

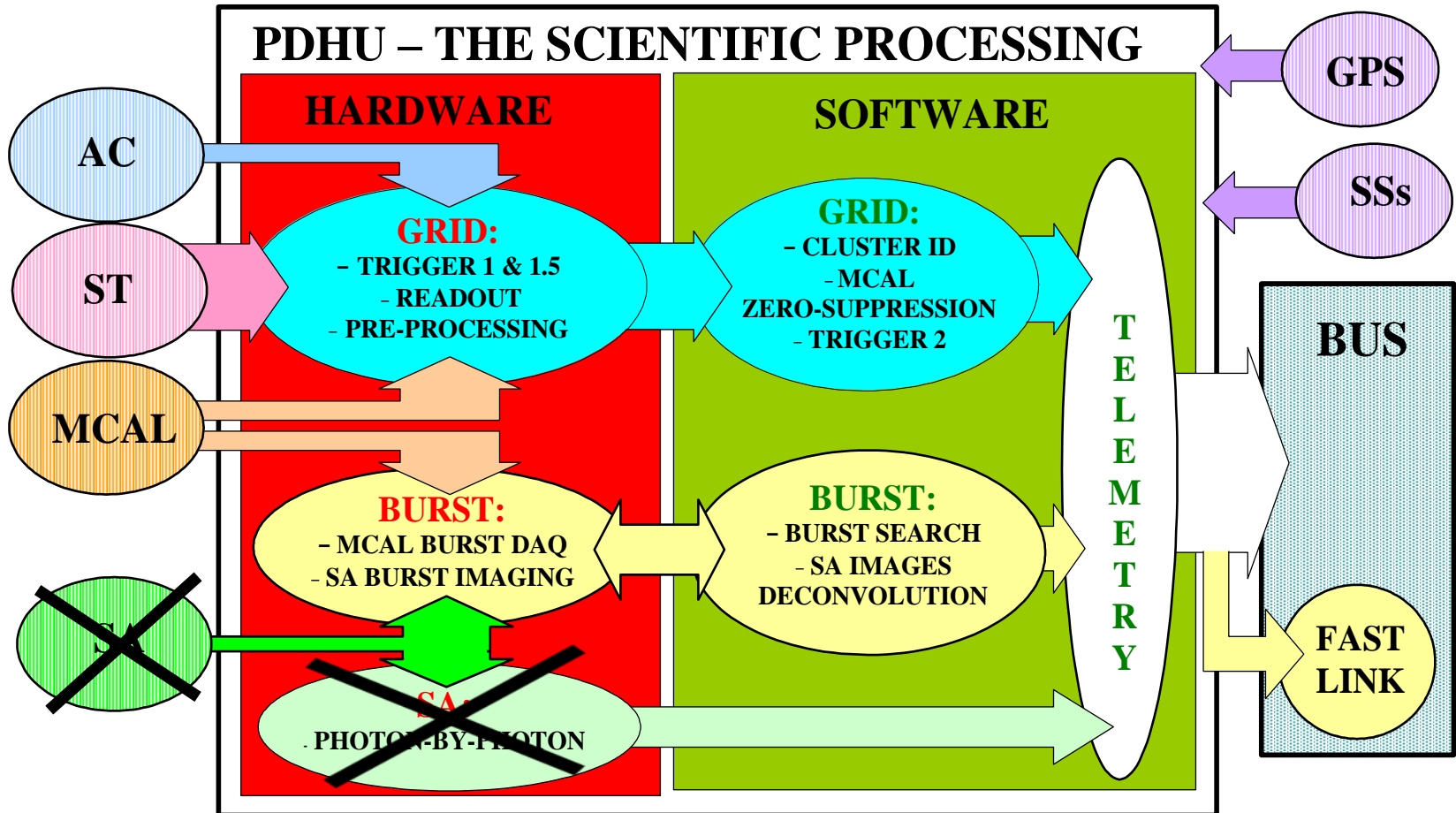
Ideas for the ASTROGAM trigger logic

A. Argan, INAF

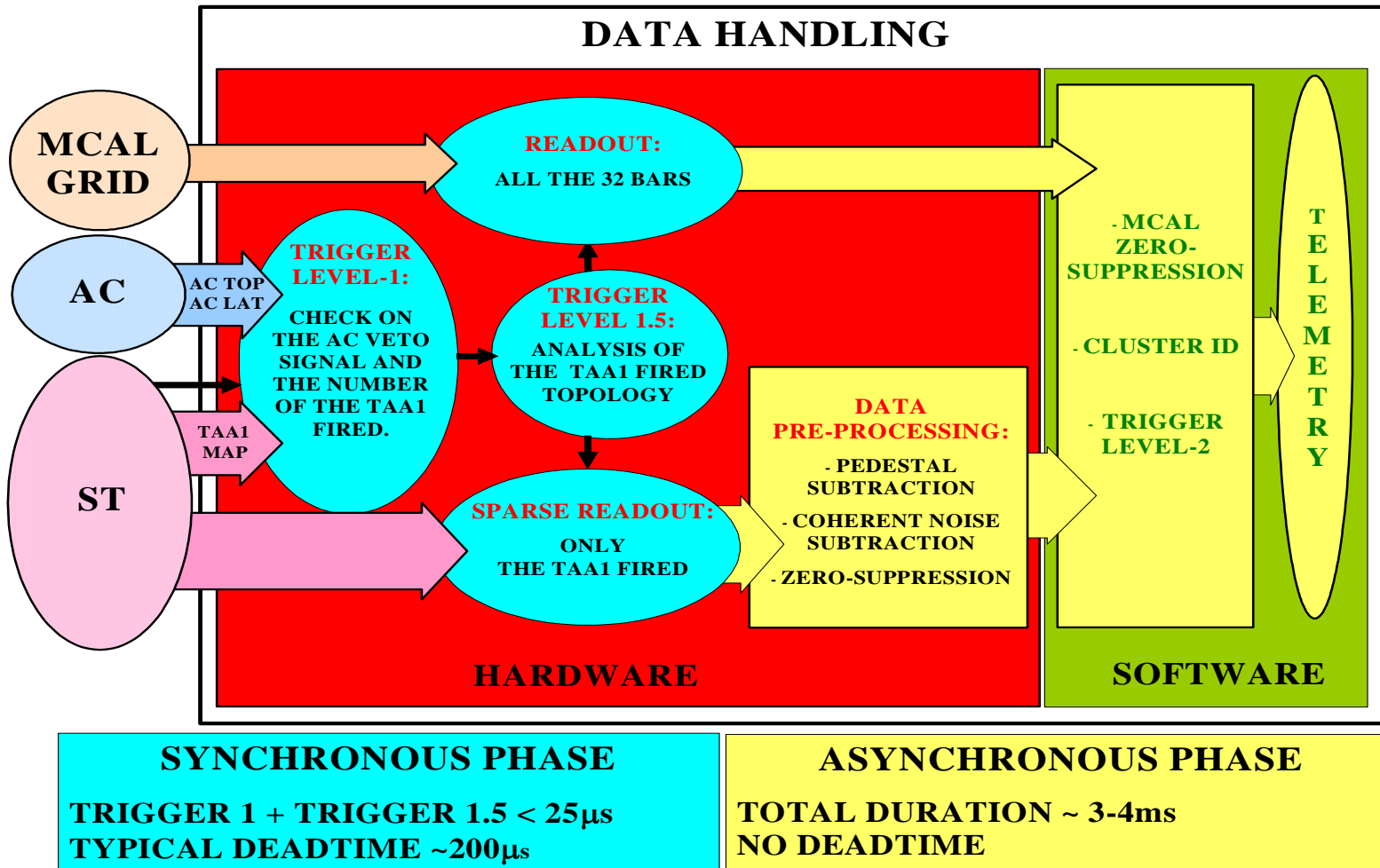
SUMMARY

- Overview on the AGILE trigger logic
- On-board data flow
- Possible Trigger pipeline scheme

OVERVIEW ON THE AGILE ON-BOARD DAQ (I)



THE AGILE ON-BOARD DAQ (II): GRID

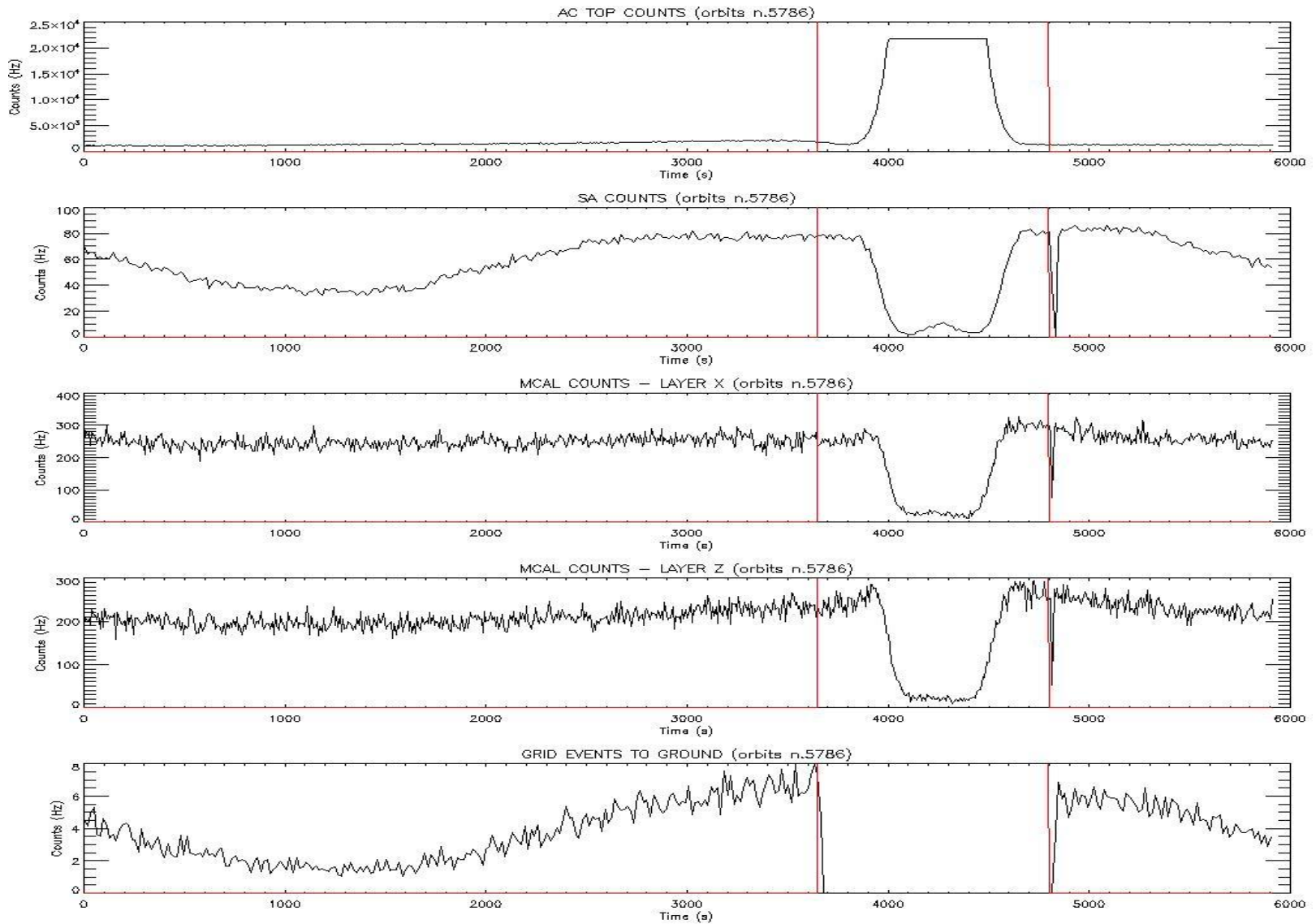


20 independent trigger algorithms

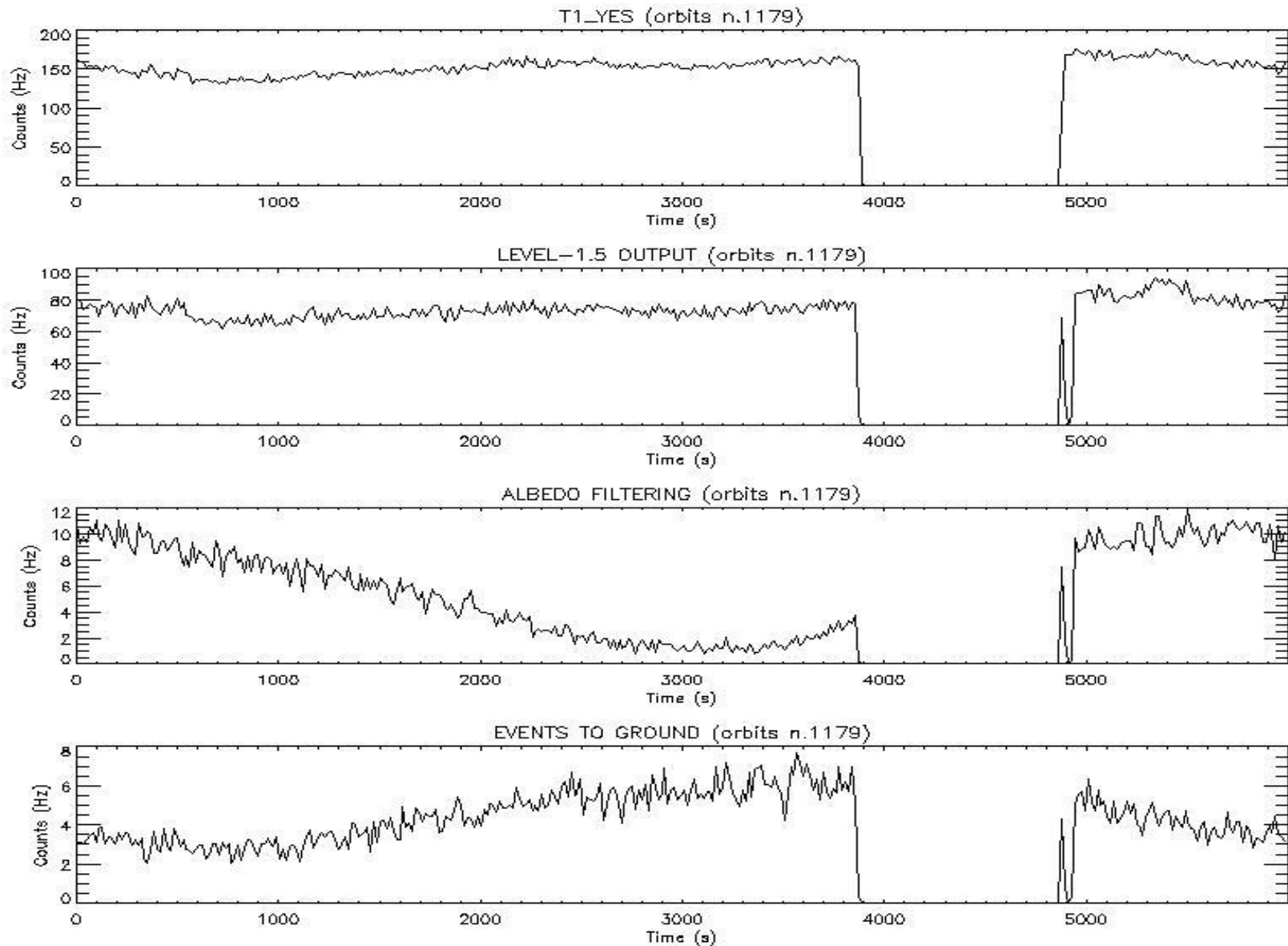
OVERVIEW ON THE AGILE ON-BOARD DAQ LOOK-UP TABLES

- PDHU – GRID logic configuration:
 - $\frac{3}{4}$ Trigger: 4 LUTs Obs. + 2 LUTs Cal.
 - AC Veto: 4 LUTs Obs. + 1 LUT Cal.
 - R-Trigger: 4x8 LUTs Obs. + 2 LUTs Cal.
 - 1.5 Trigger: 4 LUTs
 - CDIS Trigger: 4 LUTs
 - ST Offsets: 1 LUT
 - FVC1: 1 LUT
 - FVC2: 1 LUT
 - Kalman Filter: 7 LUTs
- PDHU – SA Photon-by-Photon configuration:
 - Address Corr.: 4 LUTs
- PDHU - BURST logic configuration:
 - SA Burst Trigger: 4x4 LUTs
 - SA Imaging Trig.: 4 LUTs
 - MCAL Burst Trig.: 4x4 LUTs
 - MCAL BBFP: 4x4 LUTs
 - SA Burst Imag.: 7 LUTs

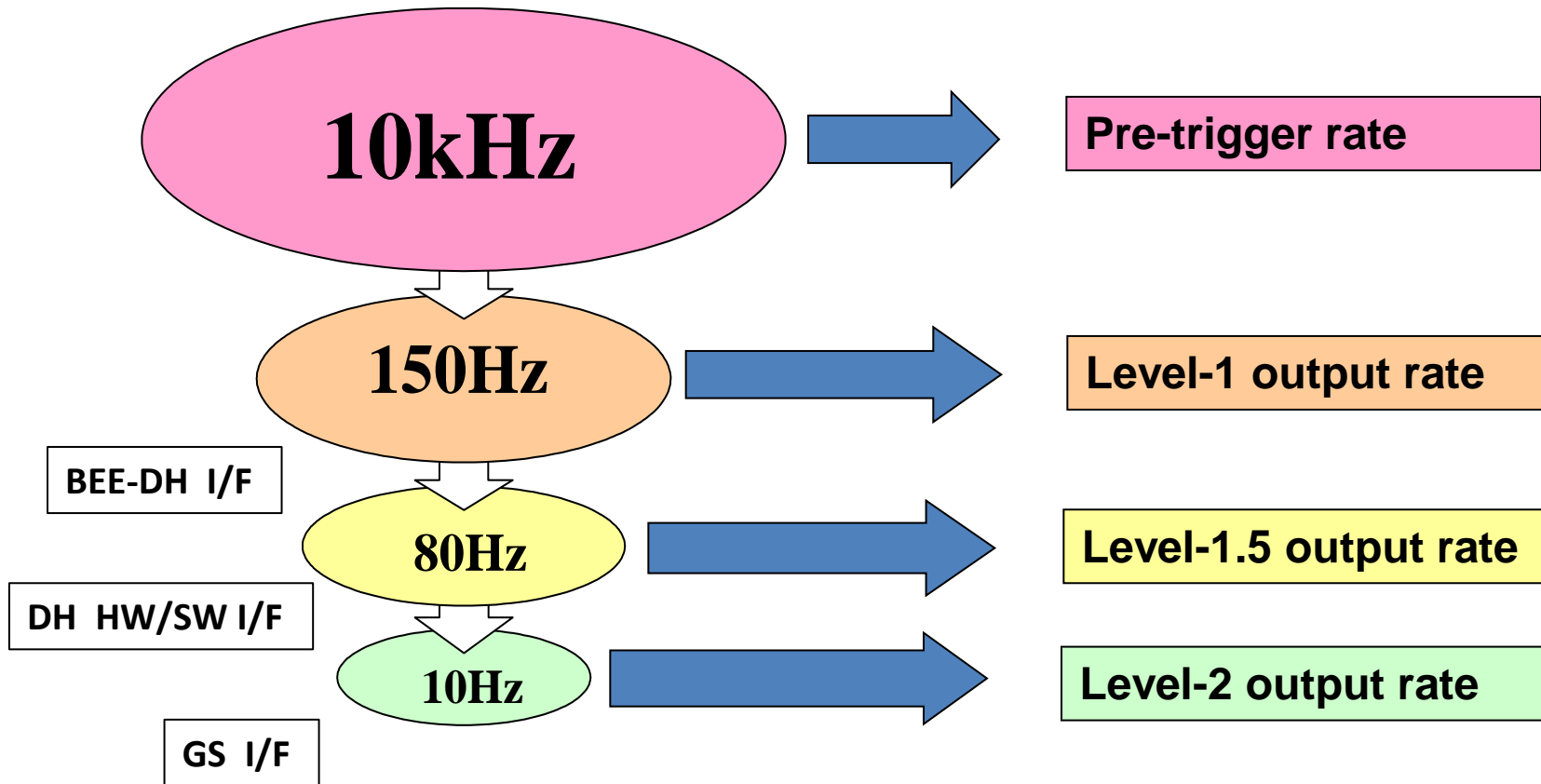
AGILE IN-ORBIT PERFORMANCE



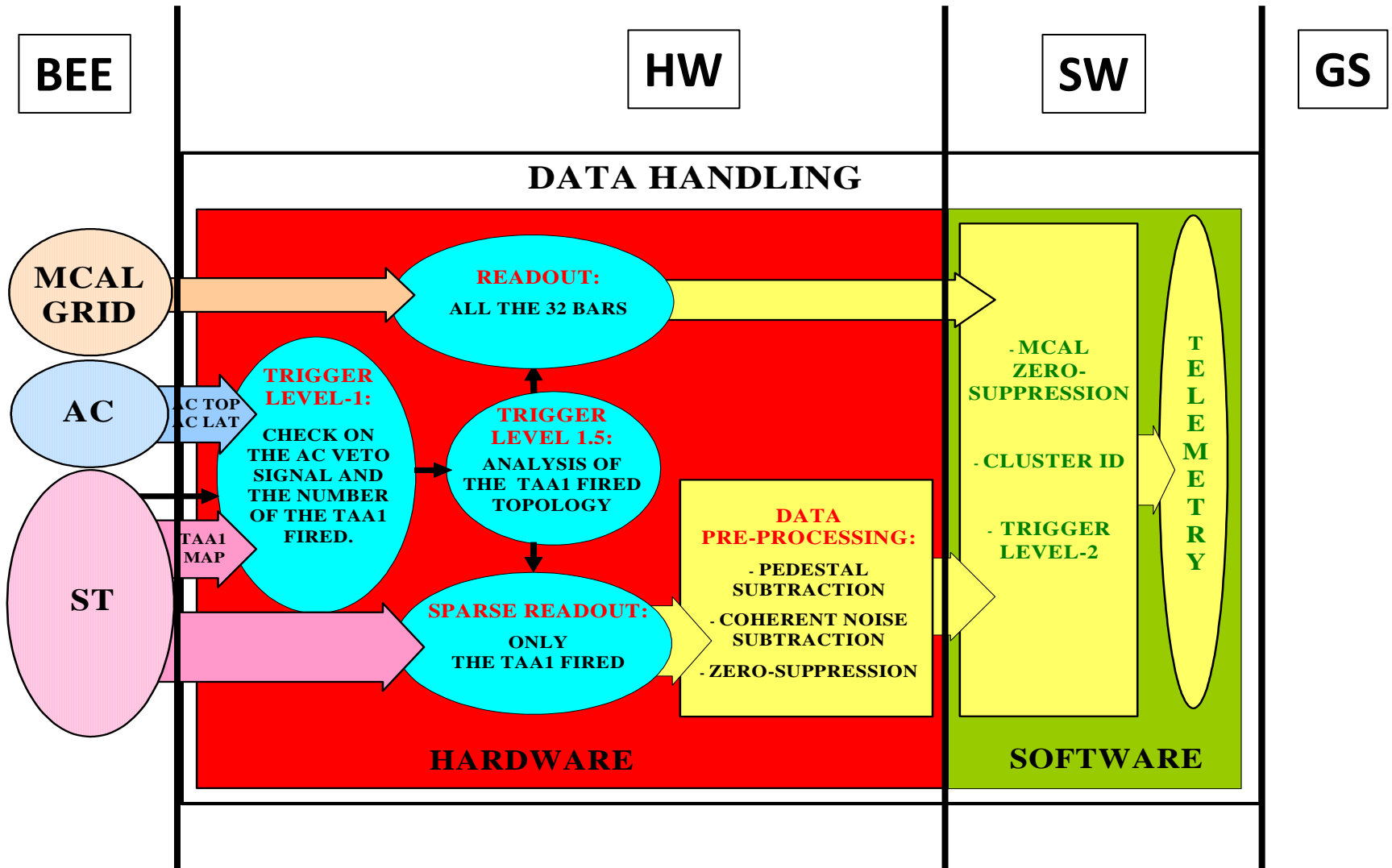
GRID IN-ORBIT PERFORMANCE



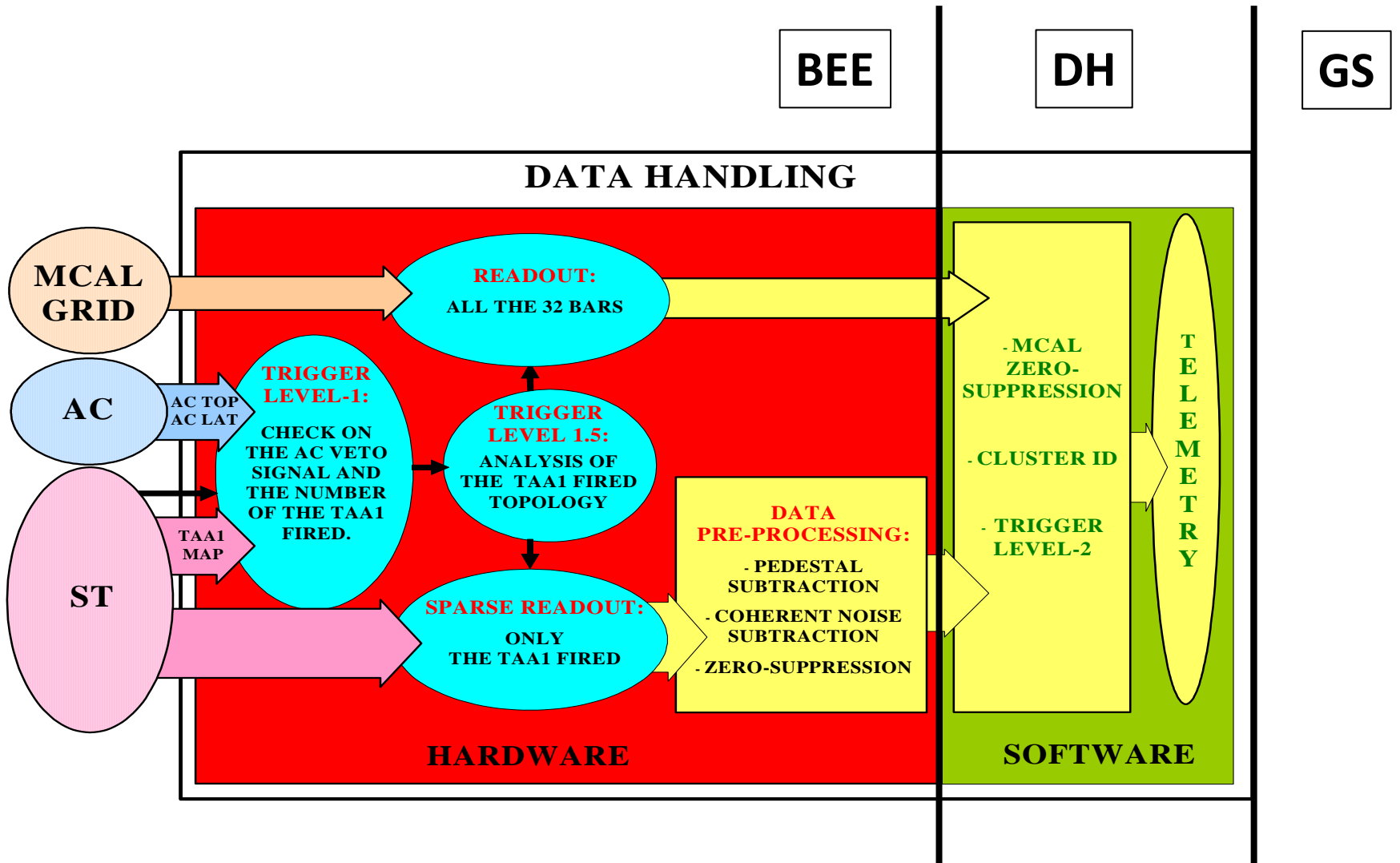
THE AGILE ON-BOARD DATA FLOW



THE AGILE BOTTLENECKS



THE ASTROGAM BOTTLENECKS



ASTROGAM ON-BOARD DATA FLOW

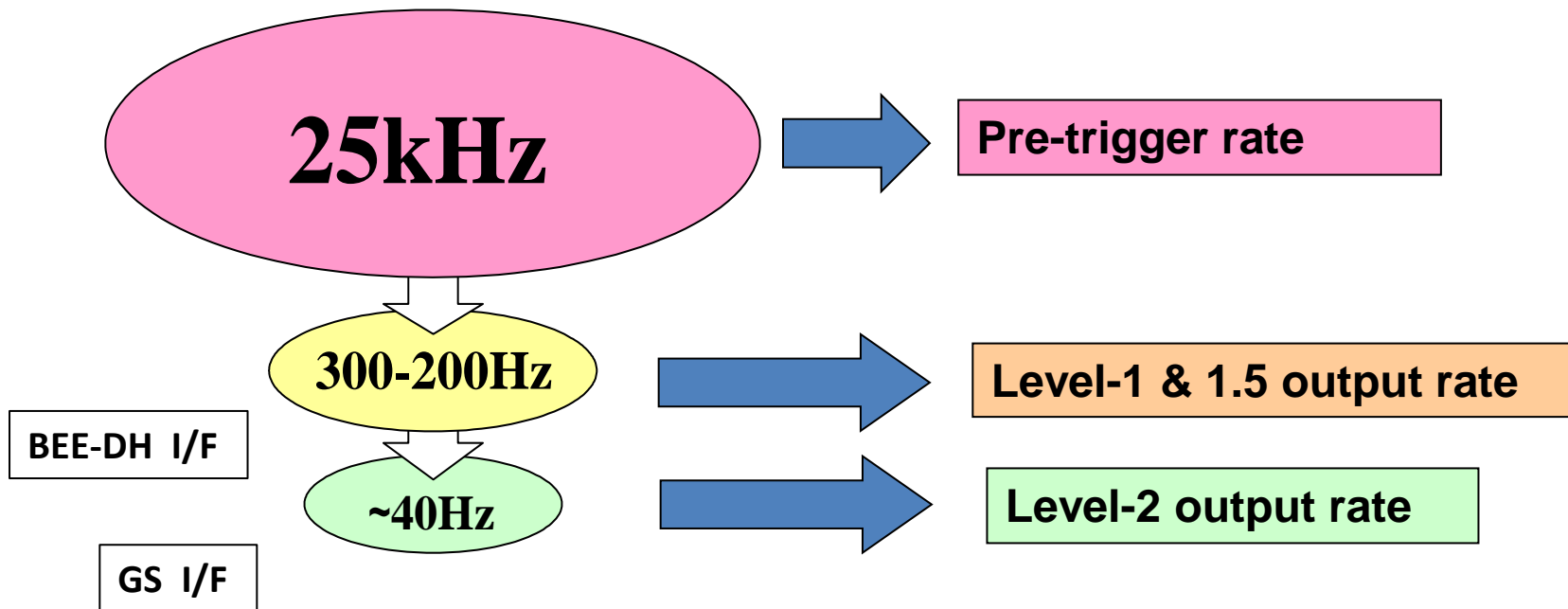
AC surface = 2.5 x AGILE

downlink = 5 x AGILE

ev. pkt length = 2 x AGILE

2 Ground Stations (Kourou & Malindi)

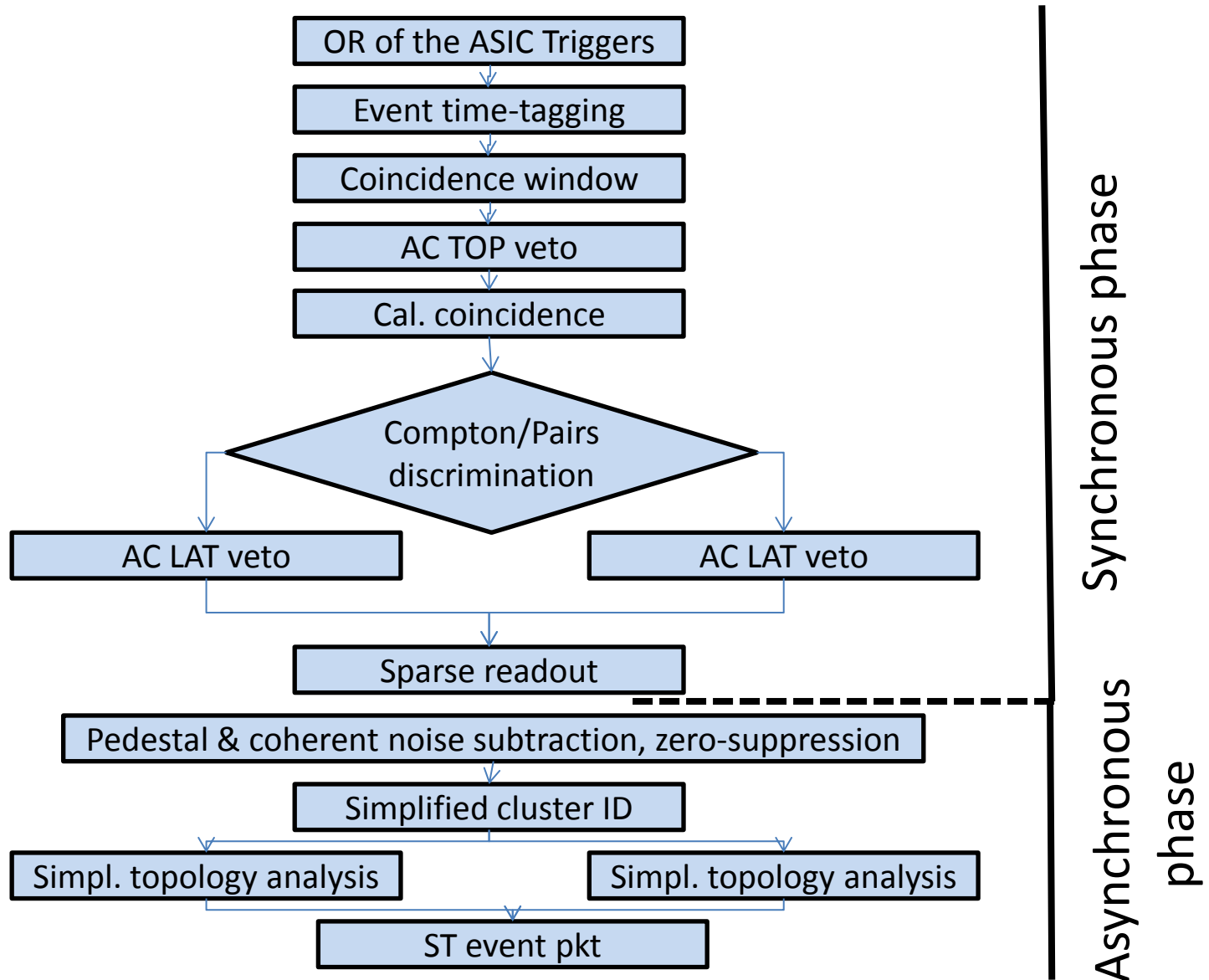
Short timescale AC ratemeters (1-10ms) + Calorimeter Burst = 1/5 TM budget



ASTROGAM TRIGGER LOGIC

It's crucial to discriminate very early in the processing flow the Compton events and the Pair Production events (**different topologies**, **different AC LAT veto logic**, **different coincidence laws**).

PROPOSAL FOR THE FEE & BEE TRIGGER PIPELINE



PROPOSAL FOR DH TRIGGER PIPELINE

