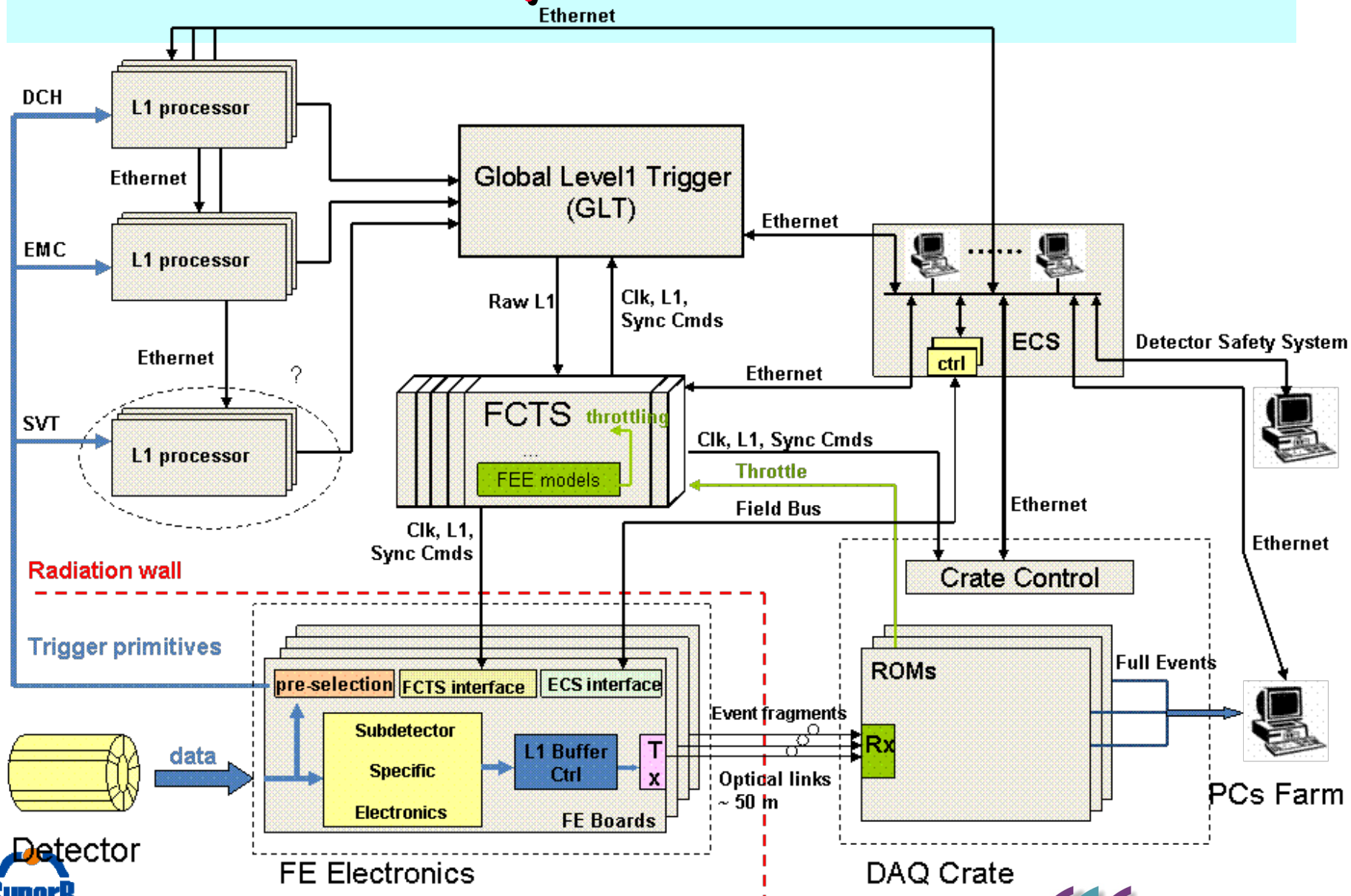
PROPOSAL FOR FTCS CRATE IMPLEMENTATION

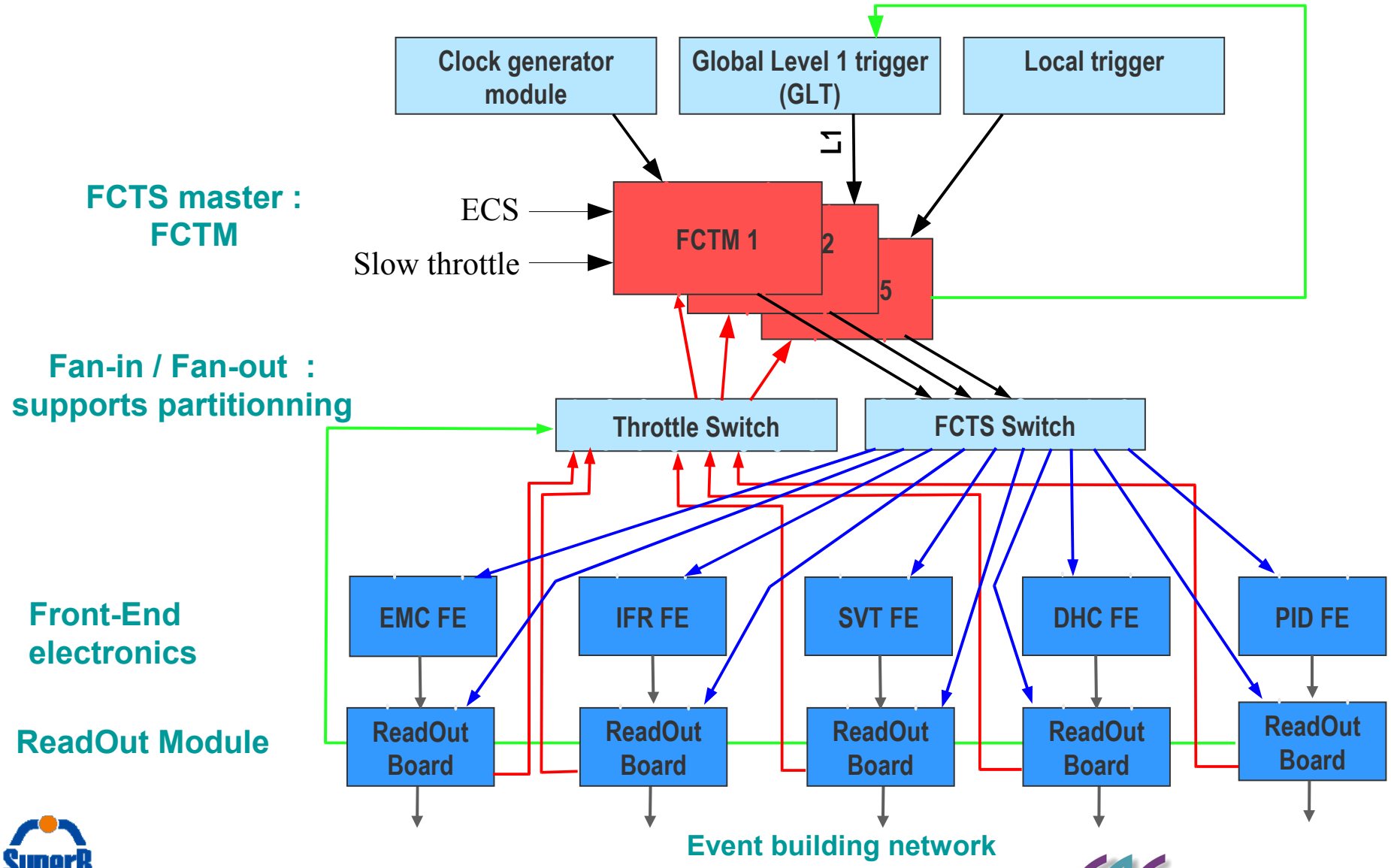
FCTS requirements

- Synchronizing the experiment with the machine.
- Delivering and buffering the clock to the experiment.
- Dealing with the raw L1 trigger decision.
- Throttling the latter.
- Permits the partitionning the system into independent subsystems or groups of subsystems.
- Generating programmable local trigger for calibration and commissioning.
- Generating different commands (calibration pulse, reset, BxID and event ID).
- Managing the stack of IP addresses for PC farm.
- Keeping trace of all event-linked data to put in the event readout

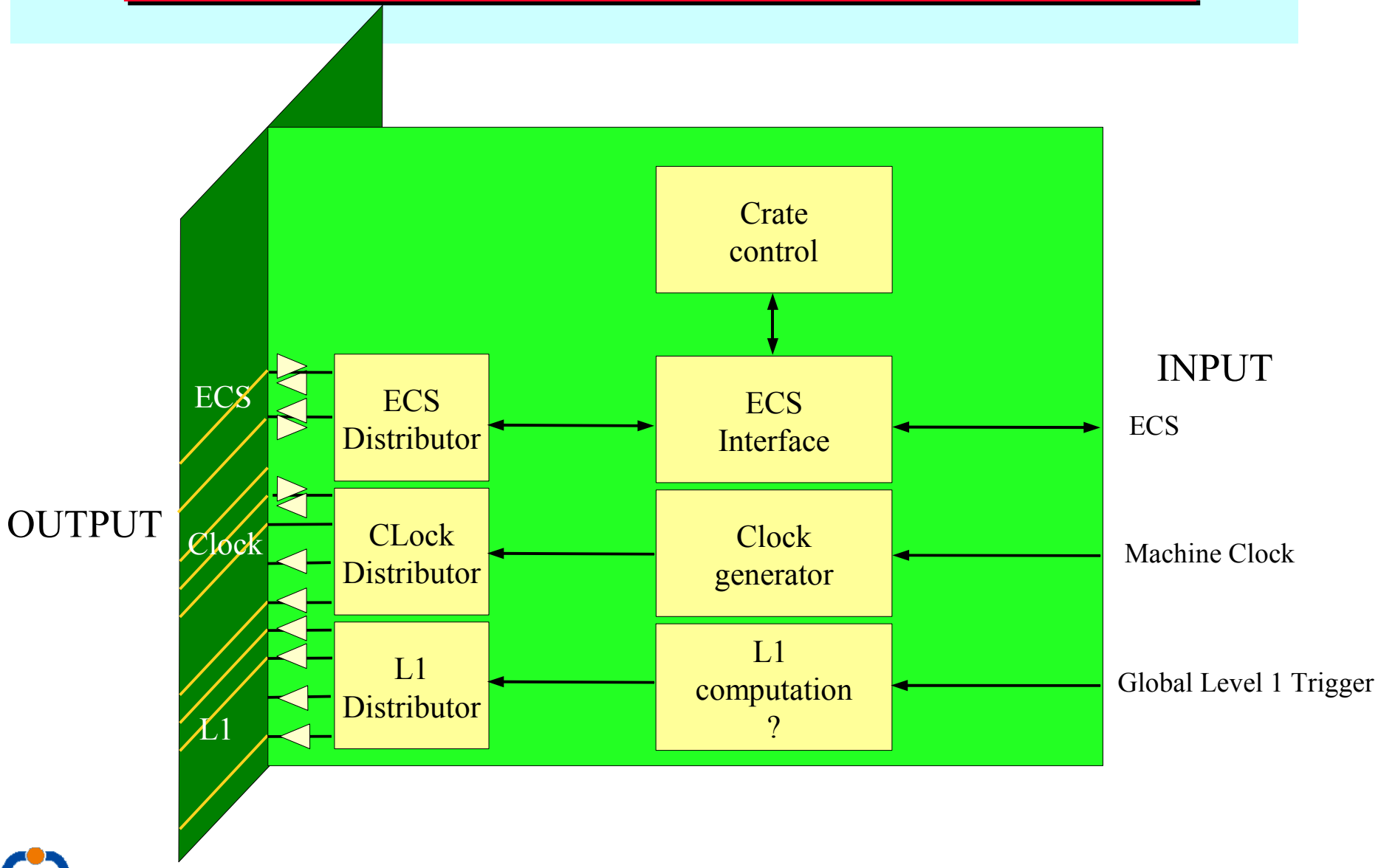
Overall system achitecture



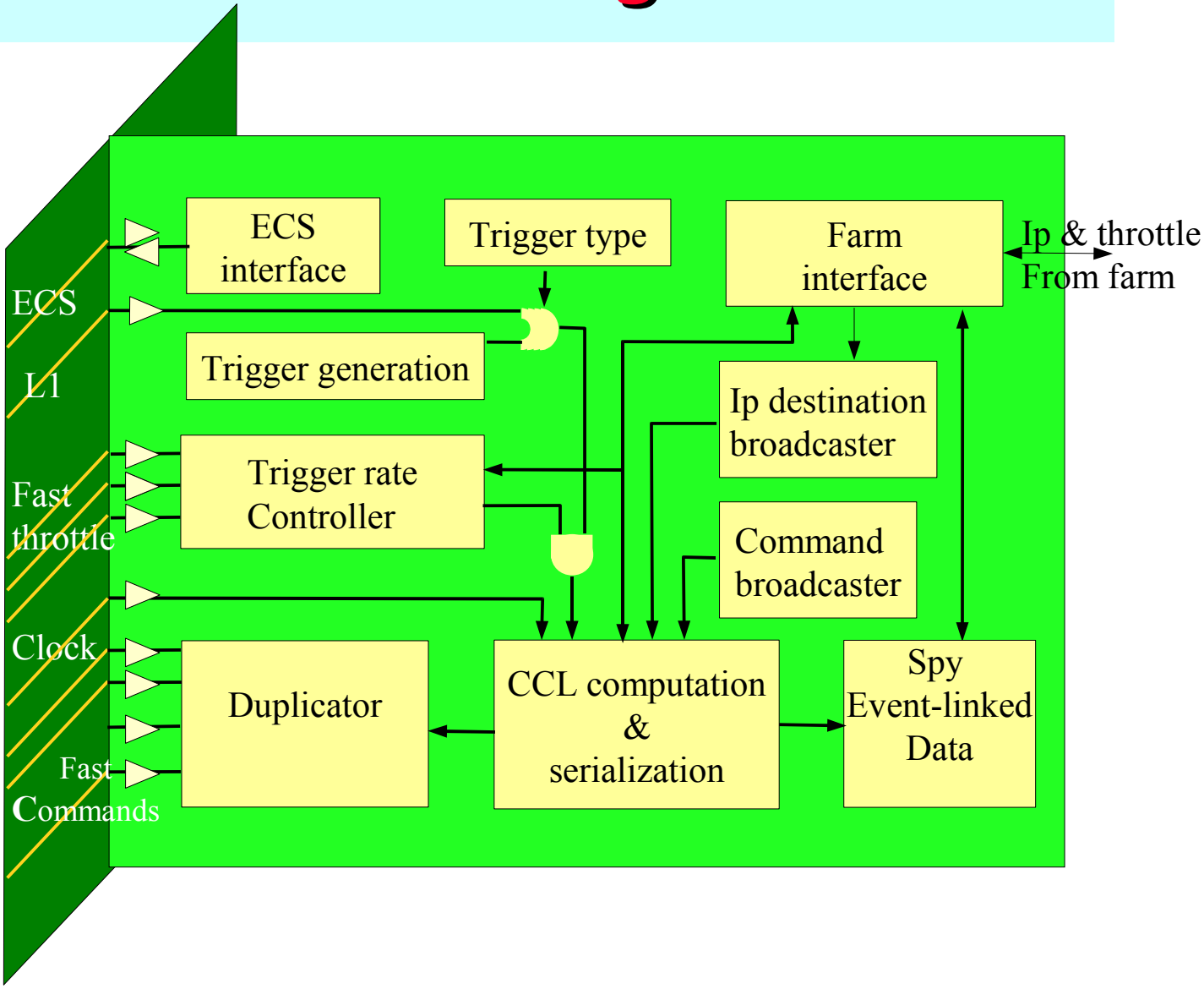
FCTS Architecture



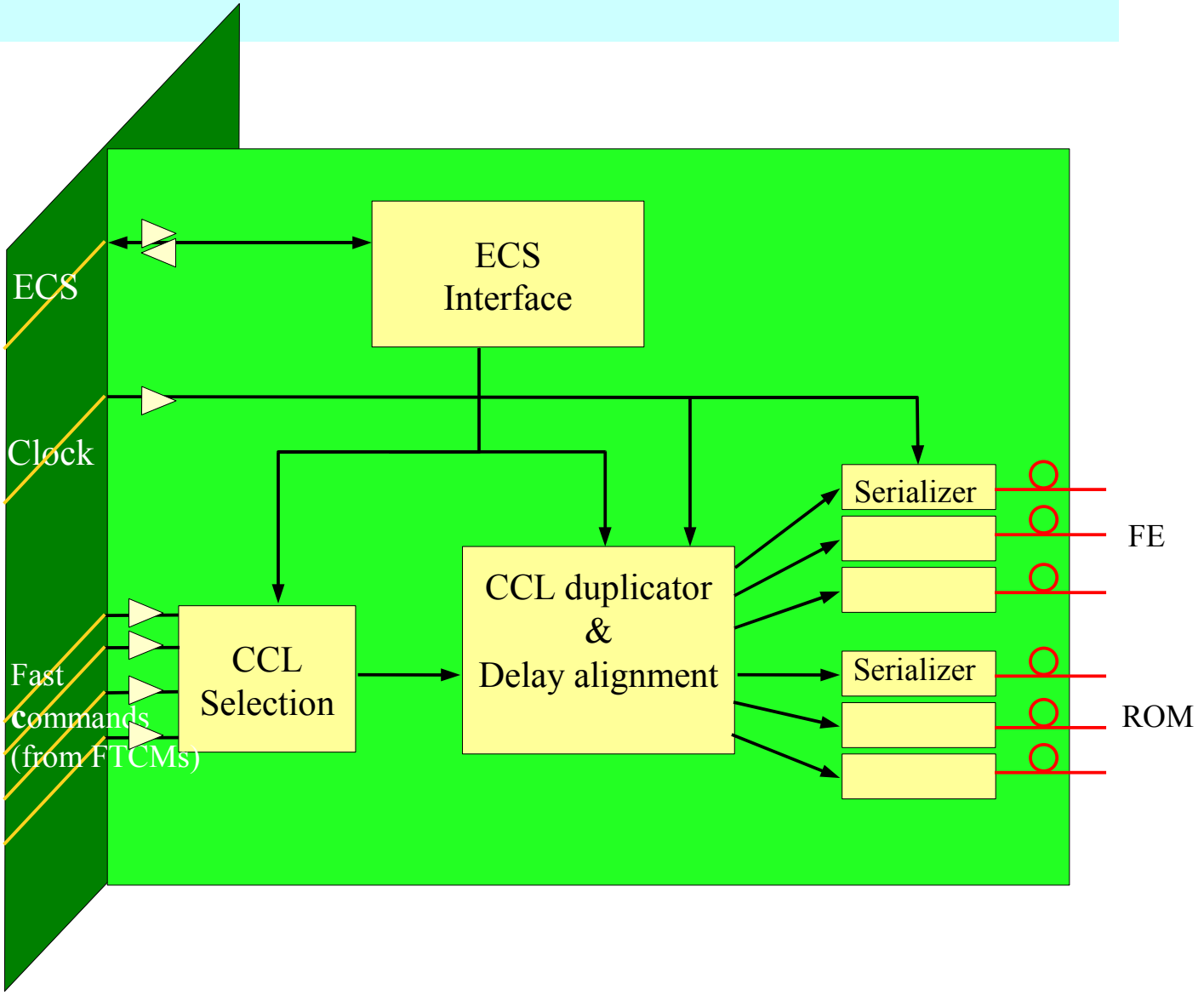
Control and distribution module



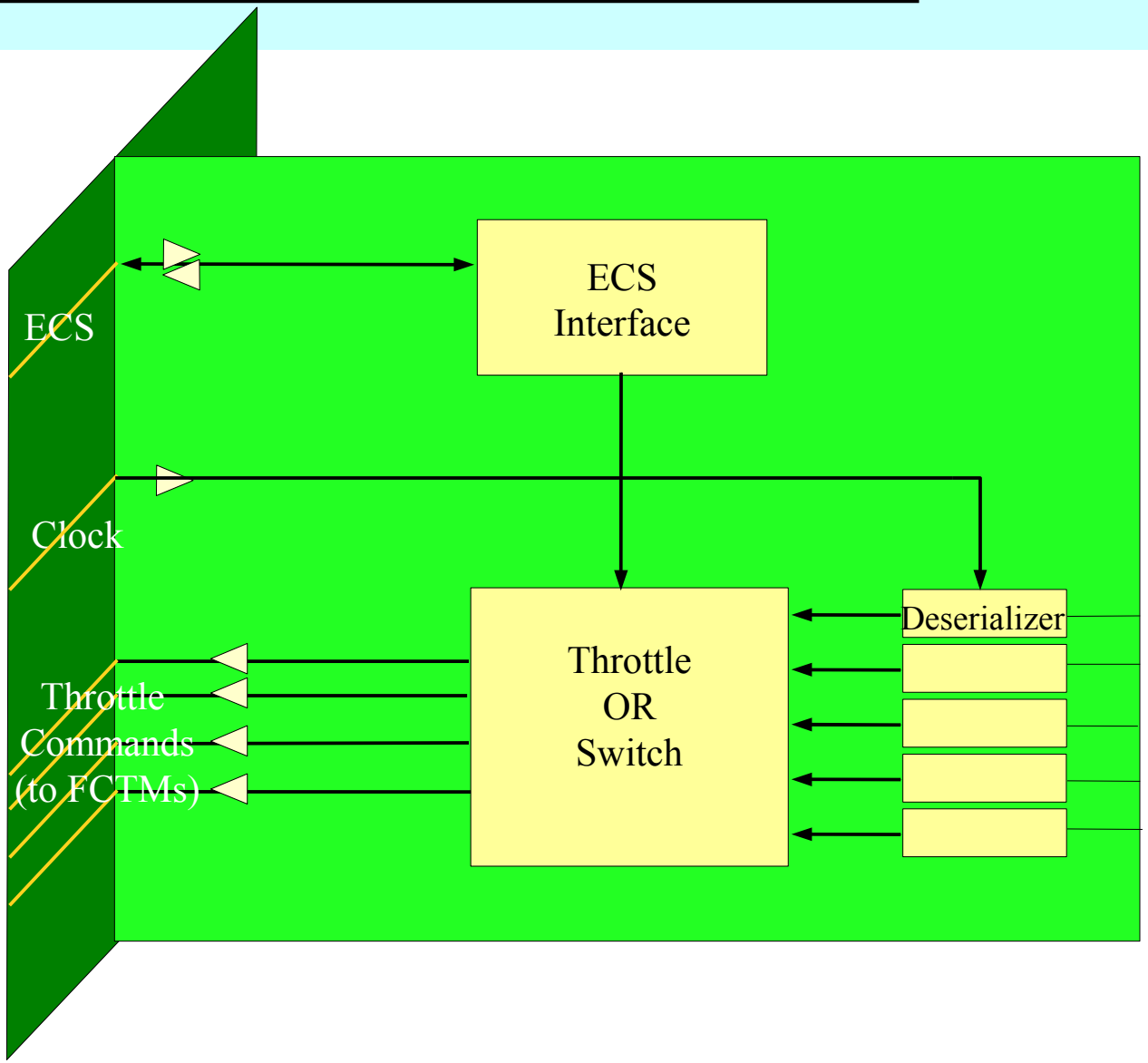
Fast Control & Timing Module

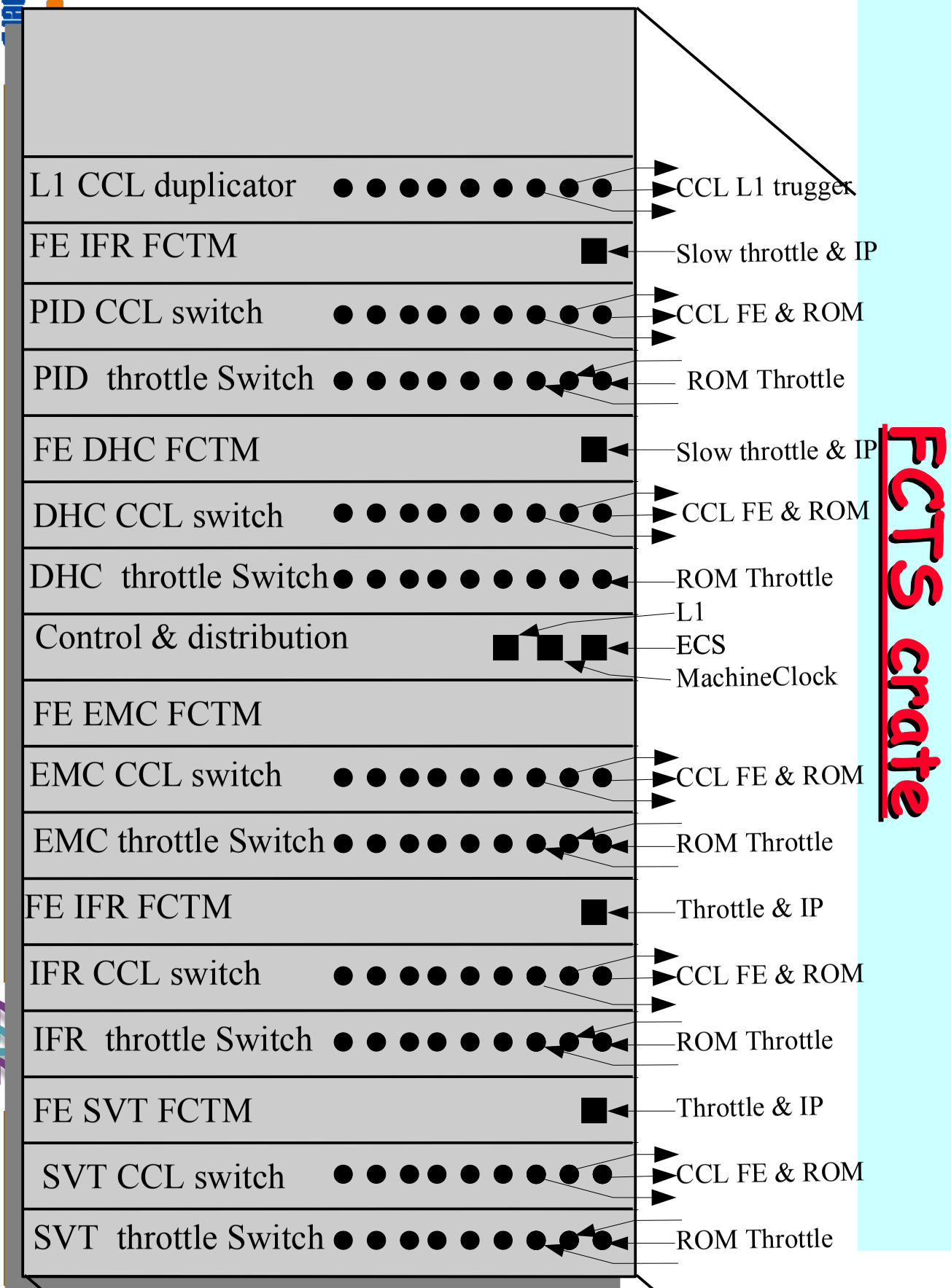


Clock & Control Link Switch Module



Throttle Switch Module




L1 CCL duplicator
CCL L1 trugger
FE IFR FCTM
Slow throttle & IP
PID CCL switch
CCL FE & ROM
PID throttle Switch
ROM Throttle
FE DHC FCTM
Slow throttle & IP
DHC CCL switch
CCL FE & ROM
DHC throttle Switch
ROM Throttle
Control & distribution
L1
ECS
MachineClock
FE EMC FCTM
EMC CCL switch
CCL FE & ROM
EMC throttle Switch
ROM Throttle
FE IFR FCTM
Throttle & IP
IFR CCL switch
CCL FE & ROM
IFR throttle Switch
ROM Throttle
FE SVT FCTM
Throttle & IP
SVT CCL switch
CCL FE & ROM
SVT throttle Switch
ROM Throttle
FCTS crate

OPEN QUESTIONS

- Granularity of the detector partitionning:
  - Nb of FCTMs, of switch modules,... → more than one crate

    => one FTCS crate plus duplicator boards located in other crates.
- Link between FCTS and ROM to be defined (no latency constraints, no radiation constraint)
- Standard crate (AdvancedTCA) or custom one.
- Common mezzanine for ECS & CCL links ?
  - permits delivering the clock without a working FCTS
  - lower price & surface