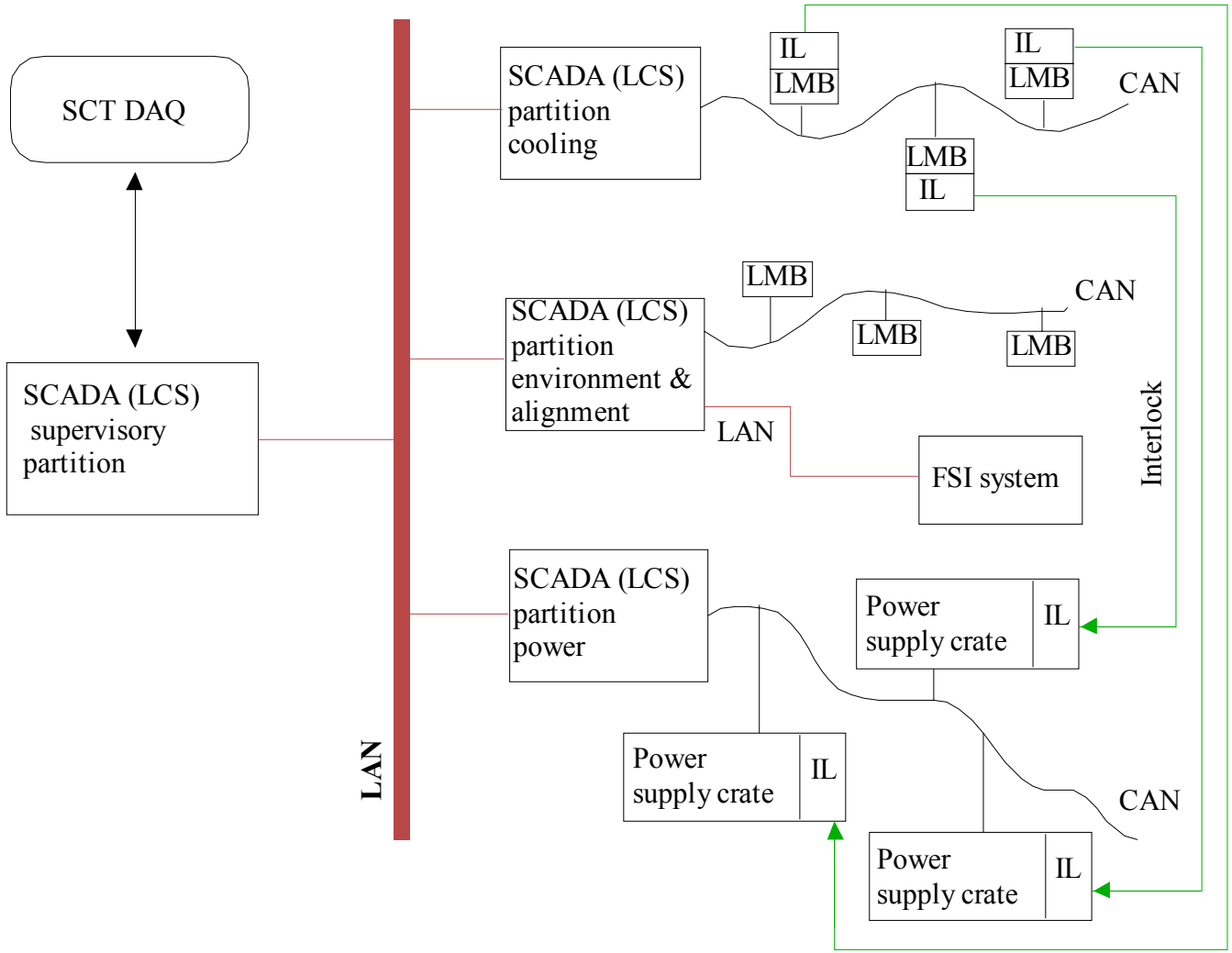
SCT Status

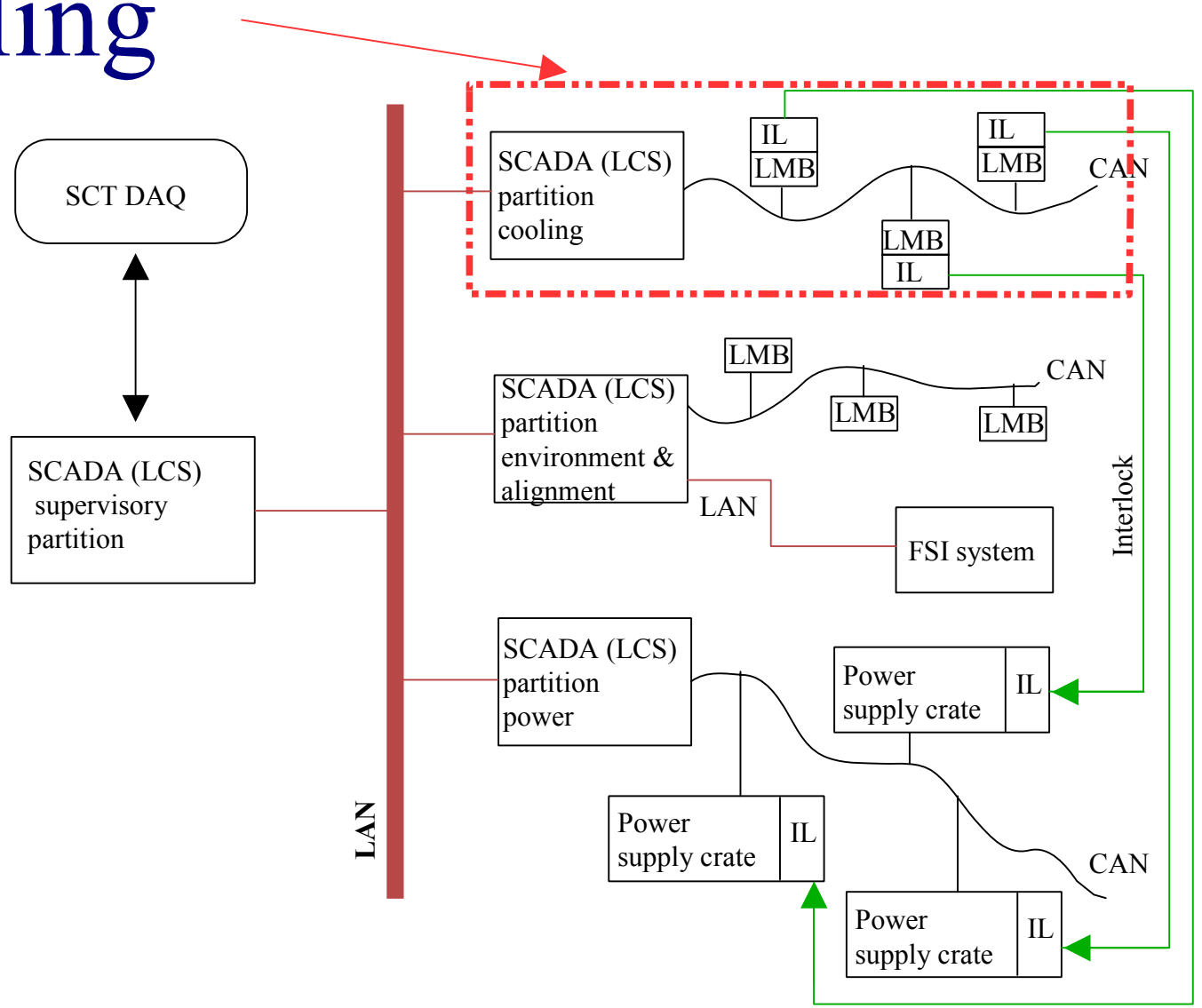
Richard Brenner
(Uppsala University)

- Structure of the SCT DCS
- Cooling
- Environment
- Interlock
- Status and near future plans

Structure of DCS



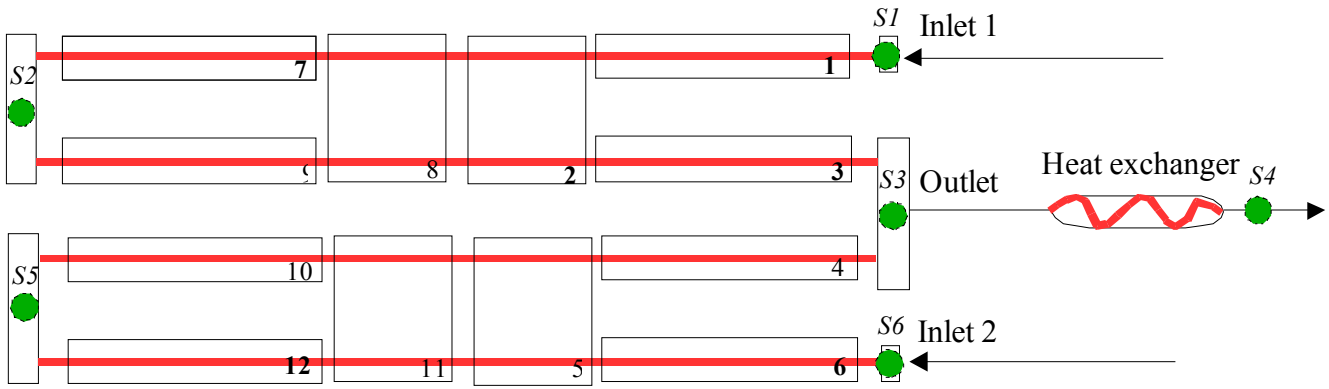
Cooling


SCT DAQ
SCADA (LCS)
supervisory
partition
LAN
SCADA (LCS)
partition
cooling
IL
LMB
IL
LMB
CAN
LMB
IL
SCADA (LCS)
partition
environment &
alignment
LMB
LMB
LMB
CAN
LAN
FSI system
Interlock
SCADA (LCS)
partition
power
Power
supply crate
IL
Power
supply crate
IL
CAN
Power
supply crate
IL

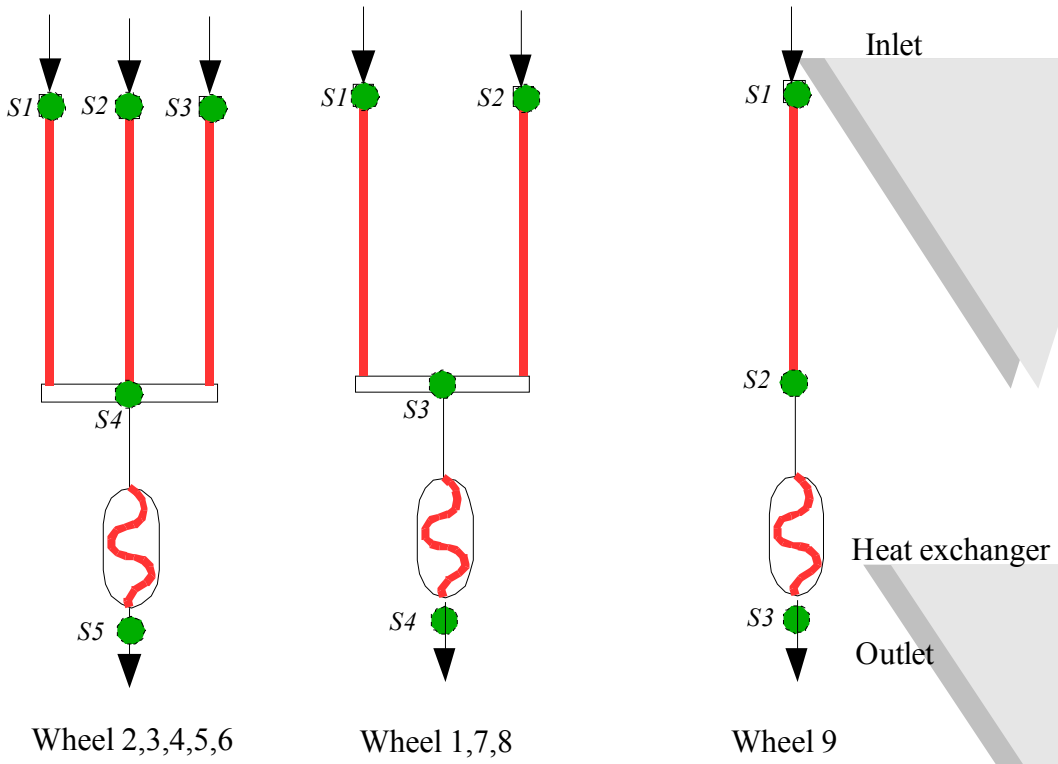
DCS points (cooling)

Compressors shared with pixels, flow control made in subdetector

PLC (ELMB) for flow regulation
~600 temperature sensors
~300 pressure sensors
~300 pressure regulators (I2P)
16(?) ELMB's with ADC&DAC

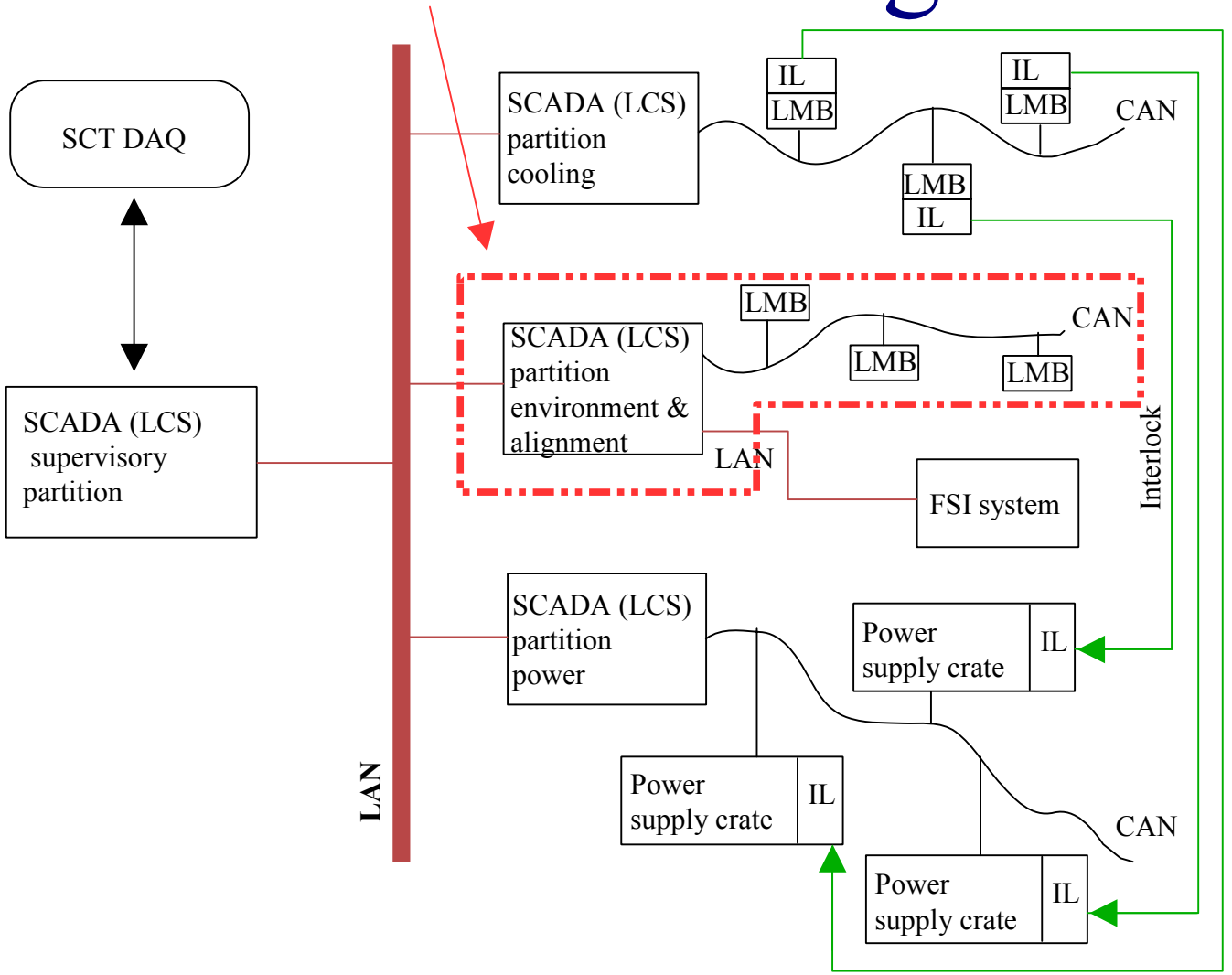


Barrel units (44 units in system)



Forward units (1/quater disk)

Environment monitoring

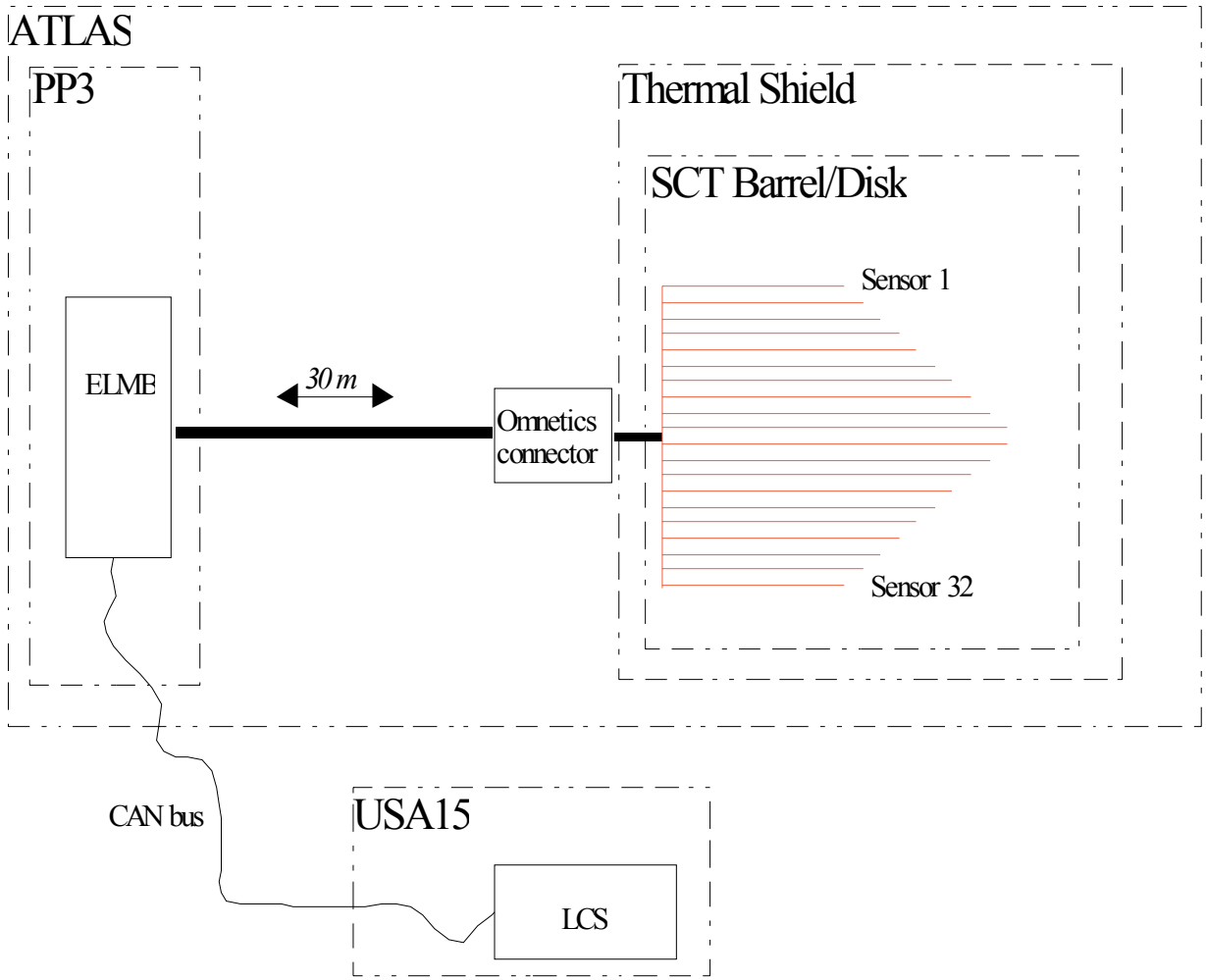


DCS points (environment)

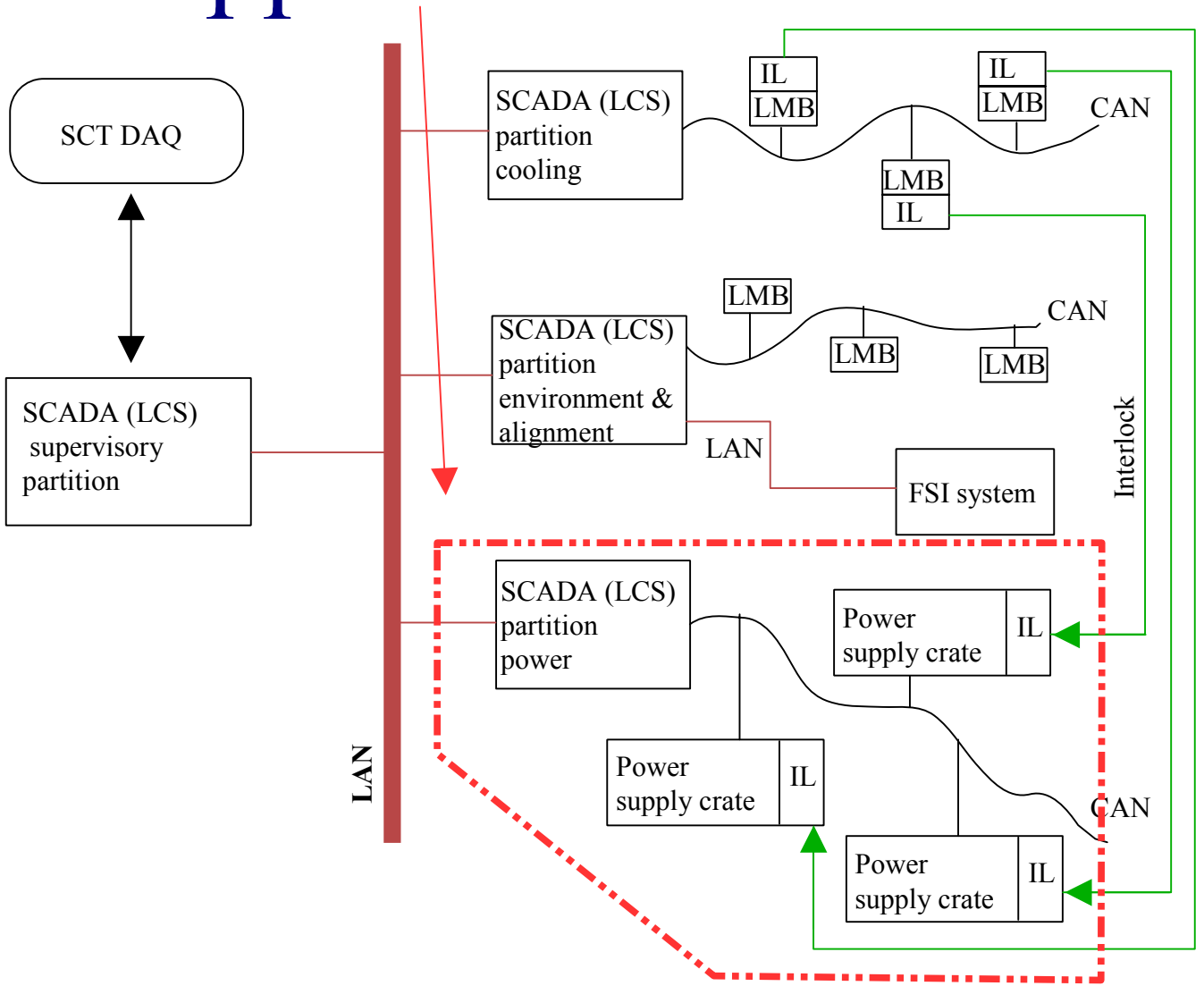
Temperature, humidity and barometric pressure
(Radiation level)
FSI alignment system
~500+400* sensors in Barrel-SCT
~600+400* sensors in Forward-SCT

32 ELMB´s with ADC in 2-4 branches
ELMB's will be mounted at 'PP3' (outside calorimeter)

* Temperature along services


ATLAS
PP3
Thermal Shield
SCT Barrel/Disk
Sensor 1
ELME
30 m
Omnetics connector
Sensor 32
CAN bus
USA15
LCS

Power supplies

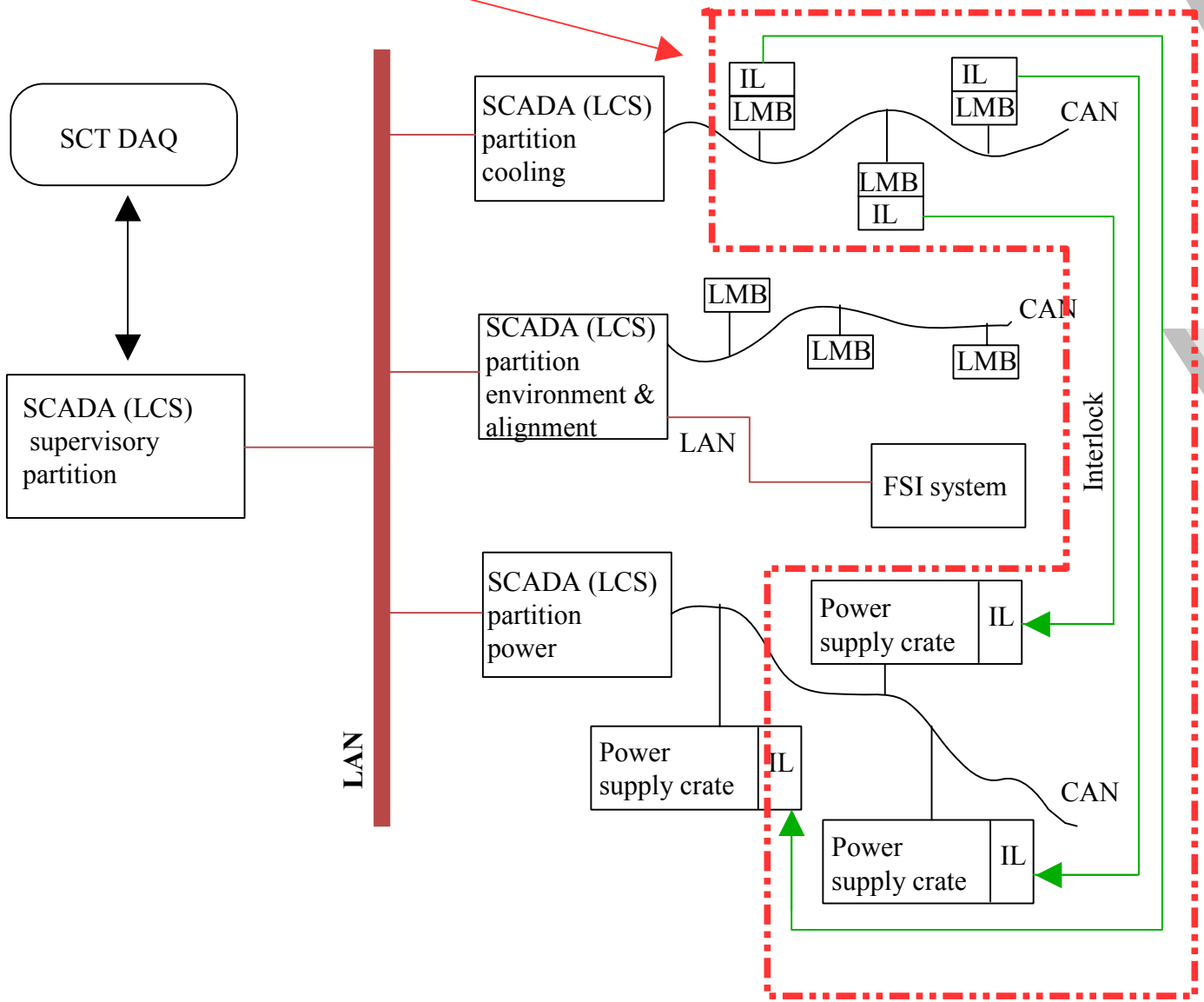


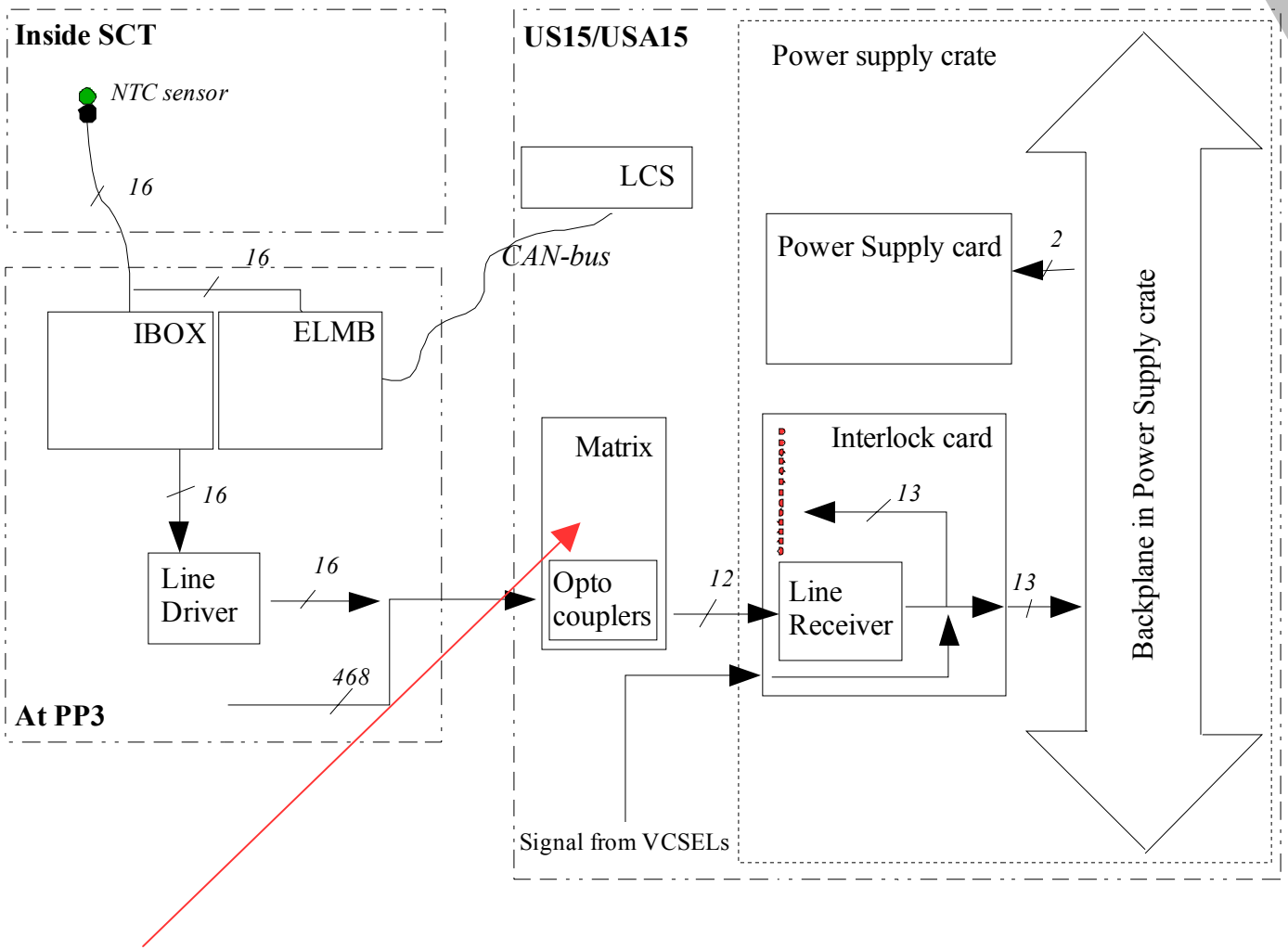
DCS points (power supplies)

Every silicon detector module (4088 modules) have its own power supply.
Grounding and shielding is very complicated, hence temperature sensors (NTC) located close to the readout electronics have its current source in power supplies.

~57000 voltages,currents,temperatures to be monitored
~50000 voltage, current, trip settings to be set.
~650 monitoring parameters/crate controller (ELMB)
88 crates in USA15 and US15
(12 cards with 4 LV/card, 6 cards 8 HV/card, Interlock and Crate Controller)
88 ELMB's without ADC in 15-20 branches?

Interlock


SCT DAQ
SCADA (LCS)
supervisory
partition
LAN
SCADA (LCS)
partition
cooling
SCADA (LCS)
partition
environment &
alignment
SCADA (LCS)
partition
power
IL
LMB
IL
LMB
CAN
LMB
IL
LMB
LMB
CAN
LMB
LAN
FSI system
Interlock
Power
supply crate
IL
Power
supply crate
IL
CAN
Power
supply crate
IL



We need a “big Matrix” matching power supplies, cooling and DAQ readout together

Status

- A FDR document is in preparation (Parts of the document has been in some FDR of SCT subsystems.*(Next PS FDR)*
- Deliverables have been specified and costs are reviewed.
- First attempt to build realistic DCS in PhaseII cooling test *(1see P-O talk)*
- Documents on radiation hardness and performance of DCS sensors in preparation.

Near future activities

- This autumn work on combining power supplies, cooling and environment under PVSS main task. Work will be done both in the system test lab and the cooling lab.
- Early-mid 2002, get a full DCS system going in Oxford (~10 % with as final components as possible).
- Early 2004 DCS, all DCS system available.

Team:

S. Basiladze, R. Brenner, R. Waistie, P-O. Wallin...