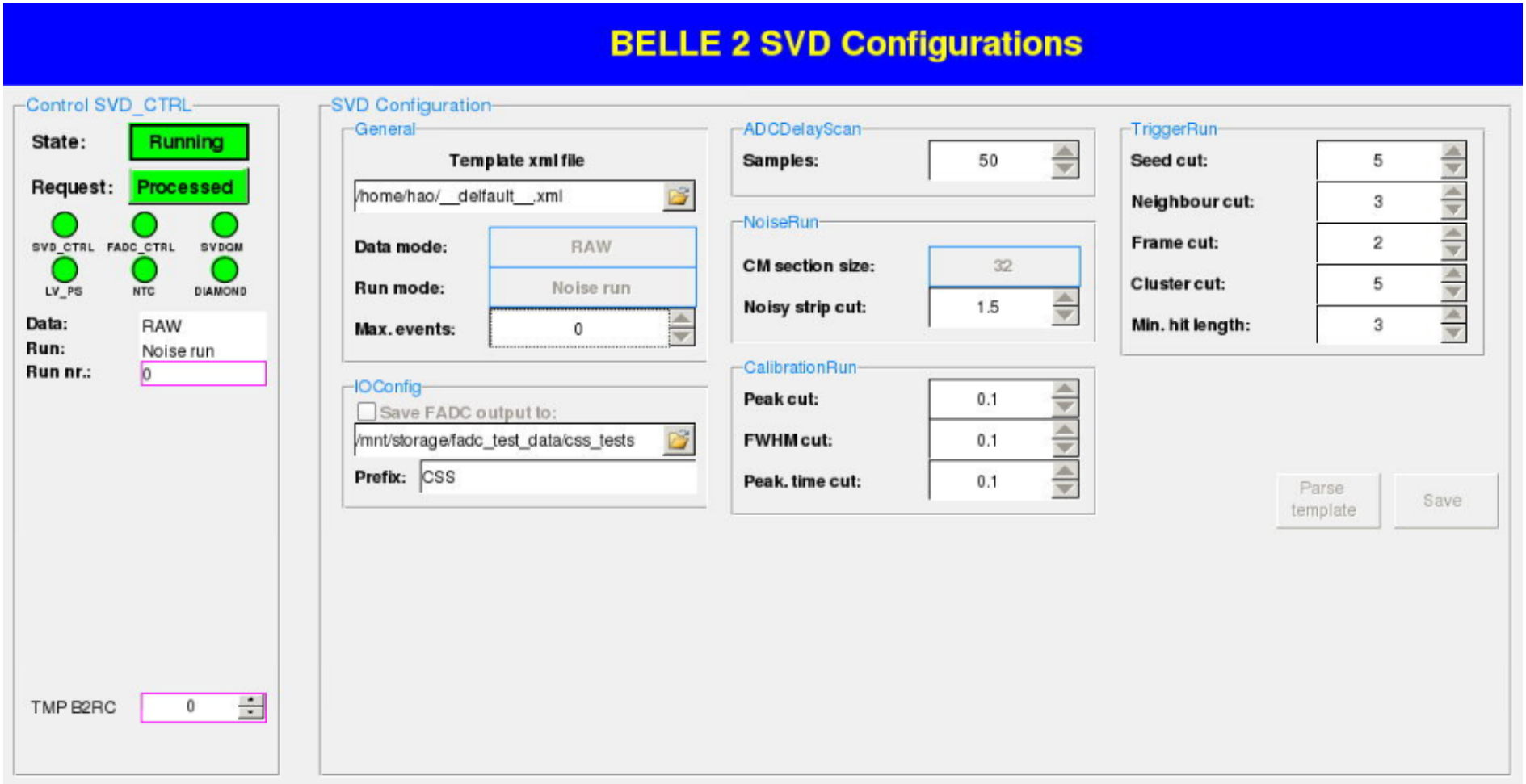
C++ Interface

FADC CTRL and SVDQM core



OPI - Preliminary build!

Configuration



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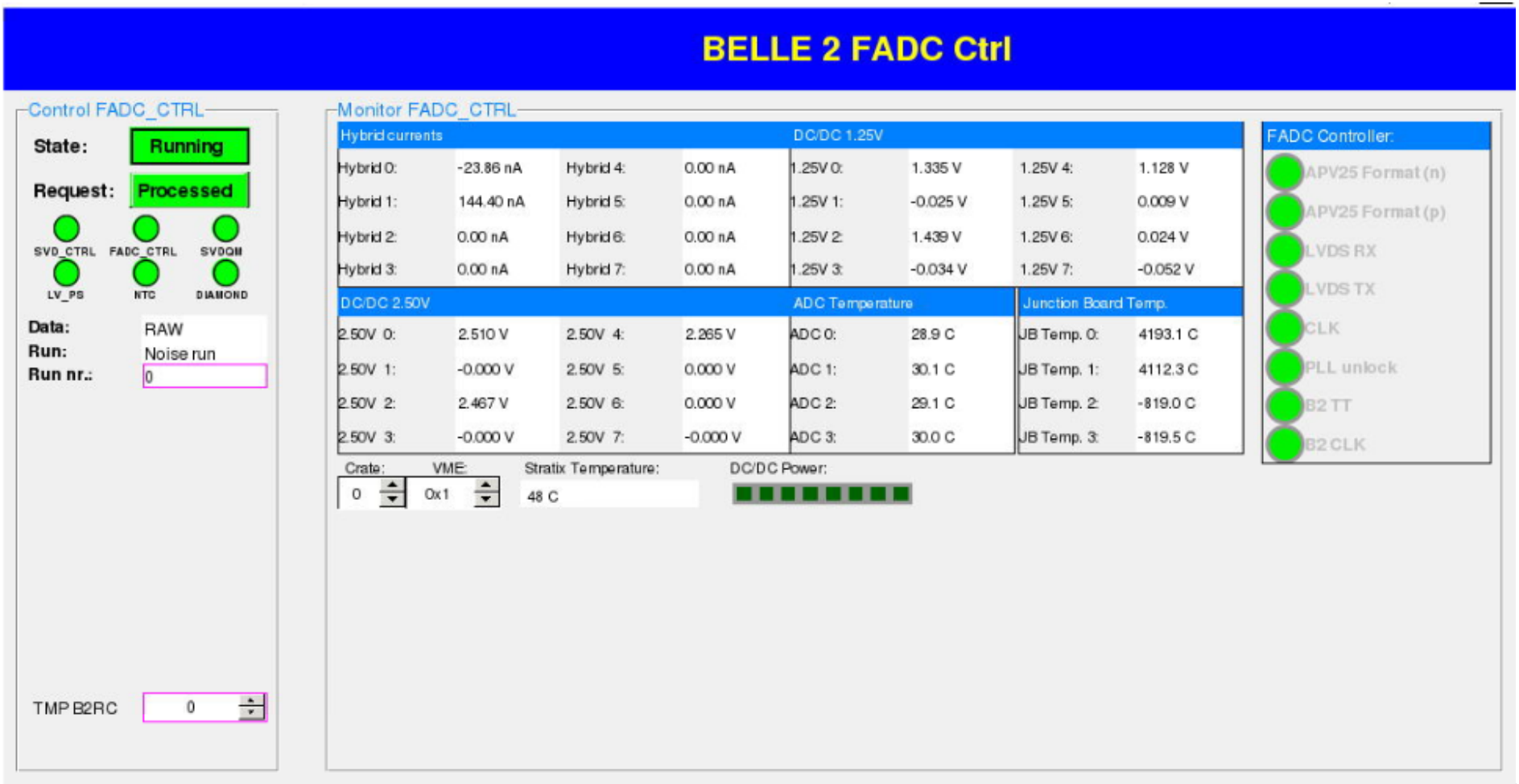
OPI - Preliminary build!

FADC CTRL



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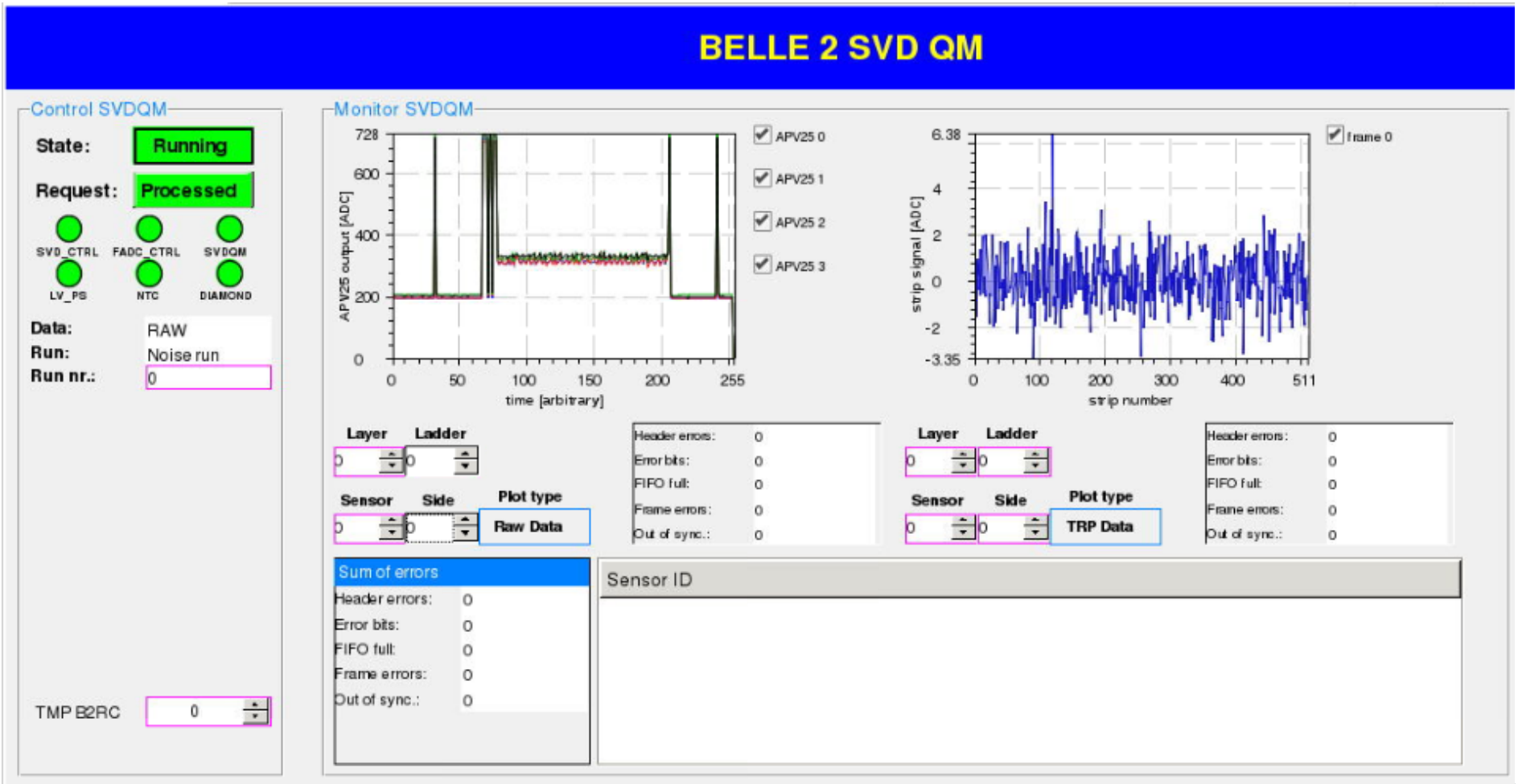
OPI - Preliminary buld!

SVDQM



Todos and time line

Last B2GM:

- Debugging the DESY build (**on going...**)
- Refactoring the DESY build (**end of August**)
  - Core implementation of SVD QM (80% finished, 1-2 week)
  - Core implementation of FADC CTRL
  - Adapting SNL codes.
- Updating / rewriting OPIs (**end of September, mid October**)
- Forwarding warning and error msg to Belle II RC. Internal interface is already implemented. (If there is an interface on Belle II RC side, few days...)
- Configuration databases (**unknown need discussion**)

Current state

- **Finished** debugging DESY build.
- **Finished** refectoring C++ implementations, few minor tweak left (configuration)...
- **Finished** msg logging to CSS, using the C++ implementation provided by M. Ritzert.
- Implementing BOY widget for specific tasks needed by SVDQM and FADC CTRL OPI (**ongoing, end of october**).
- Move local file bases configurations to database (**not started yet**).
- Implement alarm system, need responsibility definition between Slow Control and Belle II DAQ. (**not yet started**)

A discussion important point: What kinds of plots do you expect to see on SVDQM (shifter and/or expert interface)?

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