Multi-core for payload processing: use case from the Euclid mission

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In the frame work of the Cosmic Vision program, the Euclid mission has the objective to map the geometry of the Dark Universe. Galaxies and clusters of galaxies out to z~2, in a wide extragalactic survey covering 20 000 deg², plus a deep survey covering an area of 40 deg² will be targeted on the visible and infrared by an imaging and spectroscopic channel.

Stat-of-the-art detectors (the HAWAII-2RG detector) will achieve the frames acquisition for the near infrared wavelength. To reduce noise, detect and remove cosmic ray, and to obtain a final frame, many data operations are required on each frames recorded by the detector.

The talk will present the requirement for the Euclid on board processing, highlighting how they could be fulfilled by the use of a multi-core processor.