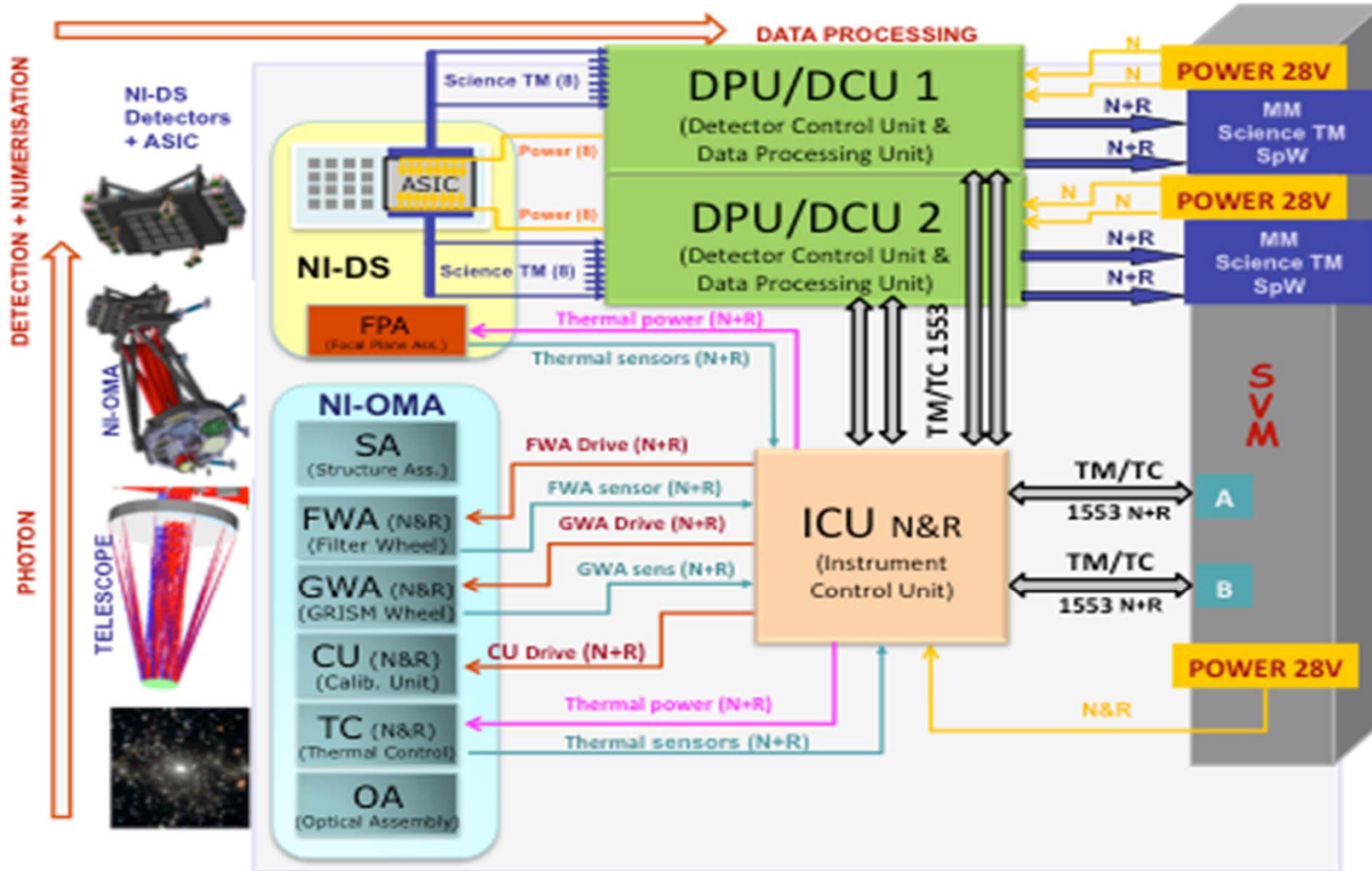


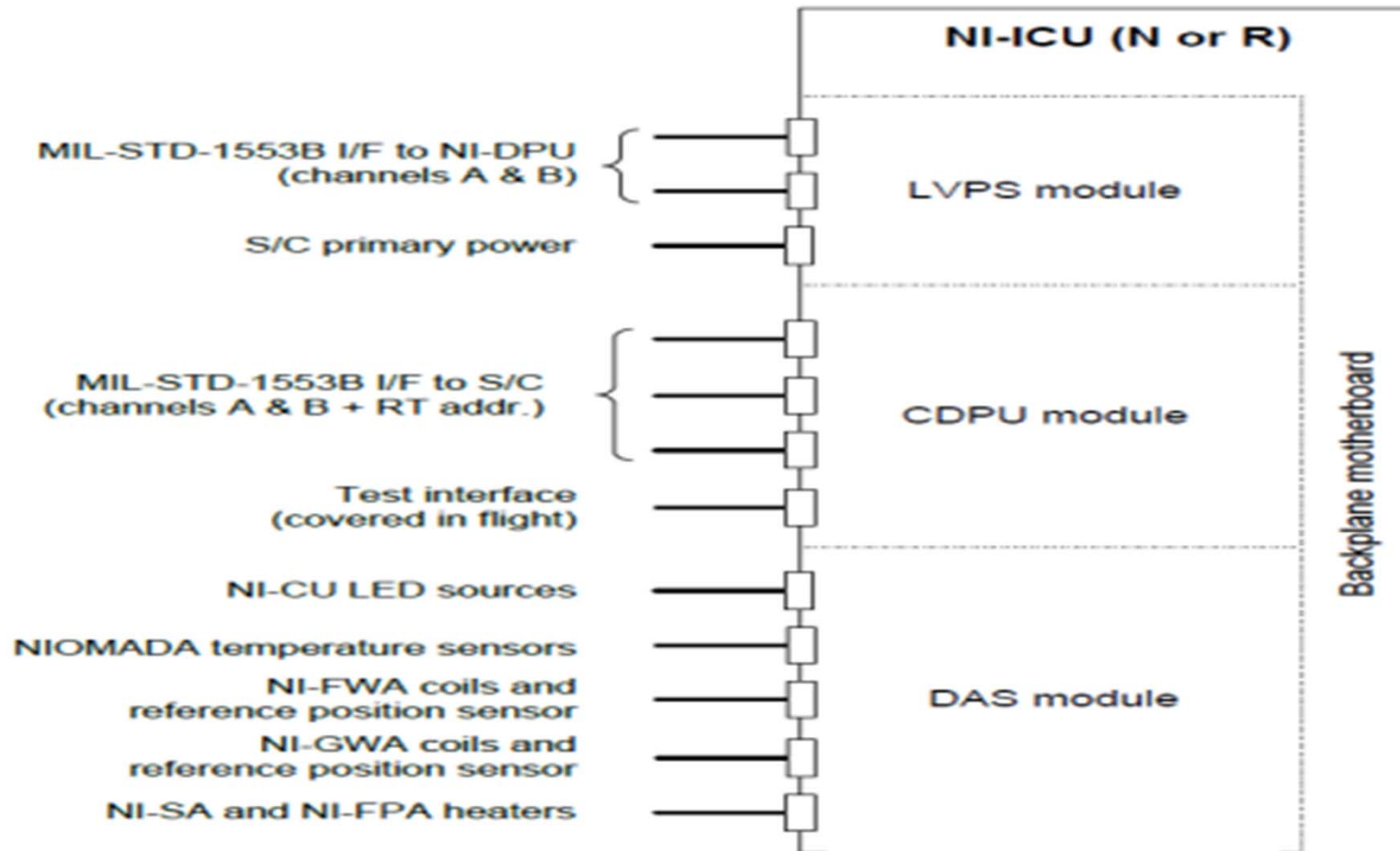
On-Board SW of Euclid-NISP instrument

V. Capobianco et al.
Osservatorio Astrofisico di Torino

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- Study of dark universe (dark energy and dark matter)
- It will be placed in L2 orbit (1,5 mln Km)
- Mission lifetime will be about 6 years
- Telescope diameter is 1.2 meters
- 2 on-board instruments:
 - VISible imager
 - Near Infrared Spectro-Photometer

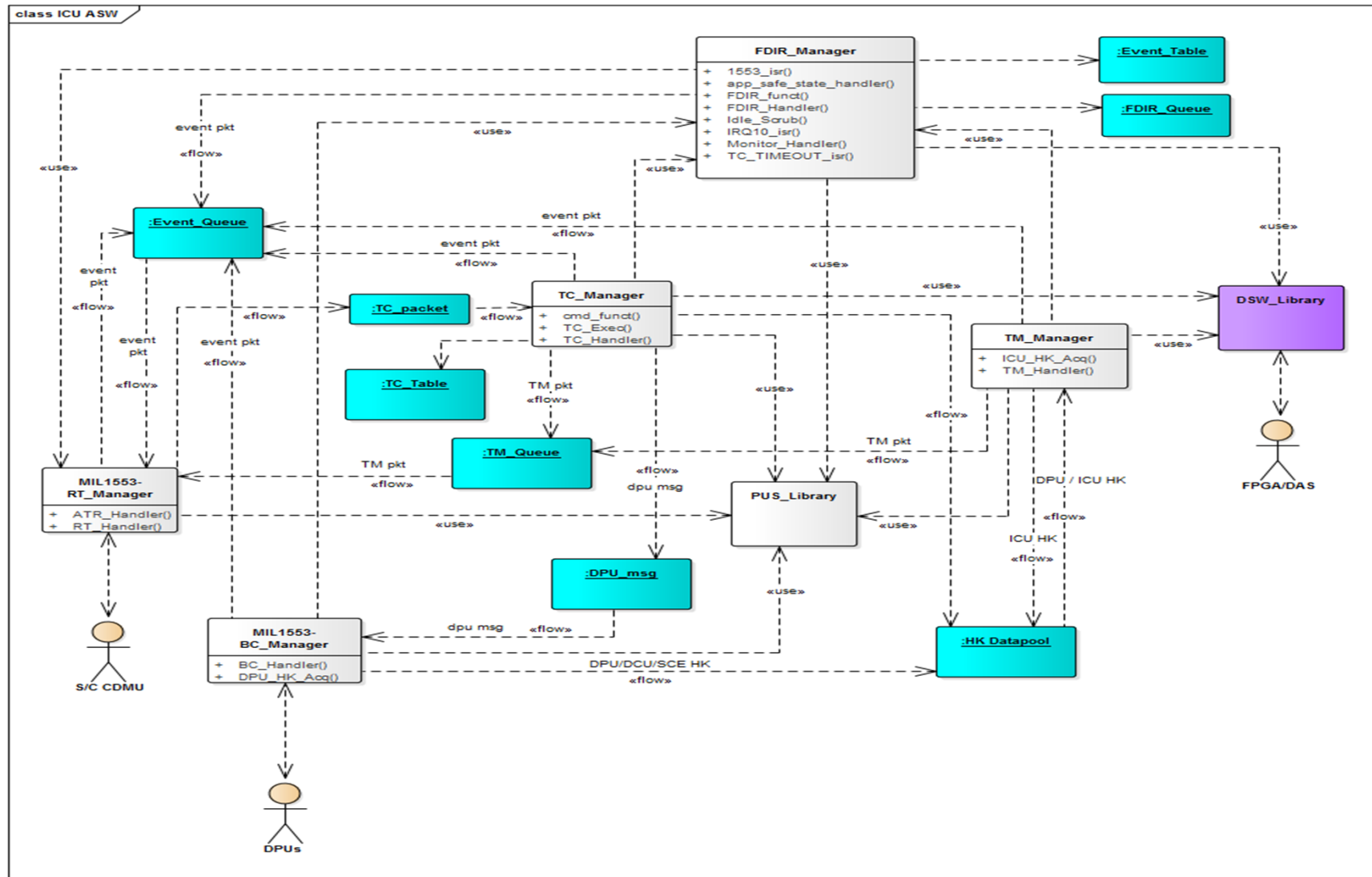




- SPARCv8 LEON2-FT CPU processor embedded on a MDPA ASIC
- CPU clock is 80MHz
- Interfaces:
 - 2 Mil-BUS 1553
 - 1 Spacewire
 - 1 SPI
- Memories:
 - 64KB PROM
 - 4MB EEPROM (2 banks of 2MB)
 - 8MB SRAM with EDAC protection
- RTAX FPGA:
 - Extends MDPA functionalities (WatchDog, Reset, Clock, On-Board Time)
 - Interface CDPU with DAS Module

- Exchange of TC\TM packets with Spacecraft on a Mil-BUS 1553 link using PUS and ECSS standards
- TC execution and distribution to NISP units connected on DAS board and DPUs (through a second MIL-BUS 1553 link)
- Management of SW maintenance
- HK data acquisition from NISP subsystems
- Monitoring of health parameters
- Handling of FDIR functionalities
- Management of NISP operating modes

ICU ASW Design



- 13 Tasks
- 5 Timers
- 13 Telemetry queues
- ~70 Telecommands
- ~2000 HK Parameters
- Max TC data rate: 1 pkt/s (about 1 KB)
- Max TM data rate: 2 pkt/s (about 2 KB)
- Max Event data rate: 4 pkt/s (about 300 Bytes)

- Wheels movements synchronized with CMU
- OBT synchronization of DPUs
- Anomalies handling
- Up to 72 hours of autonomous operations

- Framework Eclipse with plugins
- RTEMS 4.8 Edisoft libraries
- GCC 4.2.1 Compiler
- Versioning and Issues: GitLab
- Static Analysis: Parasoftware C/C++ and BugDetective
- Debugger: GRMON and GDB
- OS: Debian 5.0