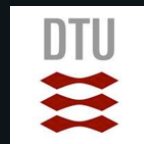# GRINTA

An explorer of the multimessenger and transient sky

Lead Proposer: Lorenzo Natalucci, IAPS

INAF/RSN4 meeting, 22-24 November 2022

The GRINTA Consortium

17 European research laboratories, 47 researchers, 8 countries

GRINTA in a nutshell

- Main goals: GRB & multimessenger, Surveys
- Launch: 2030/2031
- Orbit: LEO equatorial (<5deg)
- Rapid repointing, light S/C

- GRB detection:
    Coverage ~8 sr FoV (0.02-10 MeV)
- Followup:
    Coverage 400deg^2 FoV (5-200 keV)

- #GRBs: ~570/yr (of which ~90 SGRBs/yr)

- Localization:
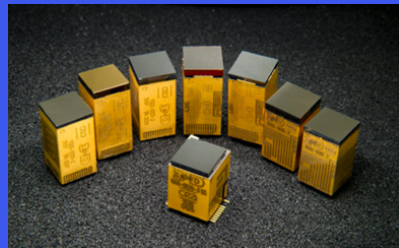   <10 deg @90% confidence at first detection,
    30" after followup

GRINTA

The S/C and payload module

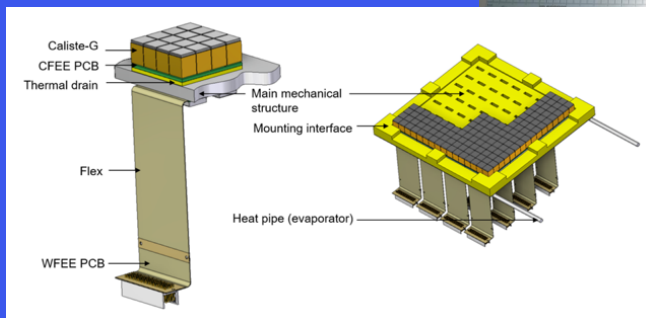

S/C study based on TAS-I Nimbus S/C
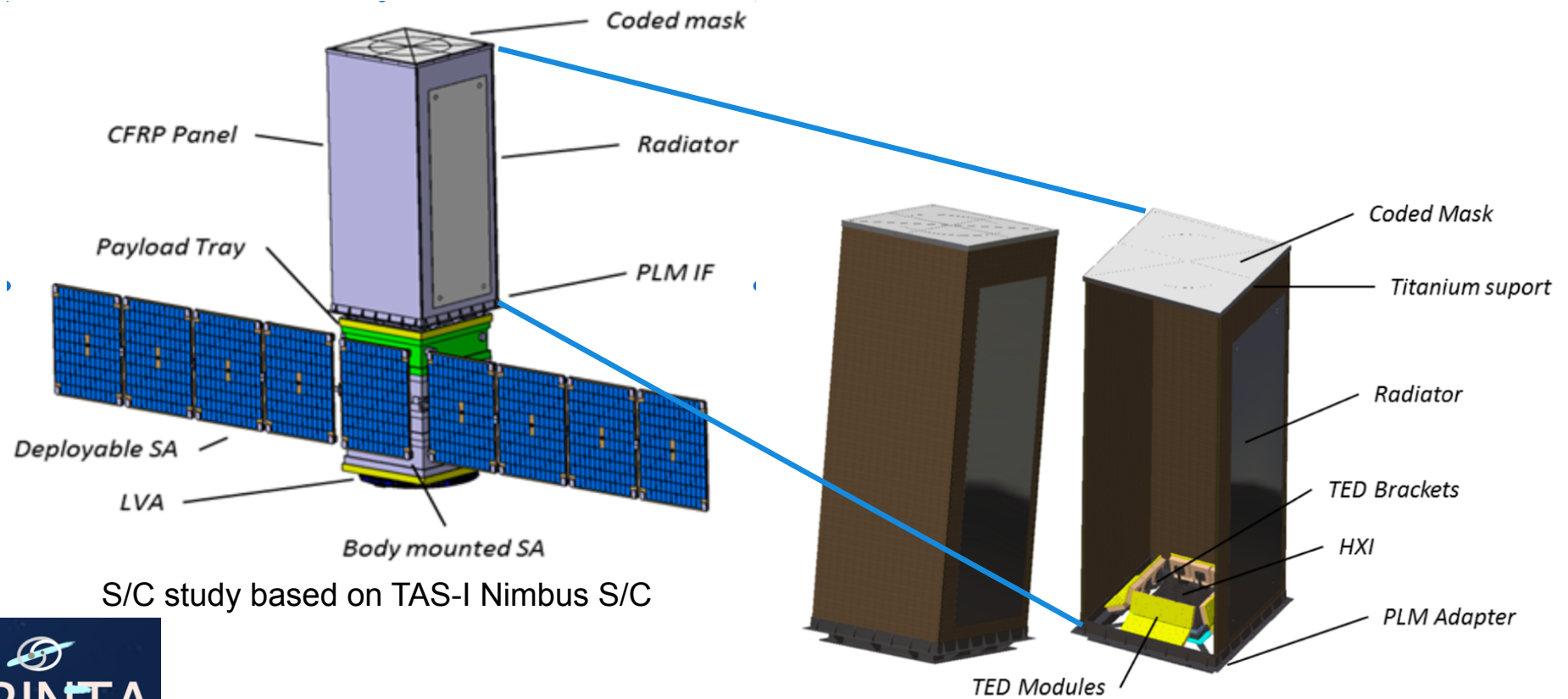
The GRINTA payload

Hard X-ray Imager (HXI)

- Coded mask instrument (400 deg^2 FoV)

- Detection units based on Caliste modules (CdTe Schottky, already flight proven)

- Focal plane assembly has 16x16 modules, 850cm^2 detection area. Imaging pixel size = 1mm.

A set of Caliste modules. A version of them has been launched on Solar-Orbiter(TRL-9)

Transient Event detector (TED)

- 24 modules, each of 100cm^2 geometric area

- They are used on board to detect GRBs and other transients and send alerts to the DPU

- They also act as active AC system for the HXI detector plane

- Technology already used in space, mainly on smallsats (e.g. GECAM, GRID, …)

- Sensitivity ~1.5-2x better than Fermi/GBM (directions<60°)
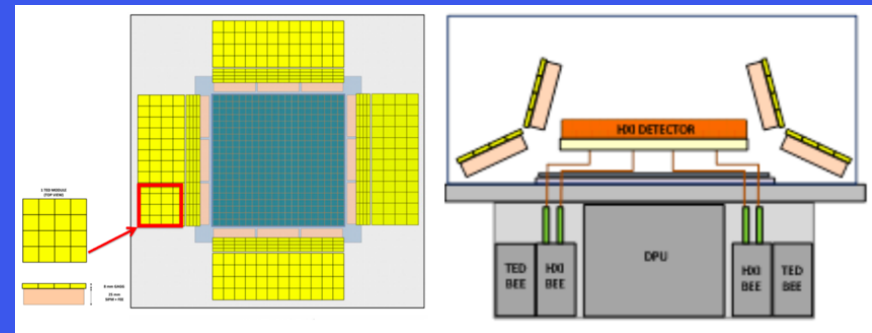
Future prospects

- The GRINTA mission concept is a natural evolution of the successful, currently operational missions: Fermi, INTEGRAL, Swift, with an innovative operational approach.

- Recenty proposed to ESA as the F2 mission (1st and 2nd phase proposals). Launch date: 2030/31. Only Italian PI mission in competition for the 2nd phase.

- Among the final three missions (out of the initial 19 Phase 1 proposals) considered for selection, GRINTA was not chosen due to claimed programmatic risks.

- ASI had fully endorsed the Italian contribution to the mission.

- The ESA committees have fully recognised the value of GRINTA in the 2030 mission scenario. The Consortium is strongly motivated to search for other flight opportunities.