

Company presentation

Funding for European Defence Research and Technology

Ljubljana, 2019

www.skylabs.si

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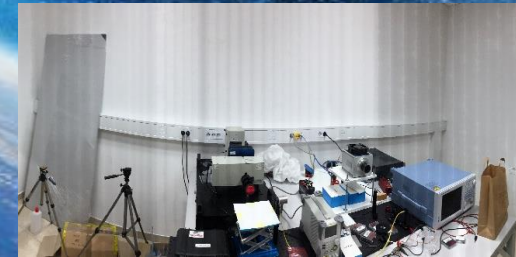
The logo features the word "skylabs" in a white, lowercase, sans-serif font. A thin white arc is positioned above the letters "y" and "l", starting from the top of the "y" and ending at the top of the "l".

skylabs

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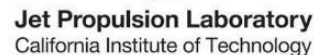
SkyLabs at glance

- **Highly skilled electronics and software R&D engineering team**
 - Team of 15 experts
 - Embedded electronics and software development
 - Analog electronics, radio systems, and signal processing
 - Mechatronics development
 - IP Cores (digital and mixed signals)
- **Engineering development approach**
 - Miniaturization key aspect (following latest technology trends)
 - Hardware accelerated approach
 - Awareness of harsh space environment effect
- **SkyLabs closely cooperates with University of Maribor – Laboratory for Electronic and Information Systems**
 - Knowledge and technology transfer
 - Recruiting of highly skilled professionals
 - Core research capabilities (12 researchers)
 - TRISAT mission: First satellite developed with Slovenian know-how



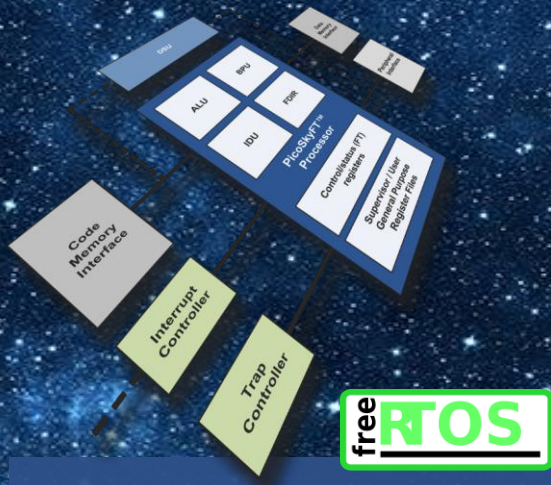
SkyLabs Vision

We are innovating the aerospace market with SkyLabs disruptive technologies, products and solutions to change the layout of space.



PicoSkyFT soft-core processor

Small footprint, radiation hardened by design processor core



Radiation testing campaigns:

- PSI Proton beam up to 230 MeV
- CERN UHE mono-energy. 40 GeV/n
- ChipIR Neutron beam 10-800MeV



PicoSkySIM™ & PicoSkyWARE

- Complete toolchain and debugger
- Clockexact simulator
- Interface board

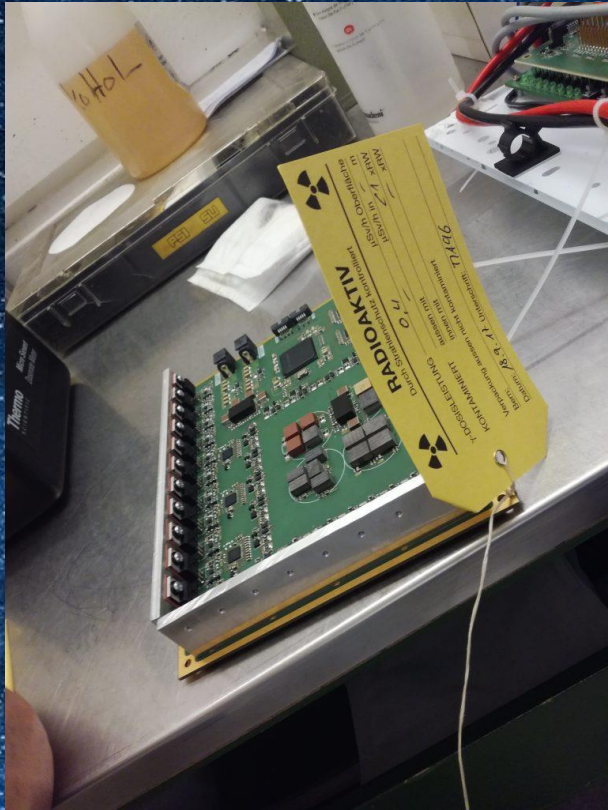


PicoSkyLINK – programmer and debugger

- **Small footprint**, soft-core and **fault tolerant** processor core.
- **ESA activity** (verification and radiation characterisation of the core)
- IP Core building block for true SoC architecture implementation and **technology independent**
- **Architecture**
 - RISC 8/16-bit Harvard architecture
 - Highly deterministic operation
 - Hard real time interrupt response capabilities
 - Low memory footprint of the application code
- **Radiation hardened by design approach** (SEE tolerant)
 - Fully distinguished dual operational mode (supervisor and user mode)
 - Spatial triplication (TMR) on register level (optional temporal redundancy)
 - EDAC protected memory blocks, by Hamming scheme
- **FDIR** policy for mitigation techniques

PicoSkyFT Ecosystem

LCLs – Latching Current Limiters

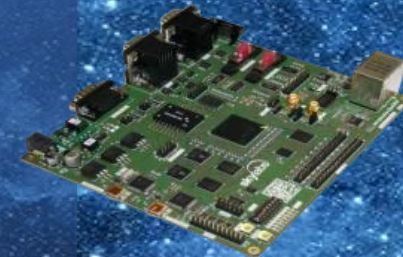


- Immune to SEE
- Detect the overcurrent event
- Limit the current through the device to a safe level, preventing permanent damage due to overheating
- 3 level protection technique
 - Component level
 - Subsystem level
 - System level
- Enhanced telemetry on each system level



DEV-BOARD-M2GL050

- MIL-STD-1553B
- SpaceWire
- CAN
- SerDes,...



DEV-BOARD-A3PE3000

- SpaceWire
- MIL-STD-1553B
- CAN
- RS422/232
- SerDes,...



SKY-PICOSKY-EVAL [SKY9213]

- CAN, PIO, USB
- ADCs, DACs
- SPI / I2C

NANOskey I - Satellite platform

Highly miniaturized & reliable nanoscale platform with FT features



**The right solution for
the emerging space market**



**Fault tolerant
system design**



**New type
of harness**



**Pushing the limits of
system miniaturization**



**Designed for high
reliability and availability**



**Tailor made to
clients needs**



TRISAT

SEE immunity, innovative error mitigation techniques, sophisticated three-level FDIR policy, redundancy on all critical functions and thoughtful component selection ensure robustness, high reliability and availability of the platform

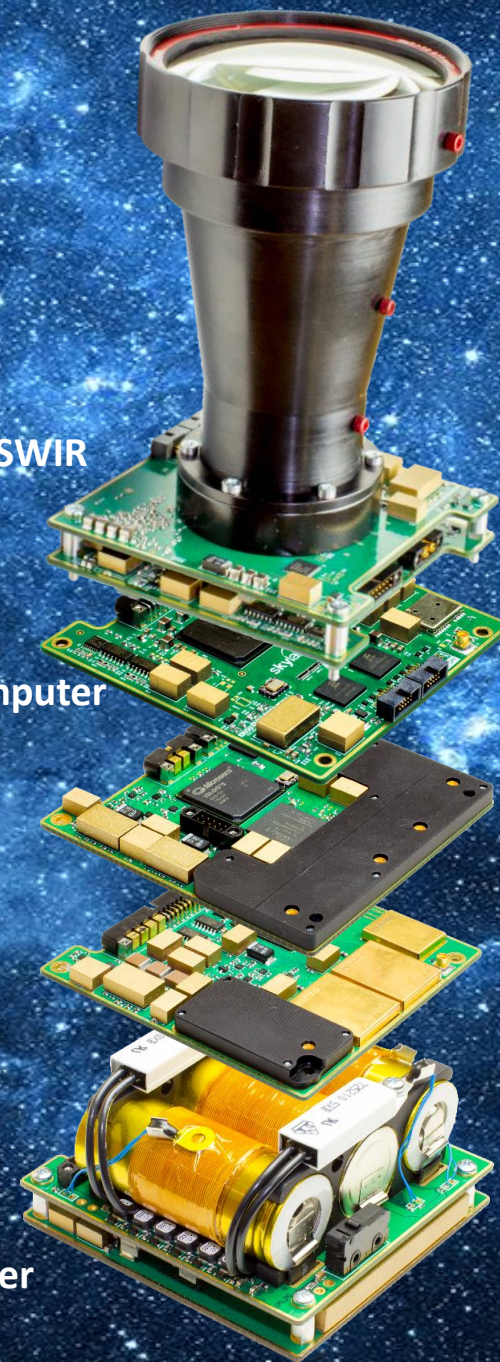
NANOimager
Miniaturized
multispectral SWIR
imager

NANOobc
On-board computer

NANOLink
S-Band SDR
transceiver

NANOcomm
UHF/VHF
transceiver

NANOeps
Electrical Power
System

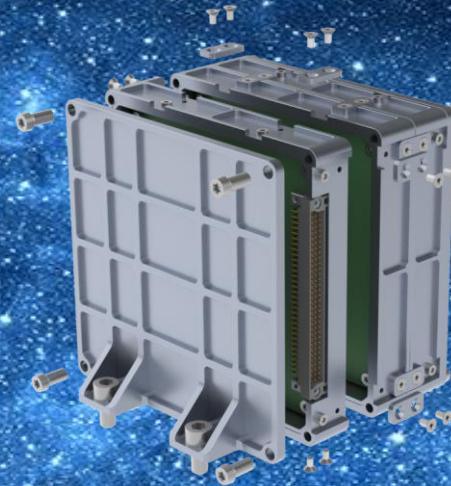
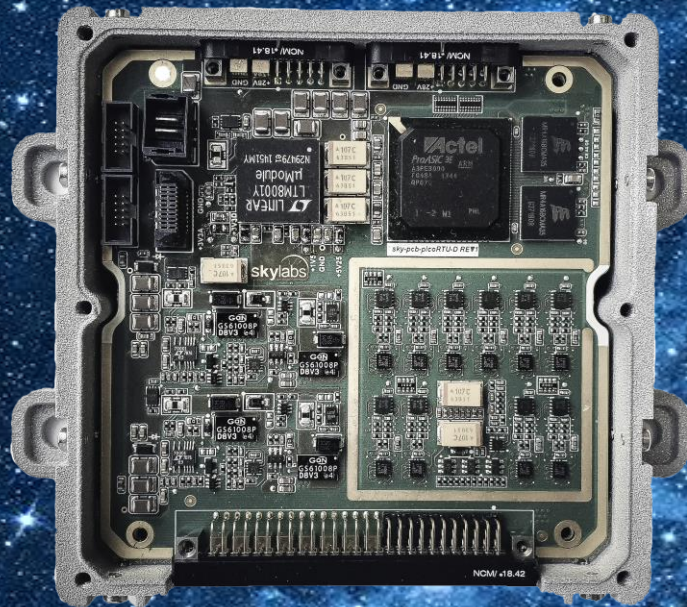


SOON

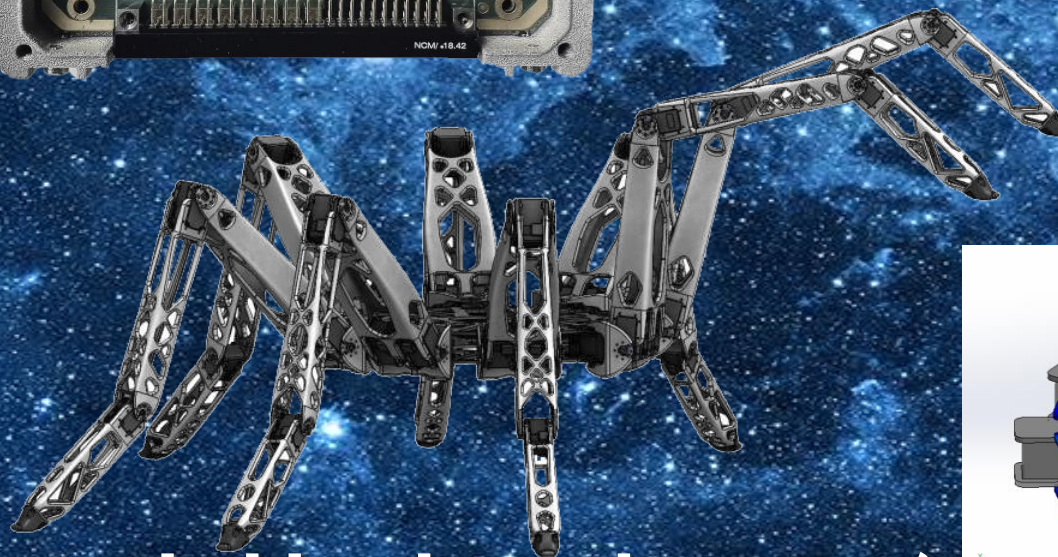
NANOhpc-E – AI at the Edge



NANOai-E prototype

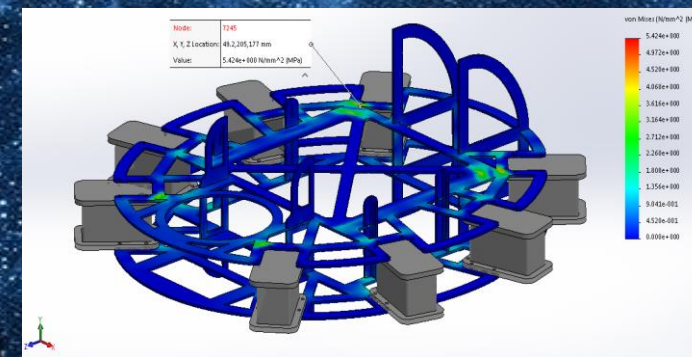


PicoRTU-D system



SARA

(Slovenian Arachnid Robot Adventurer)



The background of the entire image is a high-resolution photograph of the Earth's horizon from space. The curve of the planet is visible, showing a thin layer of white clouds and a deep blue sky. The sun is partially visible on the left, creating a bright, glowing arc. In the upper right, the Milky Way galaxy is visible as a dense field of stars. The Skylabs logo, consisting of the word "skylabs" in a white, lowercase, sans-serif font, is centered in the upper half. A white, thin, curved line arches over the text, resembling a stylized orbit or a protective shield.

skylabs

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