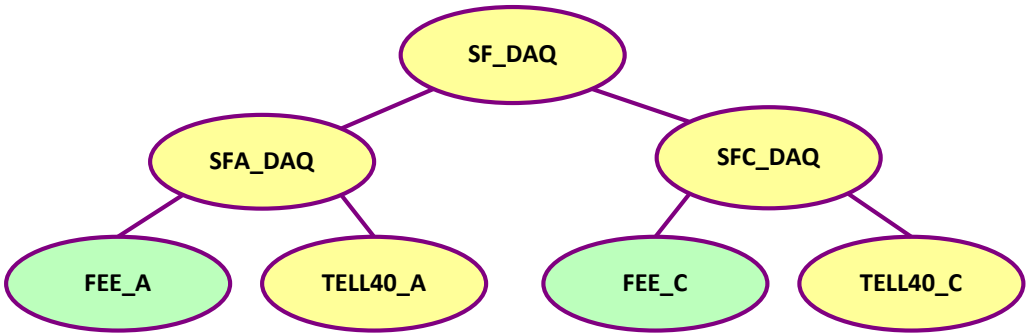
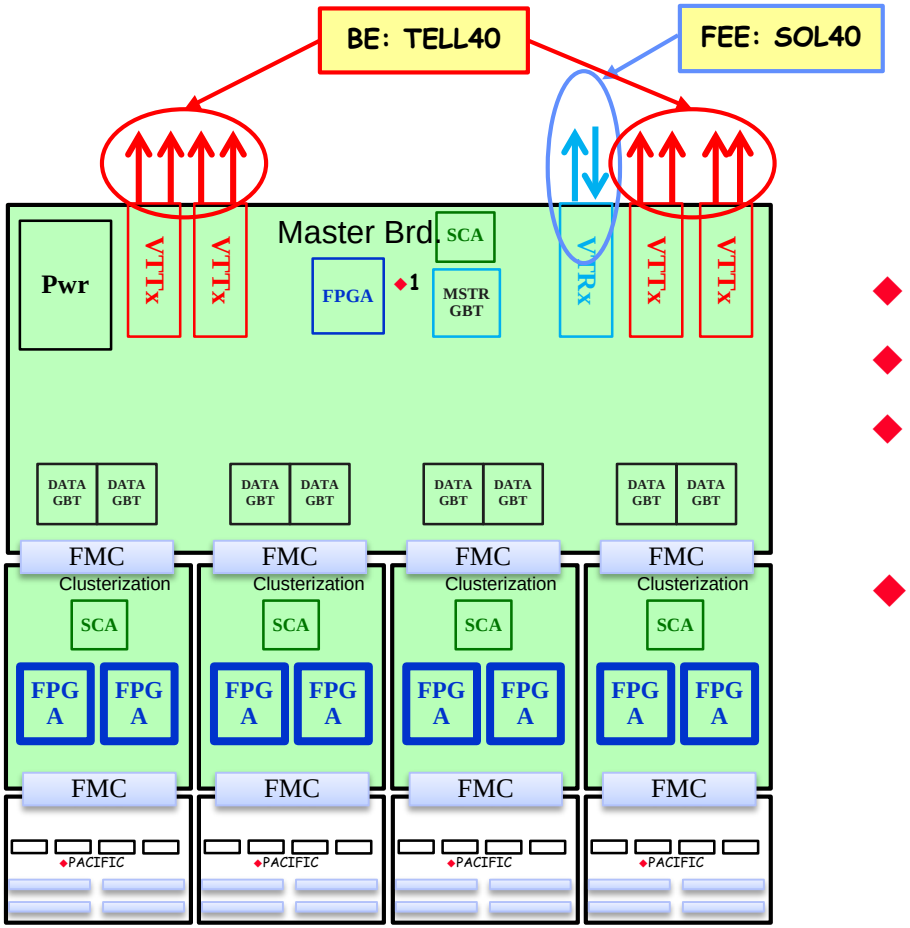
SciFi FEE → LHCb ECS

- Overview
- Hardware
- Layout
- FSM
- Controls
- Issues & Remarks



SF_DAQ control domain

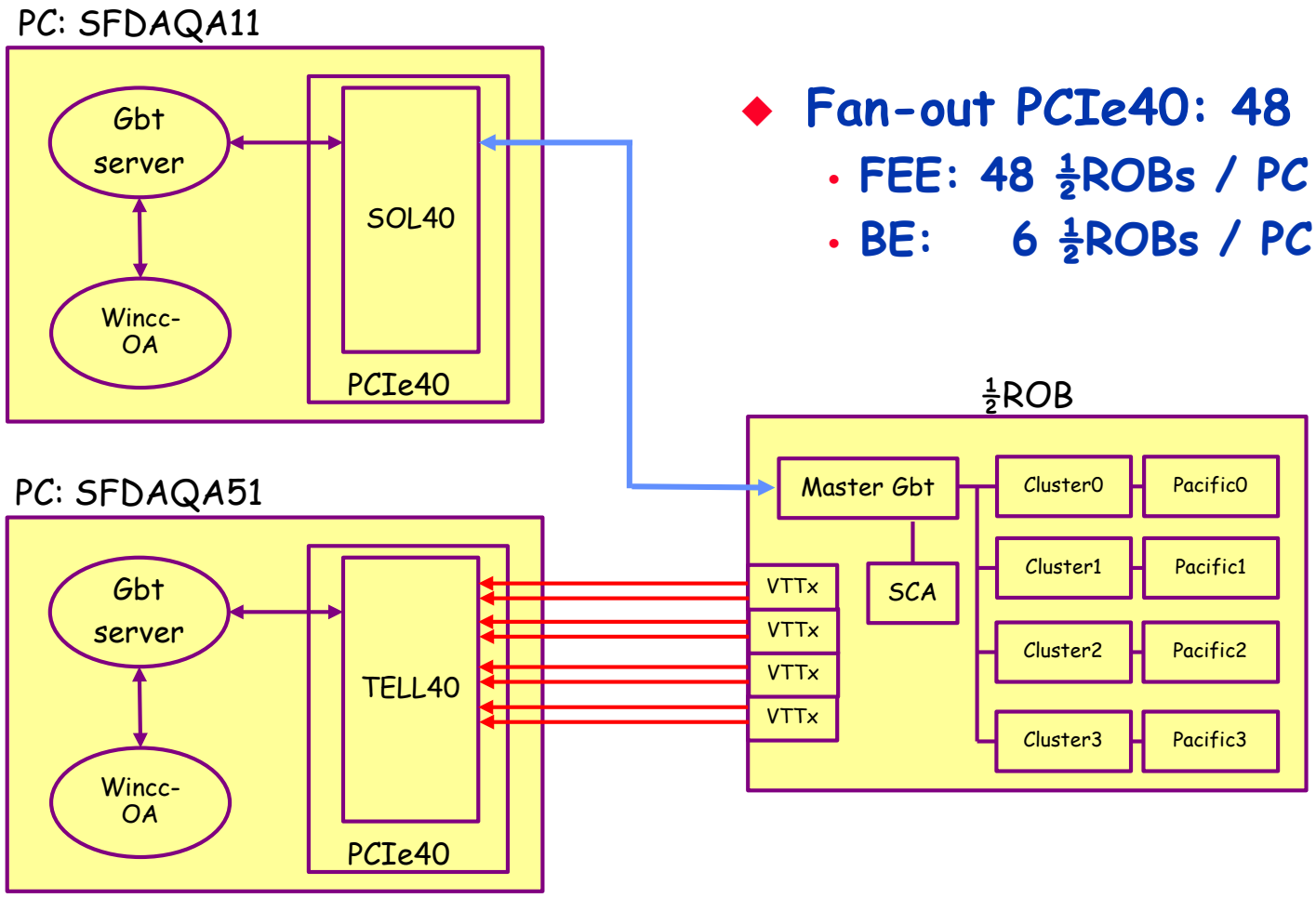
½ROB as Device Unit



- 1 Master board
- 4 Cluster boards
- 4 PACIFIC boards

- Handles 8 SiPMs; contains:
  - 1 VTRx, 1 Master GBTx, 5 SCA chips, 1 house-keeping FPGA
  - 16 PACIFIC chips, 8 Clustering FPGAs, 8 Data GBTx, 4 VTTx

PCIe40



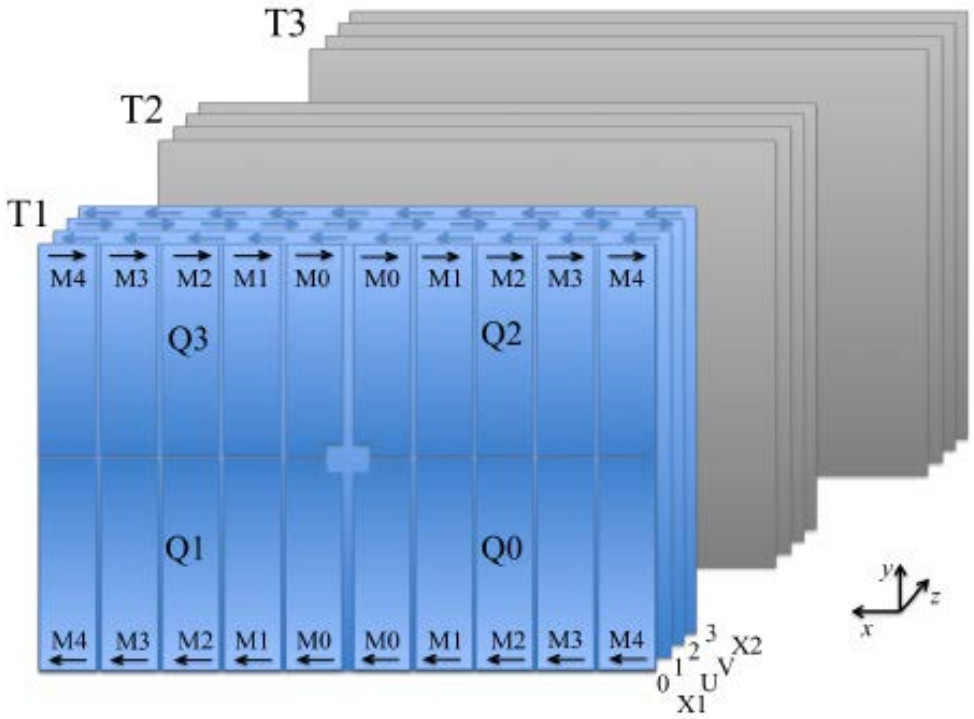
- Fan-out PCIe40: 48
  - FEE: 48 ½ROBs / PC
  - BE: 6 ½ROBs / PC

SciFi Layout

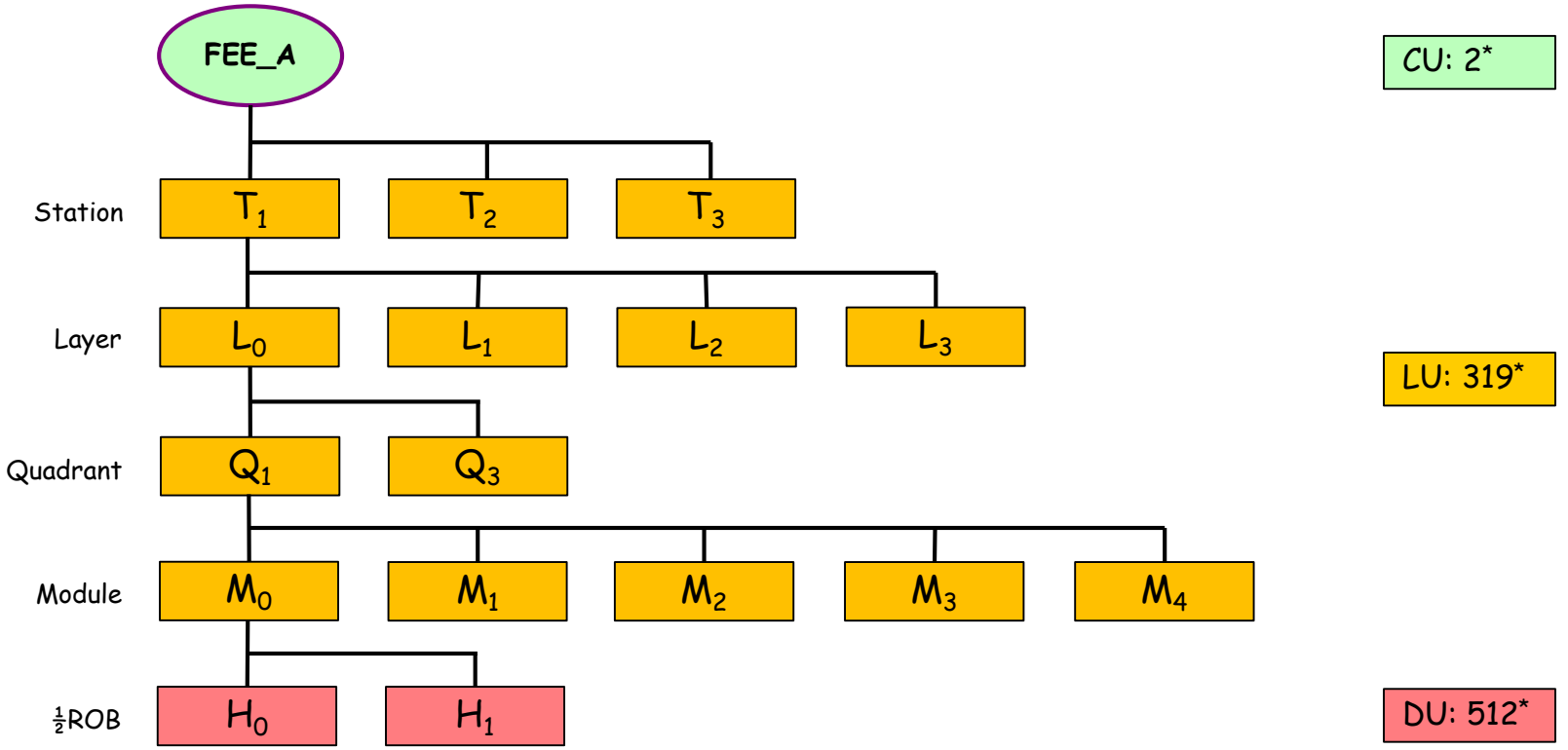
Side A: Q_1, Q_3
Side C: Q_0, Q_2

- T = station [1,2,3]
- L = Layer [0-3]
- Q = Quadrant [0-3]
- M = Module, $T_{1,2}$[0-4], T_3[0-5]
- H = ½ROB (DU) [0,1]

#DU's:
T_1 = 4(L) x 4(Q) x 5(M) = 80
T_2 = 4(L) x 4(Q) x 5(M) = 80
T_3 = 4(L) x 4(Q) x 6(M) = 96
----+
256 * 2(H) = **512**



FEE FSM

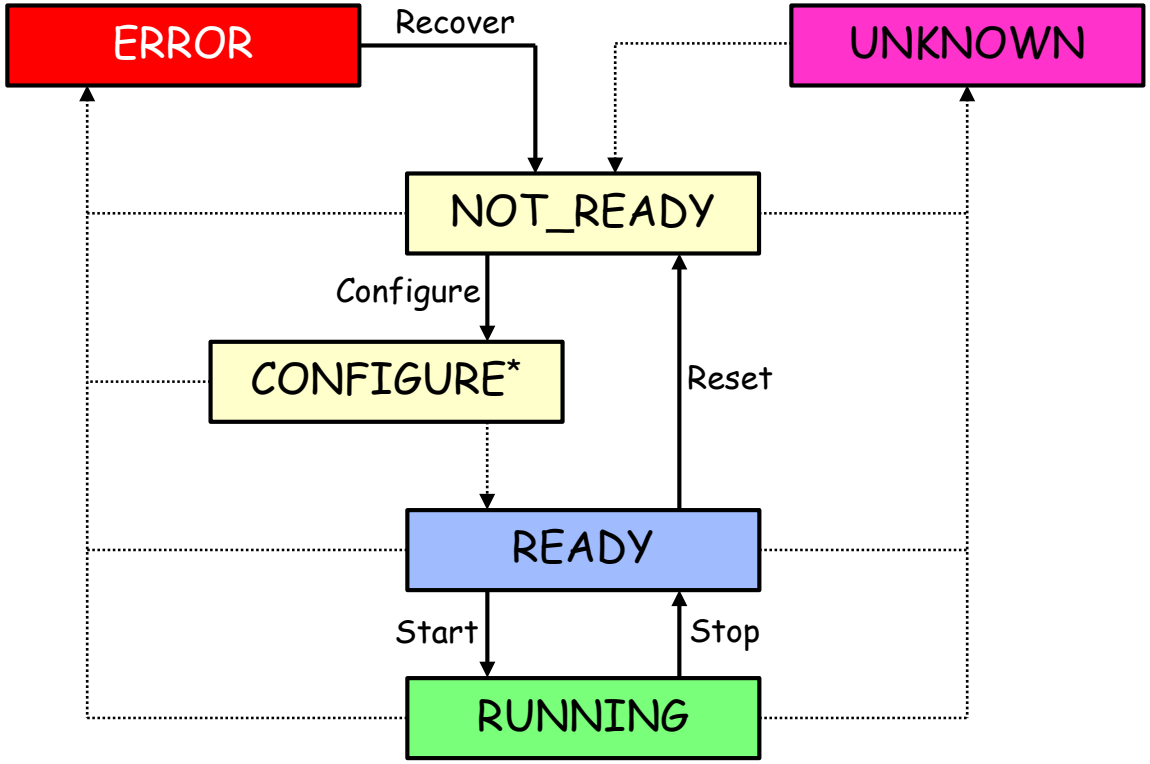


FSM domains:

- Station: SFA_DAQ_FEE_T1
- Layer: SFA_DAQ_FEE_T1_L0
- Quadrant: SFA_DAQ_FEE_T1_L0_Q1
- Module: SFA_DAQ_FEE_T1_L0_Q1_M0
- ½ROB: SFA_DAQ_FEE_T1_L0_Q1_M0_H0

* totaal A & C

FSM: DU domain



Issues:

- FSM domains intermediate layers: majority rules?
- fwConfigDb for Configure command? PACIFIC calibration constants in particular. Are the chips numbered, some kind of ID (readable)?
- Current situation: Configuration data in files and hard coded in scripts!
- Definition/description of the states? Necessary for Watchdog control script and library scripts to implement the commands.

* transient

FEE control PCs

no.	Control PC	FSM-domains	½ROBs
1	SFDAQA11	SFA_DAQ_FEE_T1_L*x*_Q1	40
2	SFDAQA13	SFA_DAQ_FEE_T1_L*x*_Q3	40
3	SFDAQA21	SFA_DAQ_FEE_T2_L*x*_Q1	40
4	SFDAQA23	SFA_DAQ_FEE_T2_L*x*_Q3	40
5	SFDAQA31	SFA_DAQ_FEE_T3_L*x*_Q1	48
6	SFDAQA33	SFA_DAQ_FEE_T3_L*x*_Q3	48
7	SFDAQC10	SFC_DAQ_FEE_T1_L*x*_Q0	40
8	SFDAQC12	SFC_DAQ_FEE_T1_L*x*_Q2	40
9	SFDAQC20	SFC_DAQ_FEE_T2_L*x*_Q0	40
10	SFDAQC22	SFC_DAQ_FEE_T2_L*x*_Q2	40
11	SFDAQC30	SFC_DAQ_FEE_T3_L*x*_Q0	48
12	SFDAQC32	SFC_DAQ_FEE_T3_L*x*_Q2	48

Issues/remarks:

- Each PC controls/monitors 4 FSM-domains: $0 \leq x \leq 3$.
- Name of PC complies with LHCb ECS guidelines. Last 3 characters made of: <A|C><Station><Quadrant>
- Name of WinCC-OA project equals PC name?
- Why not functional **and** geographical division in PC name?
- Number of Wincc-OA projects for SciFi: 40 (enough?)

Data-points & Gbt-server

Issues/remarks:

- Data-points: each ½ROB is set up by 9 data-points (**44214** dpe's).
  Not possible to combine it into 1 (due to size of types, in particular the PACIFIC type).
  - Master-board: 1090
  - Cluster-board: 1910 * 4 = 7640
  - PACIFIC-board: 8871 * 4 = 35484

  Q: Is WinCC-OA capable to handle in one project 48 of these ***monsters***?
- Gbt-server: for each ½ROB **14714** Dim-services and **7357** DIM-commands are maintained.
  Again most of them are meant for the PACIFIC boards (80%).
  Q: Is it possible for the Gbt-server to handle 48 ½ROBs with such an amount of services and commands?
  And what about the *dns-server*?