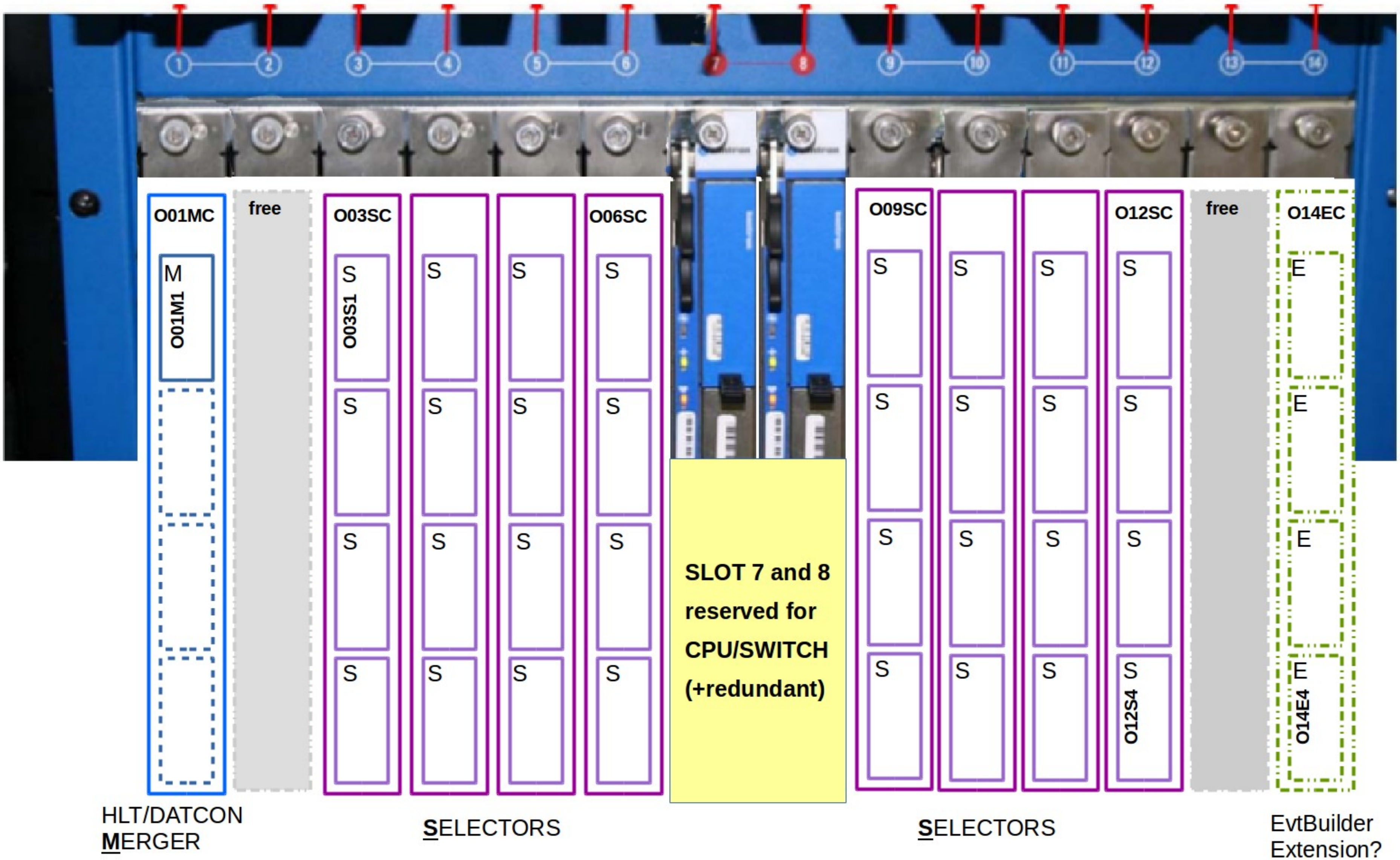
Status and Discussion Points

VXD SC – 23.7.2015

B. Spruck

ATCA Shelf Layout (proposal)



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

ONSEN Run Control

- Each board has its own Run Control IOC
  - Status of O(40) IOC has to be taken into account in top ONSEN RC
  - On-board IOC cannot (re)start the board
  - Need for a external RC which controls the boards power-up and boot (by IPMI)?
  - do we need run control for starting the shelf (by hand). second level of state machine.
  - B2/nsm does not have any detailed status for that.
- **Boot**/Configure/Start/Stop → run script on the PowerPC Linux to set-up the hardware. (most likely only on „boot“)

Scheme (will most likely change)

SM on-board

SM only runs AFTER system has booted. Thus first state is „CONFIGURED“

Load, Start, Stop

SM on SC computer, One per board

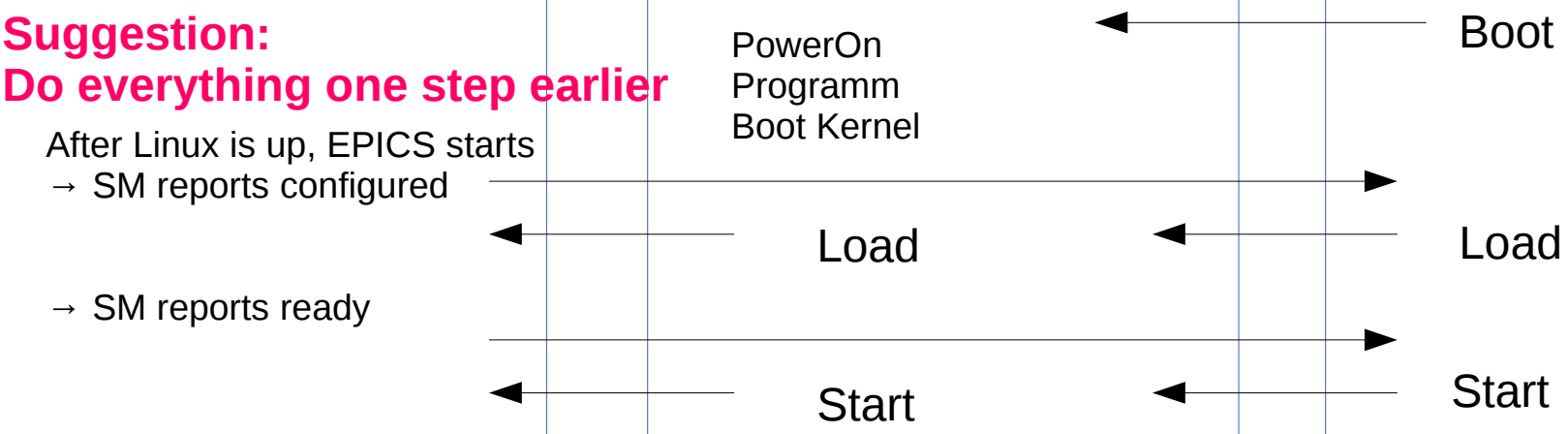
Has to control the power-on, program and boot process for each board. Actually, all boards should do that automatically.

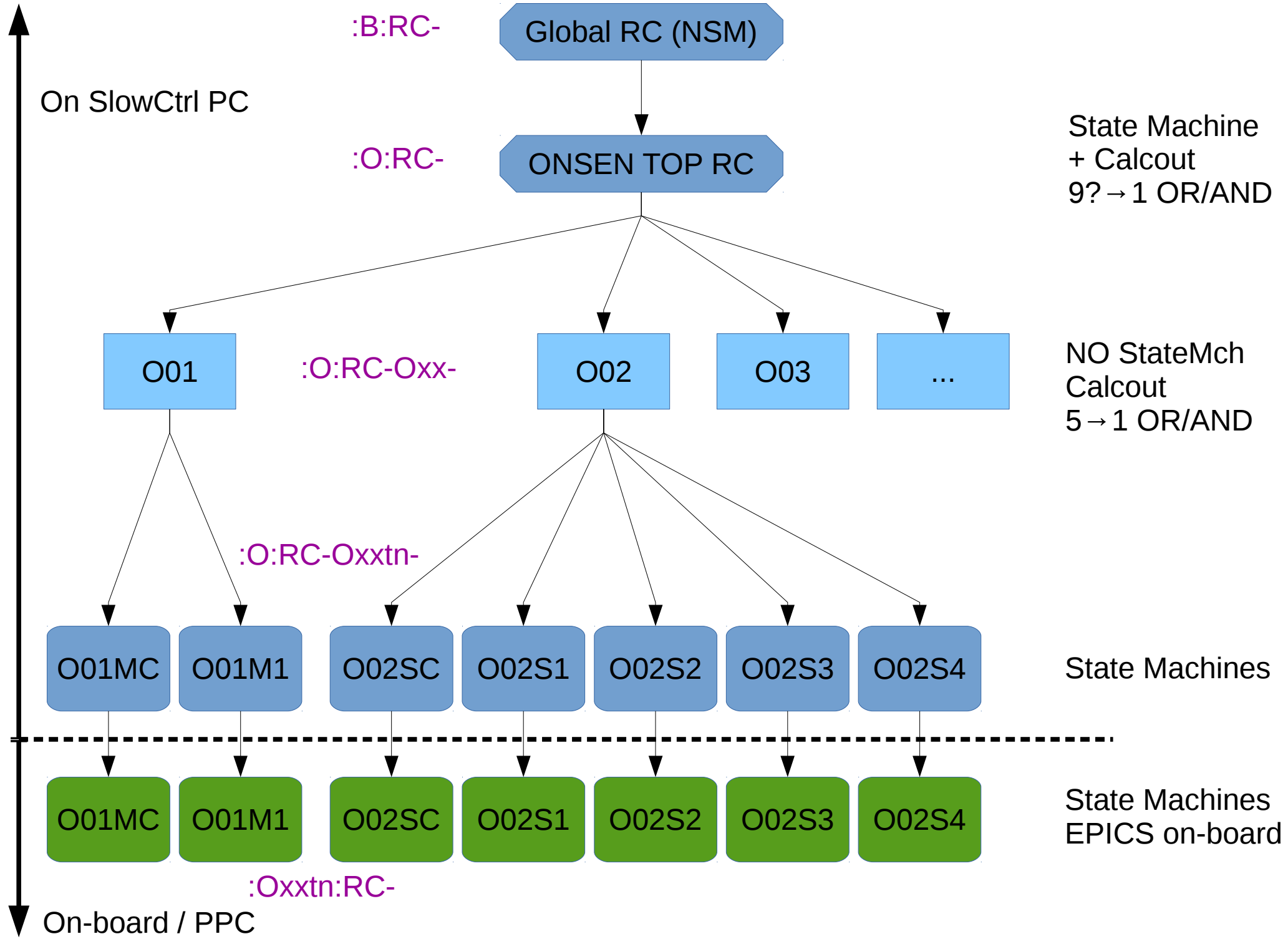
By IPMI! For tests it could be script which programs board by JTAG

Reboot, Reprogram, Power Cycle, etc

SM on SC computer, Global for ONSEN

Suggestion:
Do everything one step earlier

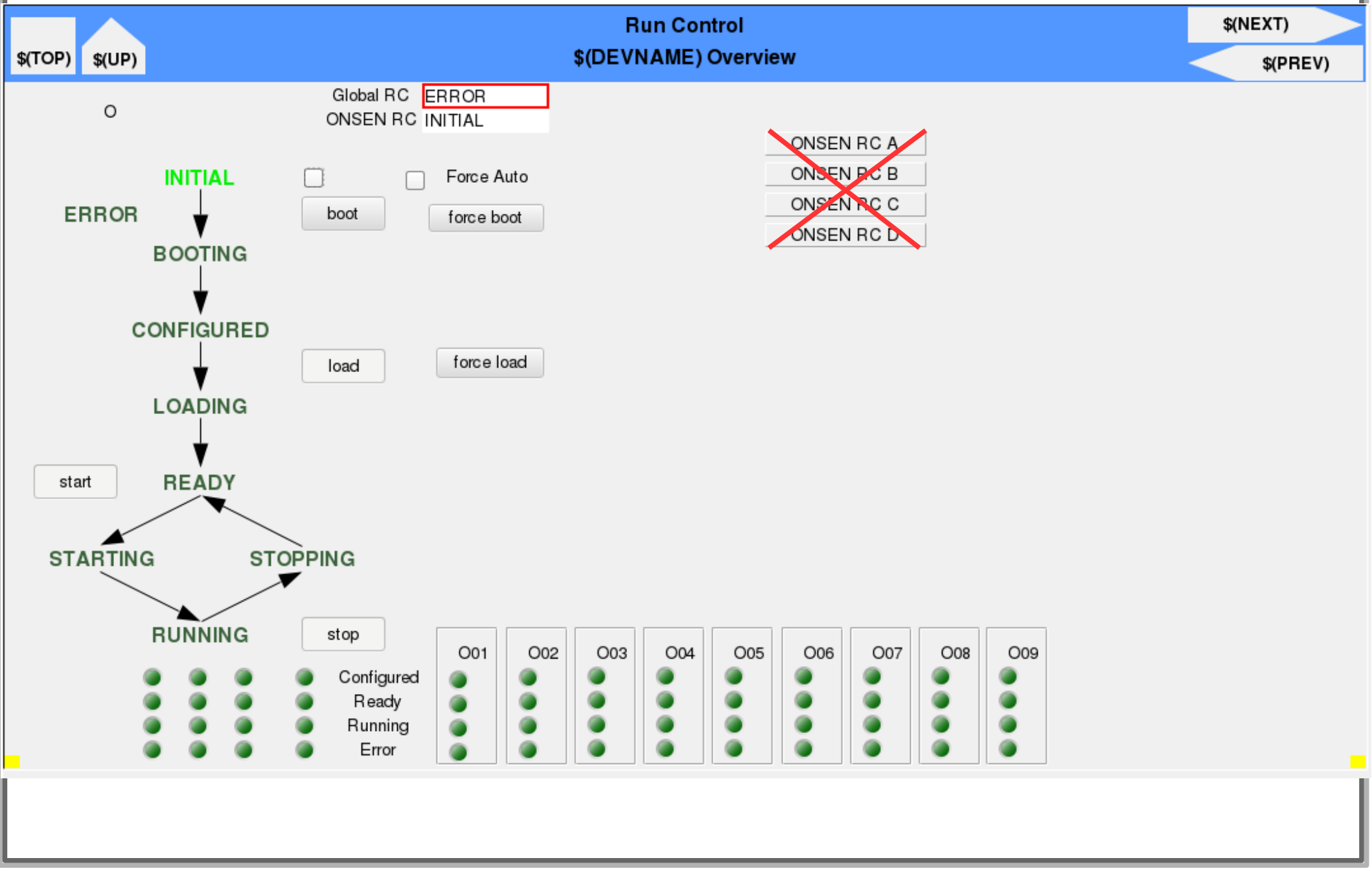



:B:RC-
Global RC (NSM)
On SlowCtrl PC
:O:RC-
ONSEN TOP RC
State Machine
+ Calcout
9?→1 OR/AND
O01
:O:RC-Oxx-
O02
O03
...
NO StateMch
Calcout
5→1 OR/AND
:O:RC-Oxxtn-
O01MC
O01M1
O02SC
O02S1
O02S2
O02S3
O02S4
State Machines
O01MC
O01M1
O02SC
O02S1
O02S2
O02S3
O02S4
State Machines
EPICS on-board
:Oxxtn:RC-
On-board / PPC

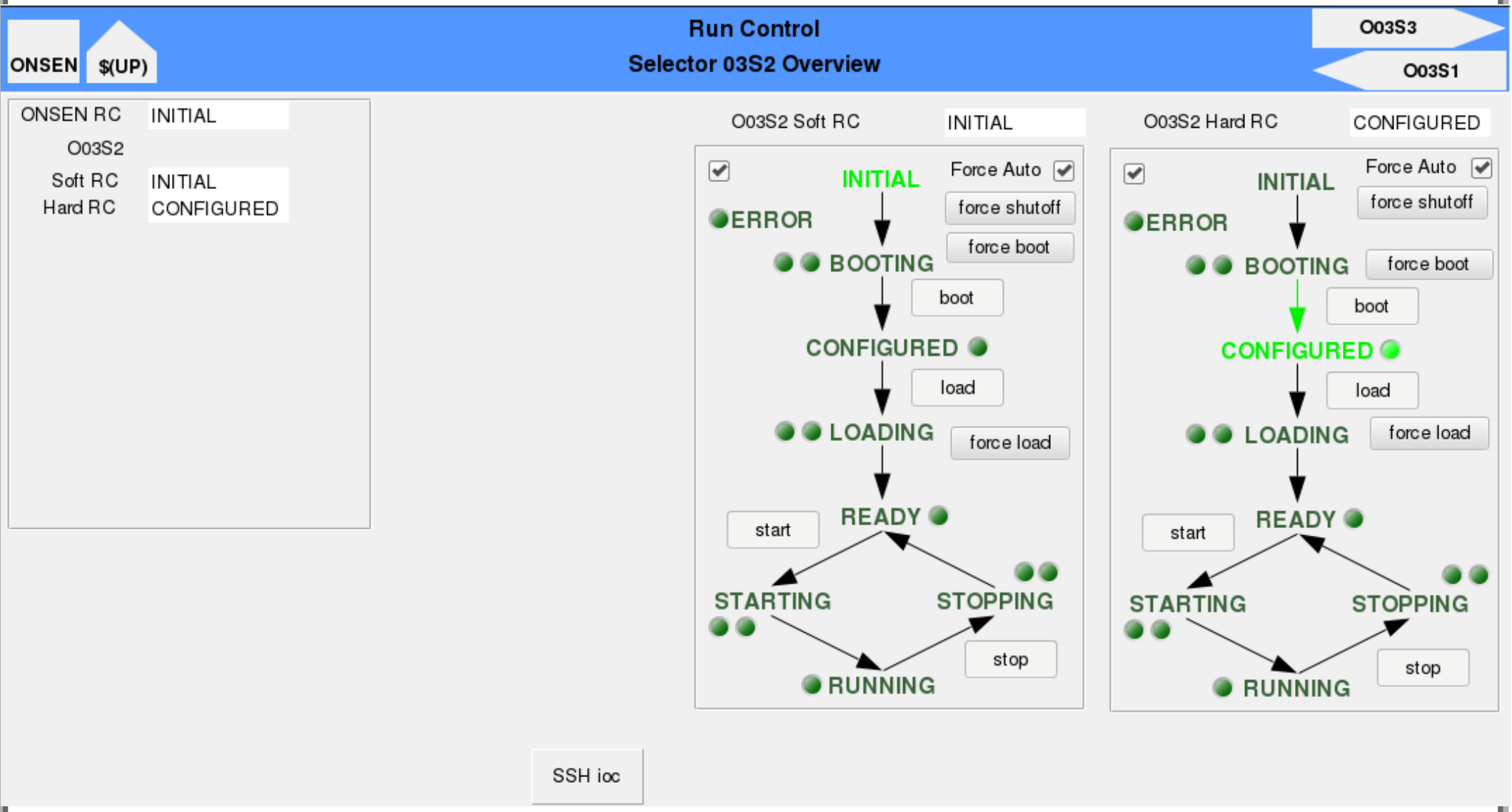
ONSEN – States and Transitions

OFF – Shelf is powered off
OFF – Shelf is on, carrier is powered off
OFF – Shelf is on, carrier is on, AMC is powered off
OFF – Shelf is on, carrier is on, AMC is on, FPGA not programmed
OFF – Shelf is on, carrier is on, AMC is on, FPGA programmed, no system
OFF – Shelf is on, carrier is on, AMC is on, FPGA programmed, linux booted, IOC off
Initial – System is ON (IOC is on, network connected, SC connected to IOC)
Booting: initial → configured – Reset Cores, Clear hw buffers, Initialize memory Buffers, HLT und EB network address, enable logic
Configured – system waits for EB, HLT DATCON and DHH connects
Loading: configured → Ready – Only if all expected connections within the system and to the ouside world are o.k. we signal ready
Ready – System is ready to process data. Actually there is no difference between Ready and Running from our side.
Start: Ready → Running – NOP
Running – System is processing data. Actually there is no difference between Ready and Running from our side.
Stop: Running → Ready – NOP. (Maybe we could wait for 5s HLT delay before going to ready, thus to be sure that all data has been processed. Its not so clear how we can decide that within the system logic itself. This depends on the scheme for the EB and HLT connections too e.g. if they drop the connection on Stop or not.

ONSEN TOP RC


$(TOP)
$(UP)
Run Control
$(DEVNAME) Overview
$(NEXT)
$(PREV)
Global RC
ERROR
ONSEN RC
INITIAL
ONSEN RC A
ONSEN RC B
ONSEN RC C
ONSEN RC D
INITIAL
ERROR
Force Auto
boot
force boot
BOOTING
CONFIGURED
load
force load
LOADING
start
READY
STARTING
STOPPING
RUNNING
stop
Configured
Ready
Running
Error
O01
O02
O03
O04
O05
O06
O07
O08
O09

ONSEN local RC



Misc. Discussion

- When are TCPIP connections from EB and HLT to be expected?
  - Would they be included in the reported status, and if yes, at which stage (READY?).
  - Will they stay connected for a STOP-START cycle?
- Connections from DHH and DATCON are always „connected“
  - Would they be included in the reported status, and if yes, at which stage.