



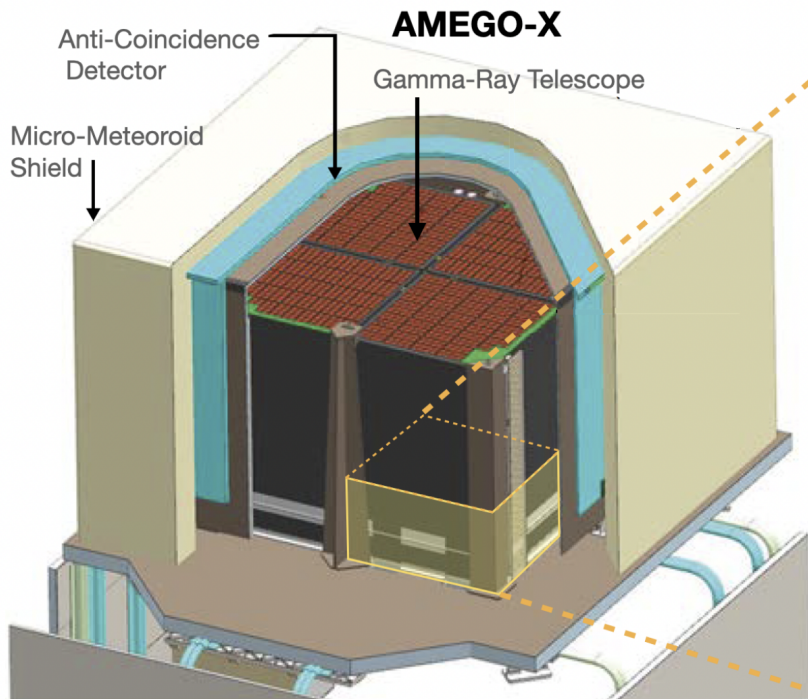
AstroPix: End of Stave Discussion

Regina Caputo (PI) NASA/GSFC
on behalf of the AstroPix team

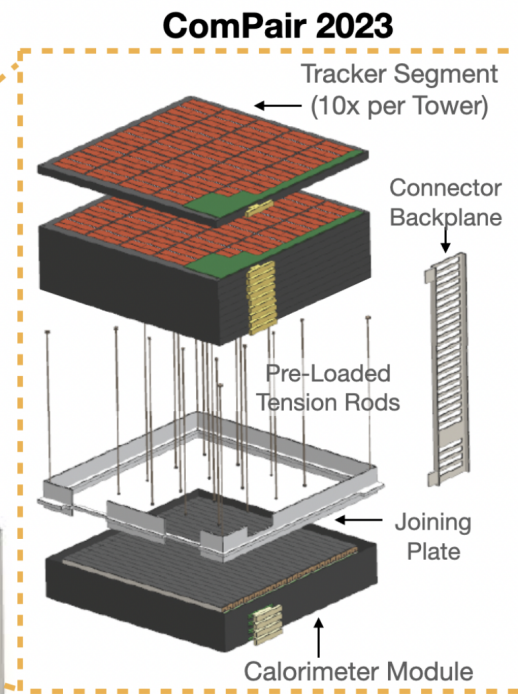
January 11, 2023



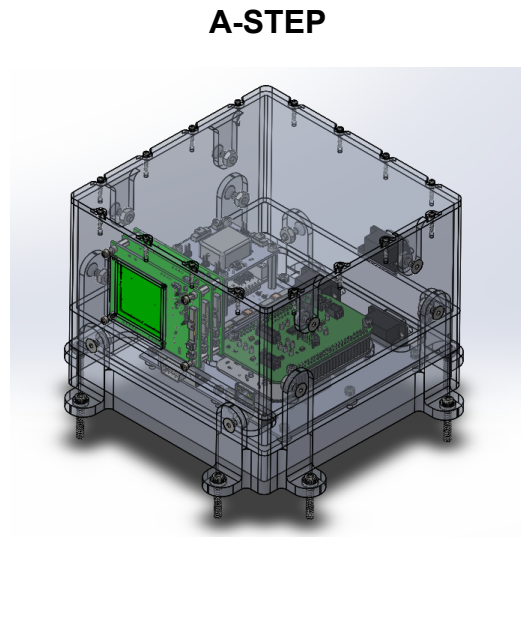
What have we been talking about?



~1m² x 40



~0.5 m² x 10



4 cm² x 3

Tracker

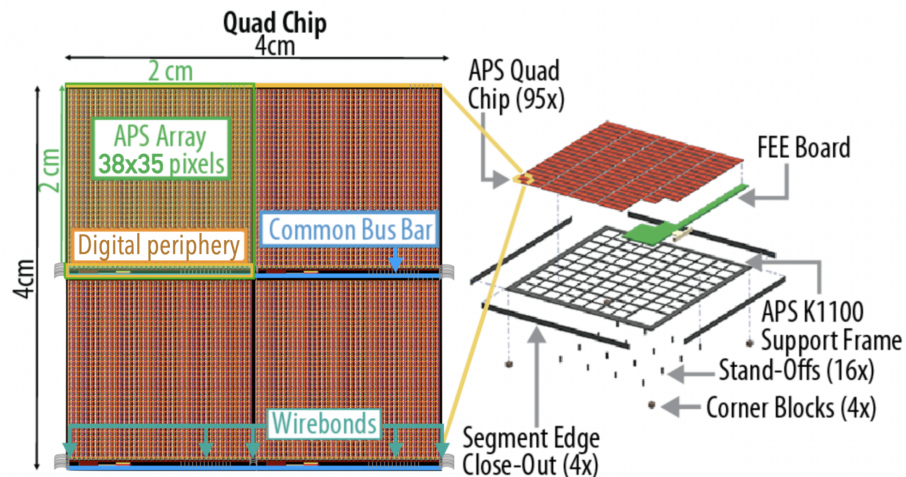
Plan: 10 identical stacked Segments of AstroPix v5** detectors

- 95 Quad Chips / layer = 1260 cm² active area

Segment mechanical structure and FEE designed and fab'd @ GSFC

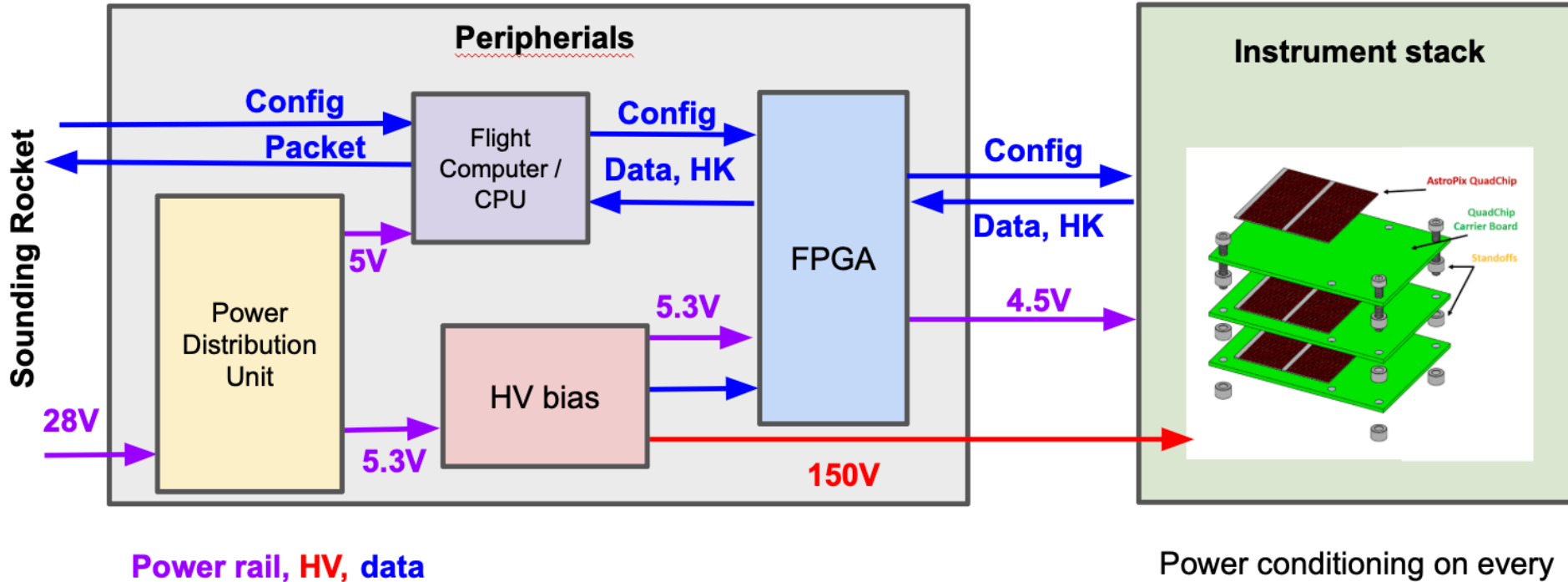
Integration and testing @ ANL

- Pick-and-place machine and wire-bonding
- Fully integrated Tracker segments transported to GSFC for full Tracker integration



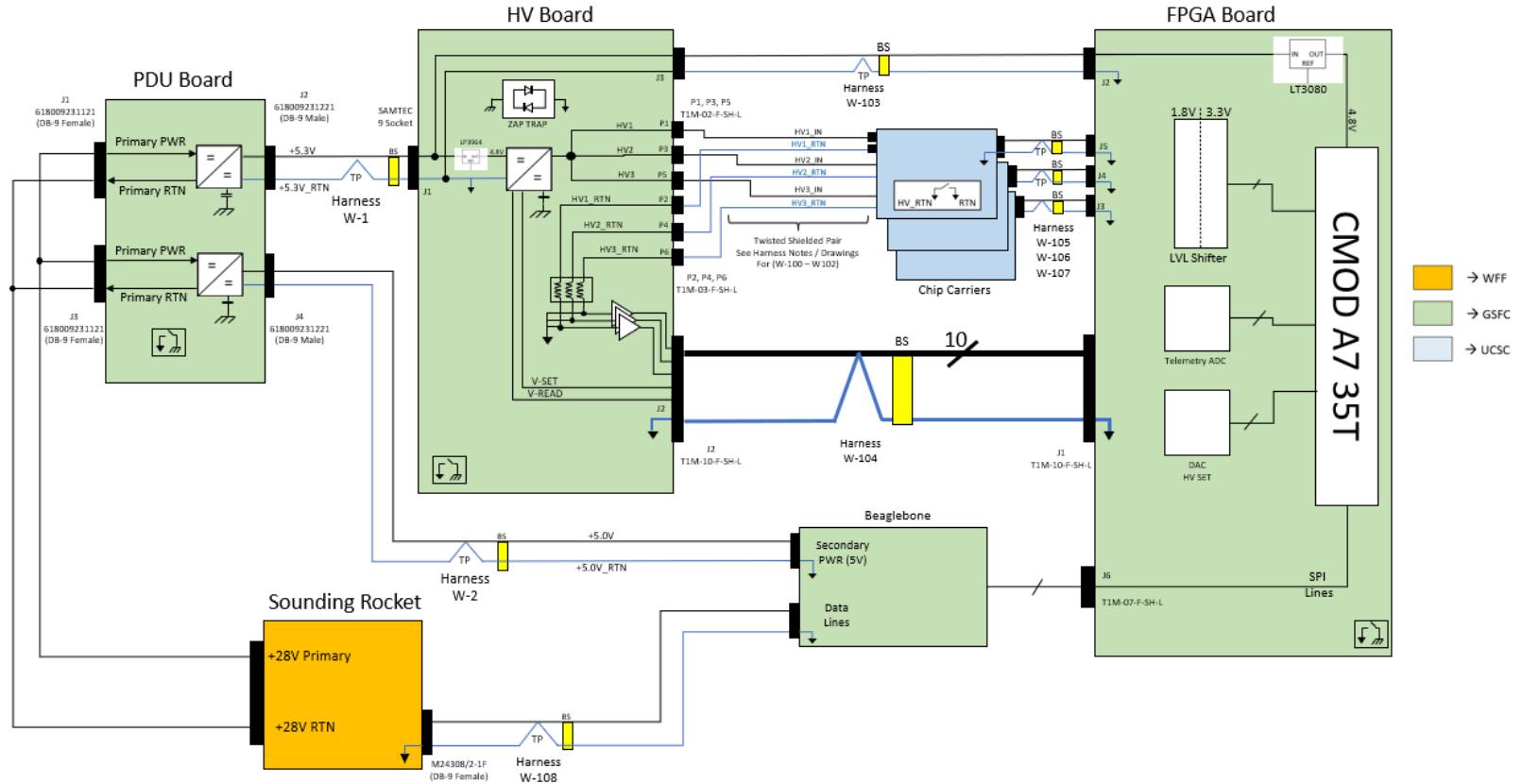
Parameter	ComPair 2015	ComPair 2023	AMEGO-X
# of detectors	10	950	15200
Detector tech.	DSSD	AstroPix	AstroPix
Energy res. (σ)	14 keV	5 keV	5 keV
Position res.	500 μm	500 μm	500 μm
Time res.	10 μs	1 μs	1 μs
Dynamic range	50-700 keV	25-700 keV	25-700 keV ₃

Block diagram for A-STEP

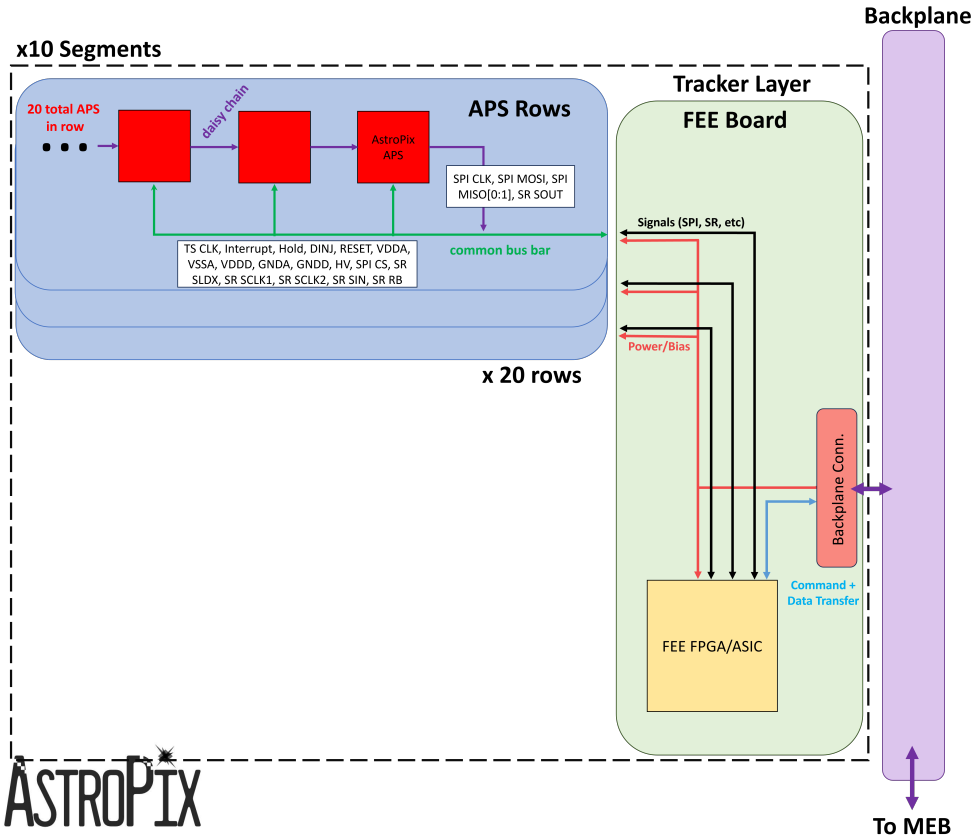


Power conditioning on every board individually, as necessary

Block diagram for A-STEP



Block diagram for ComPair 2



Trade studies on FPGA, whether we can use an ASIC instead, interaction with the backplane and trigger