POLLUX on-board software

Philippe.Plasson@obspm.fr

l'Observatoire de Paris — LESIA

Laboratoire d'Études Spatiales et d'Instrumentation en Astrophysique

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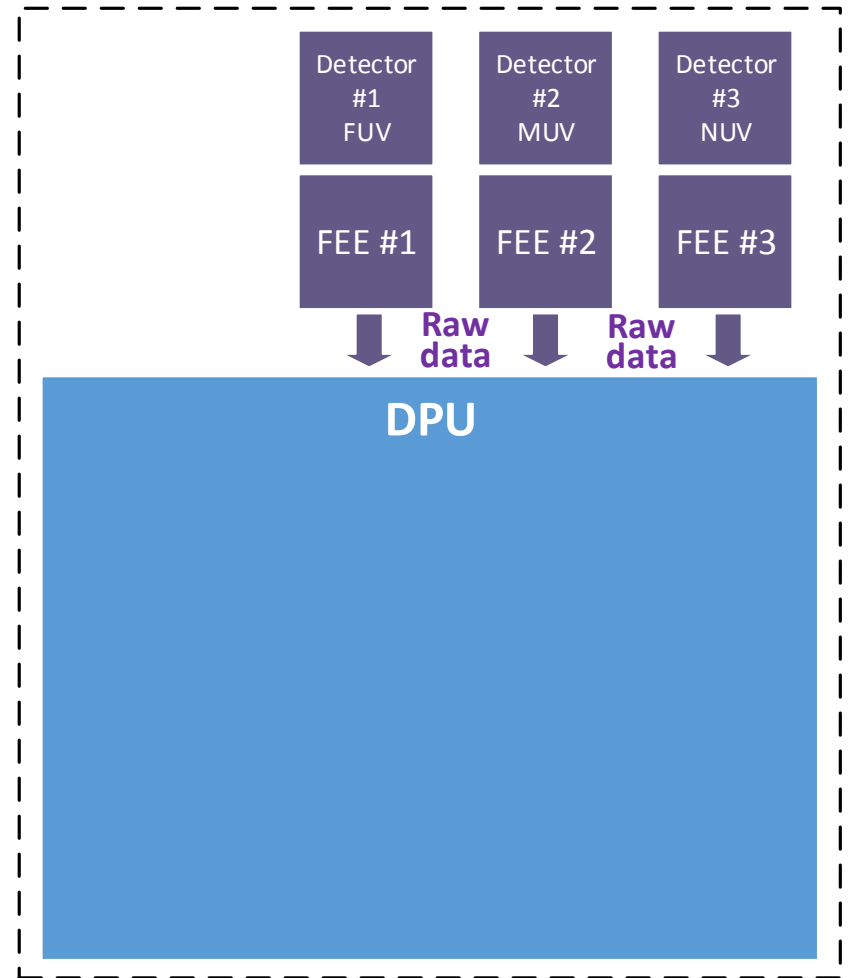
- This presentation lists the points related to POLLUX **on-board processing** which should be addressed in the context of the on-going POLLUX study.

- The report provided at the end of this study should cover this points and give answers to the main questions raised.

- The goals are:
  - Sizing the DPU H/W resources in terms of power processing, memory resources and interfaces
  - Identifying the data products and TM budget
  - Identifying the modes, user requirements and software functions
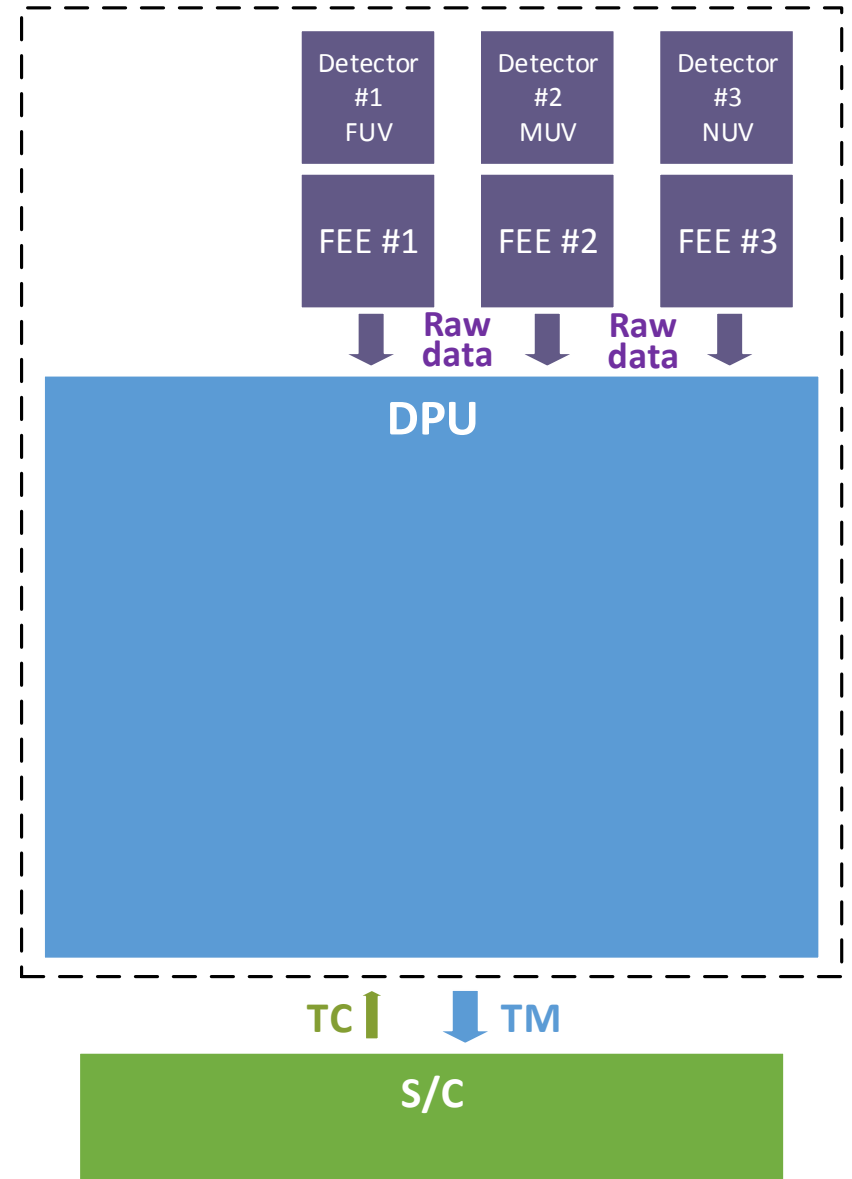 - Identifying the commanding and autonomy aspects

1. **Raw data sent by the FEE to the DPU**
   - Detector sizes (pixels)?
   - Readout mode and period?
   - Data rate?
   - Data volume?
   - Transmission profile? (burst? continuous? On-demand?)
   - Raw data content?
   - Link number?

2. **Data products generated by POLLUX and transmitted as telemetry packets to the ground**
   - Science data product?
     - Raw data?
     - Compressed data?
     - Other?
   - TM volume allocated to POLLUX?
   - What kind of link between the DPU and the S/C? SpaceWire? Other? Which data rate constraints?

3. Use cases, modes (prime observer, calibration, pure spectrometer, …), commanding, autonomy

4. On-board S/W functions
   - FEE configuration
   - Data acquisition
   - Data processing
     - Compression (lossless, lossy) ?
     - Reduction?
     - Detection?
   - Instrument configuration
   - Control of mechanisms (polarimeter retractabilty, spectral separation, ….)
   - Mode management
   - Standard services (HK, event, memory, TC ack, etc.)
   - Communication with S/C (TC/TM)
   - …
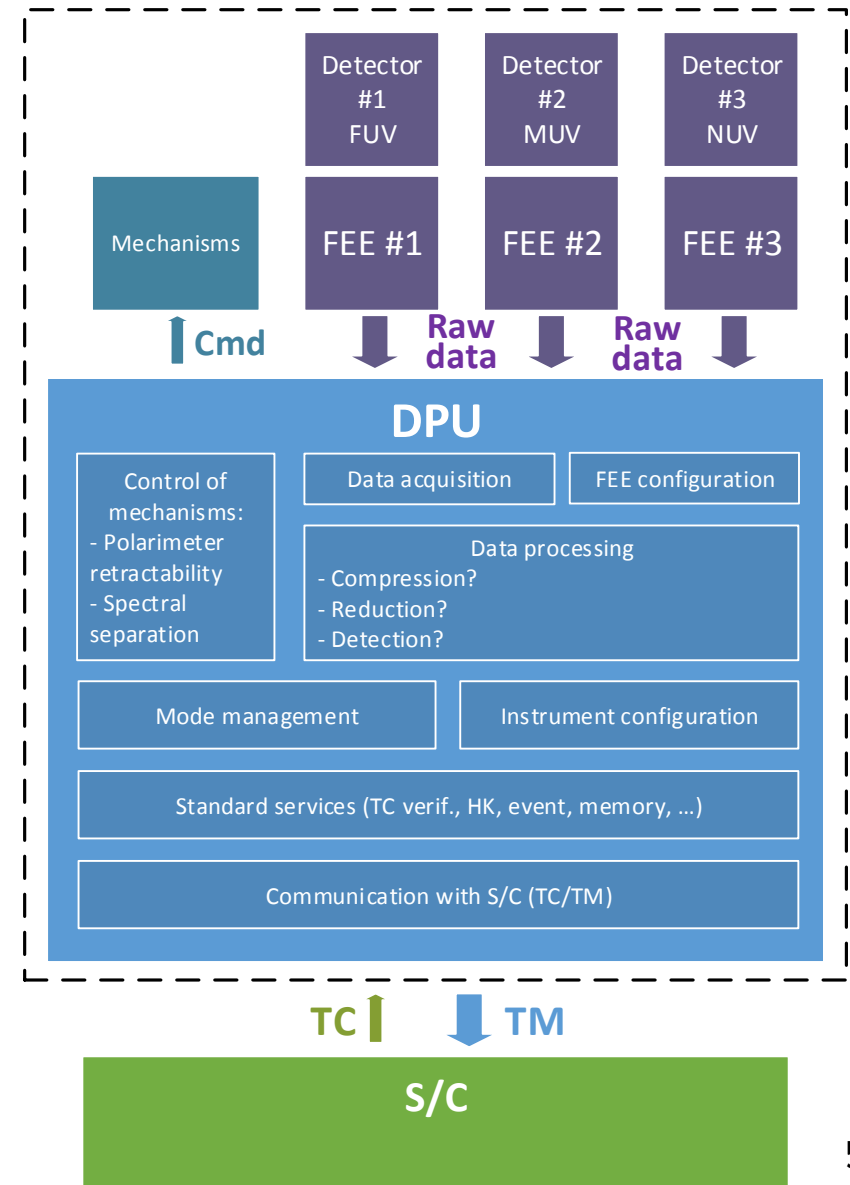
5. Processing power budget (CPU budget)
   - Prototyping / execution time assessment on LEON target
     - Need to have enough maturity in the on-board processing definition
   - Are the on-board processing critical?
6. Memory resource budget
   - Storage need?
   - Processing buffers?
   - Long term storage?
7. DPU / HW resource sizing
8. Preliminary software architecture