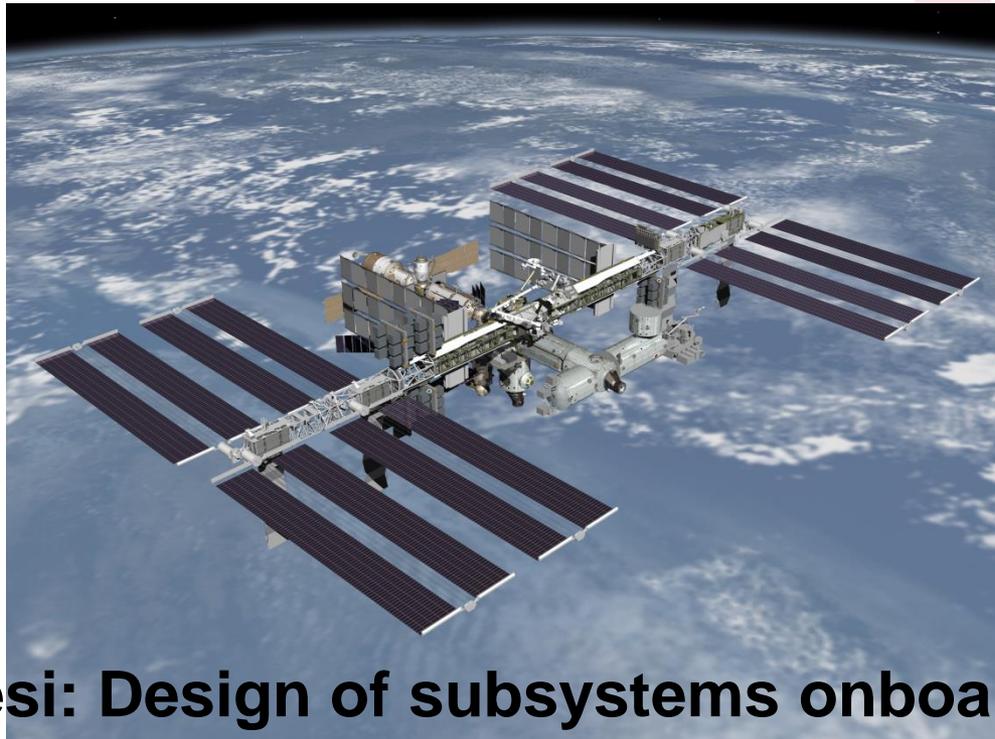




**KAYSER
ITALIA**



David Zolesi: Design of subsystems onboard the ISS

Kayser Italia S.r.l.
Via di Popogna 501
57128 – Livorno (Italy)
www.kayser.it
kayser@kayser.it

Company overview

- Kayser Italia is a fully independent Italian system engineering company (SME), incorporated in 1986
- Kayser Italia offers its products and services into the space sector
- Kayser Italia has a staff of around 60 engineers
- Kayser Italia has extensive expertise in the design and manufacturing of experiments and payloads, related Ground Support Equipment and Mission Operations and Support, both as prime-contractor, as well as sub-contractor



Company overview

- Kayser Italia has 28 years experience in the supply of hardware and software solutions and on-site support services for space
- Kayser Italia has participated to 60 space missions with 90 payloads, ranging from sounding rockets, to unmanned and manned European, Russian, Japanese, Chinese platforms, to Shuttle, and ISS.
- Engineering services with key focus on the following application areas:
 - Life and Physical Science experiment hardware, for both manned and unmanned missions
 - Equipment for spacecrafts
 - Systems and sub-systems for exploration missions
 - Mission support
 - Support to on-board and ground operations

Technical know-how and competencies

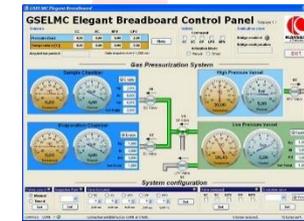
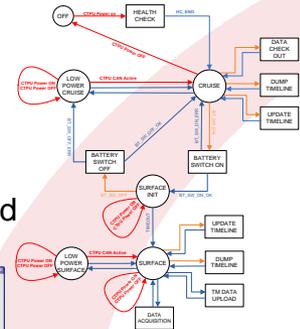
•Electrical/Electronics

- Power distribution
- Data acquisition
- Electronic controls
- Microprocessors and microcontrollers



•Software

- Instrument firmware
- Flight software
- Man-machine interface
- EGSE software
- Data acquisition, storage and presentation

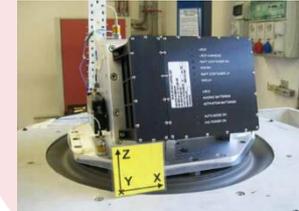


•Ground support equipment

- Electrical GSE
- Mechanical GSE
- Thermal GSE

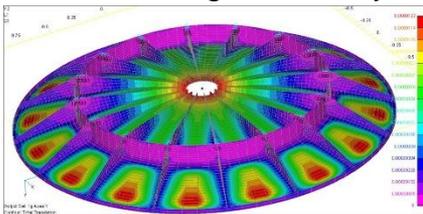
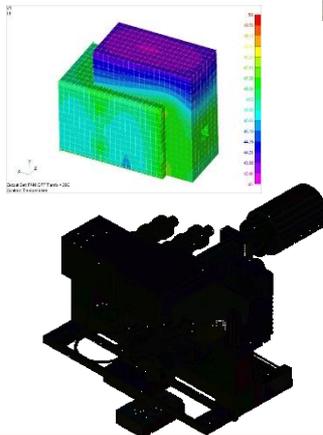


•System AIV



•Mechanics/Structural/Thermal

- Mechanical design
- FEM
- Structural analysis
- Assembly and integration
- Fracture Control
- Thermal design and analysis



Satellites programs

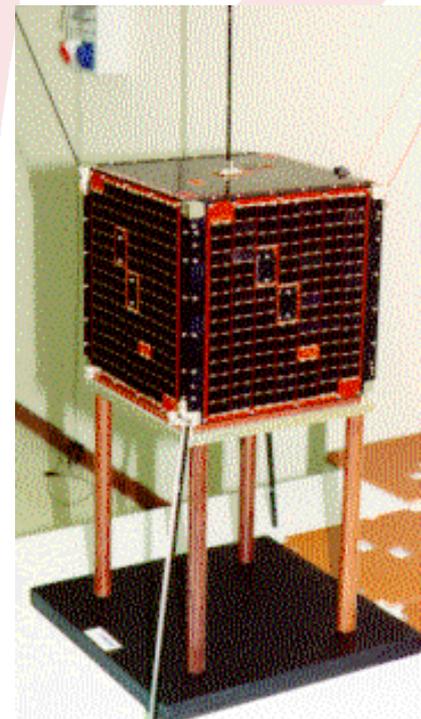
PAMELA (INFN)

Telecommand and Telemetry interfaces

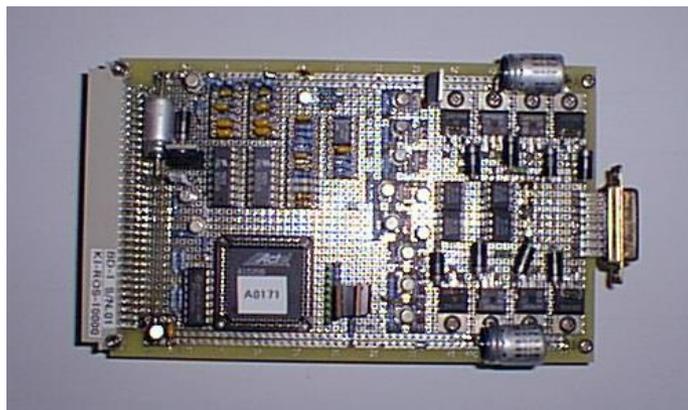


TEMISAT (Telespazio)

Microsatellite, EGSE and OCC



MITA (CGS) - EGSE



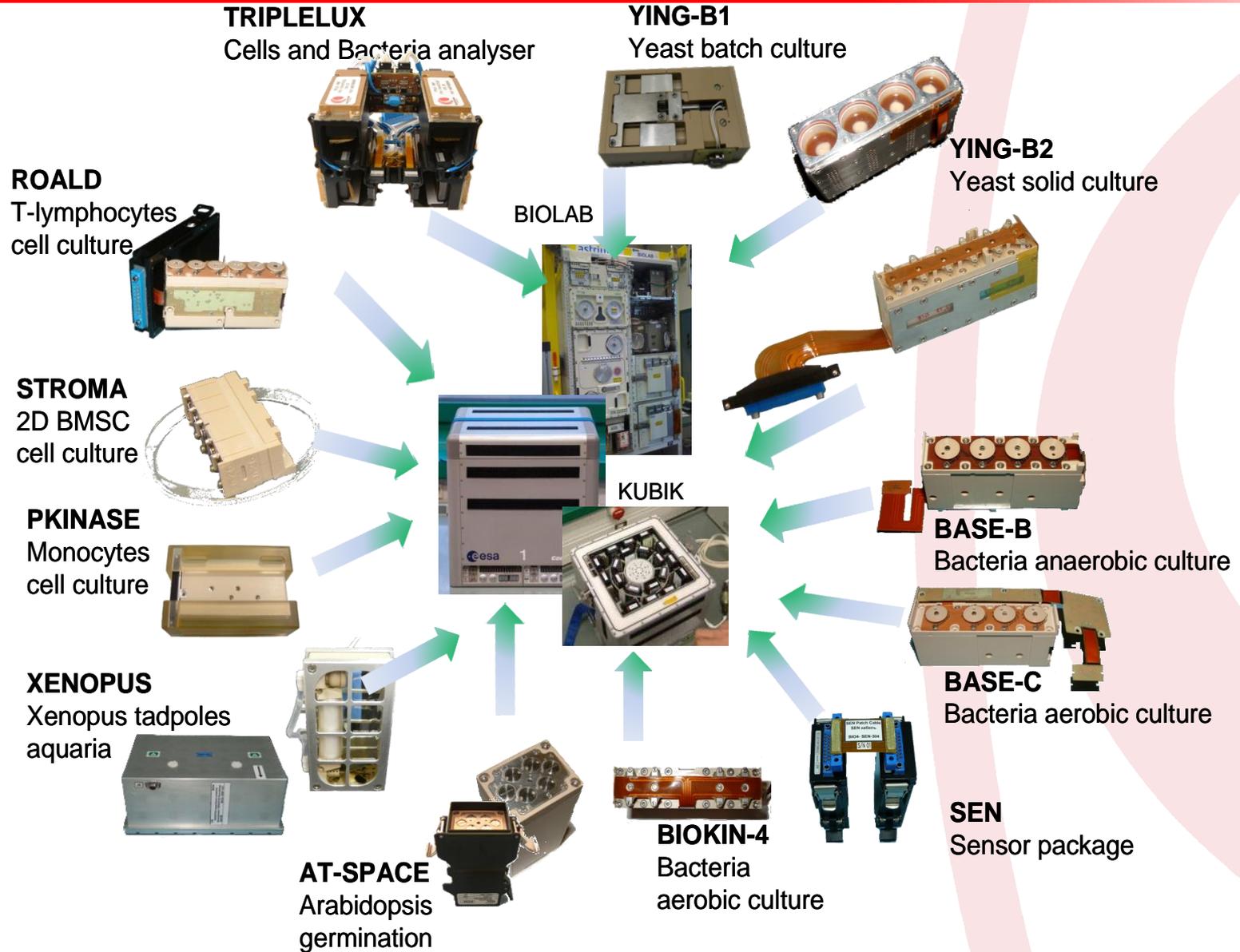
ROSETTA (OG)

Breadboard of drill and carousel control for Shark subsystem

COSMO-SKYMED (ALENIA)

- EGSE Focal plane

Life science: biology experiments



Life science: biology facilities

BIOKON (ASI)

Containers for autonomous experiments



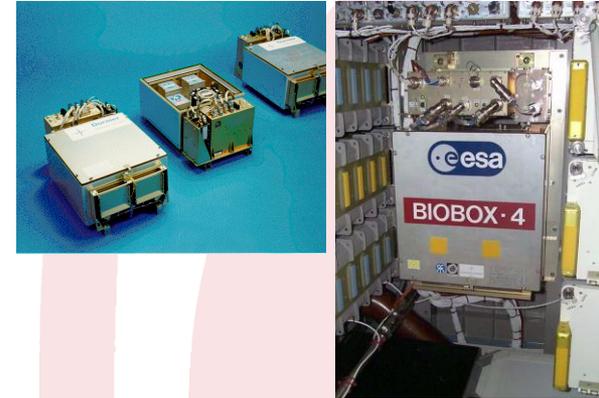
MATROSHKA (ESA/DLR)

(Sub to DLR. Facility Electronics, CAN Bus, S/W, EGSE)



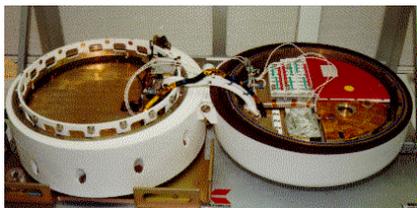
BIOBOX (ESA)

(Sub to AST . Facility control electronics, centrifuge electronics, harness, Peltier controller, F/W, EGSE)



BIOPAN (ESA)

(Sub to KT . Electronics, satellite electrical I/F, F/W, EGSE)



ECCO (ESA)

Flight Thermal Transport Containers

KIC (ESA)

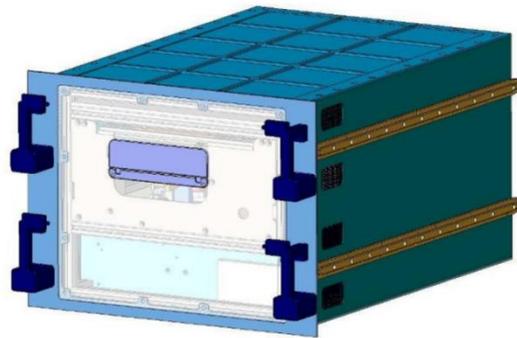
Experiment Containers



Life science: analysers



**MIDASS – Microbial
Detection in Air System
for Space (ESA)**
(Sub to bioMérieux)



**I-BICA – Immuno-Biochemical
Analyser on ISS (ESA)**
(Sub to Astrium)



BioanalysISS (ESA)
(Sub to Univ. Laval)



HPA (ASI)

Hand Posture Analyser



Hand Grip
Dynamometer (HGD)



Posture Acquisition Glove (PAG)
and Wrist Electronics Box (WEB)



Target
Objects



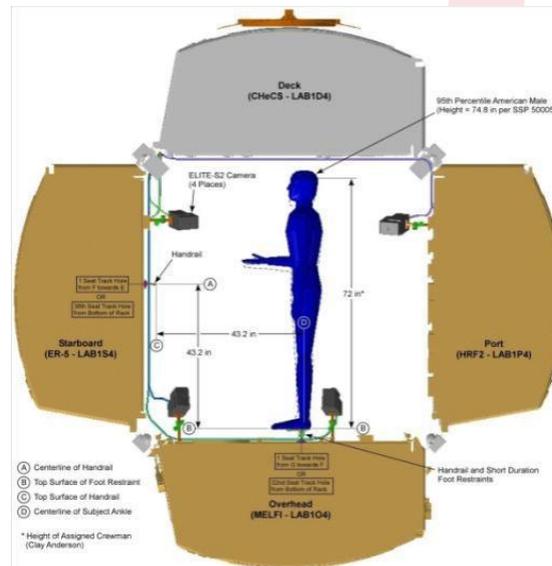
Pinch
Force
Dynamometer
(PFD)

HPA used :

- Taxi flight TM34 (R.Vittori, 2002)
- Increment 7 (Ed Lu, 2003)
- Increment 8 (Mike Foale, 2004)
- Soyuz 10S (R.Vittori, 2005)
- STS120 (Paolo Nespoli, 2007)

ELITE-S2 (ASI)

ELaboratore Immagini TELEvisive - Space 2



ELITE-S2 camera in
the USLab of ISS



ELITE-S2 integrated in EXPRESS
rack at KSC



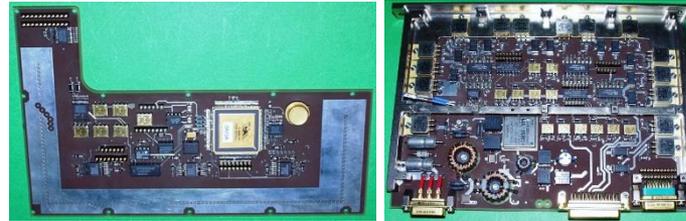
ELITE-S2 cameras at KSC

Physical science

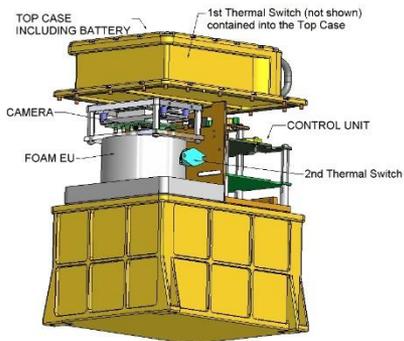
GABRIEL (ESA)



MSL (ESA) (Sub to KT. Power Distribution Module)

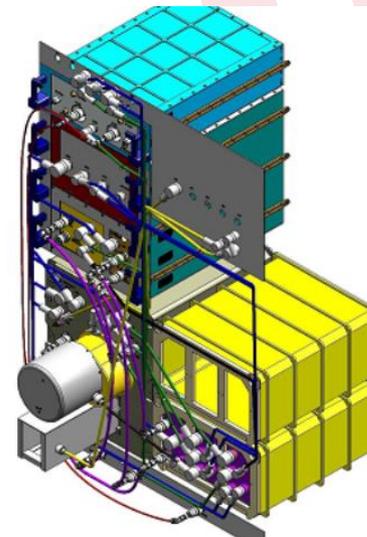


IFOAM (ASI)



EML (ESA)

(Sub to AST. Power distribution, signal/data acquisition & control electronics, GSEs)



ISS equipment

EHD (ESA)
Data storage device



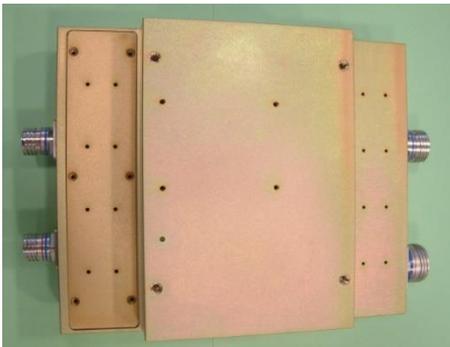
PPS/KuPS (ESA)
Portable Power Supply



HAMVIDEO (ESA)
Video Transmitter



CFEU (ESA)
Cabin Fan Electronics Unit



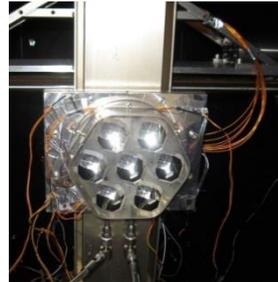
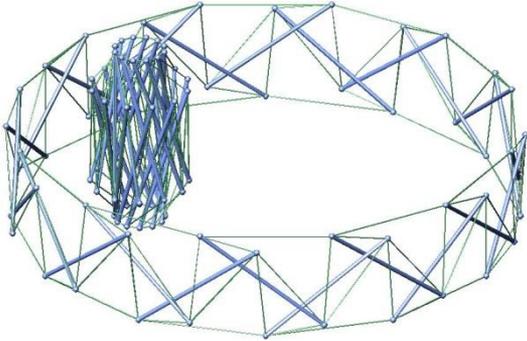
ACLS (ESA)
Advanced Closed Loop System
Sub to Astrium. Avionics of the facility



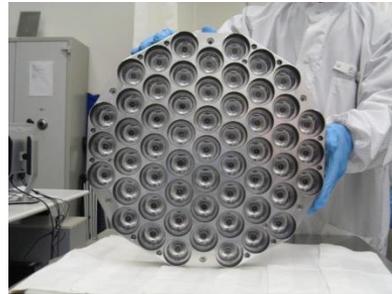
in progress..

Technologies

TSS (ESA)
Tensegrity Space Structures



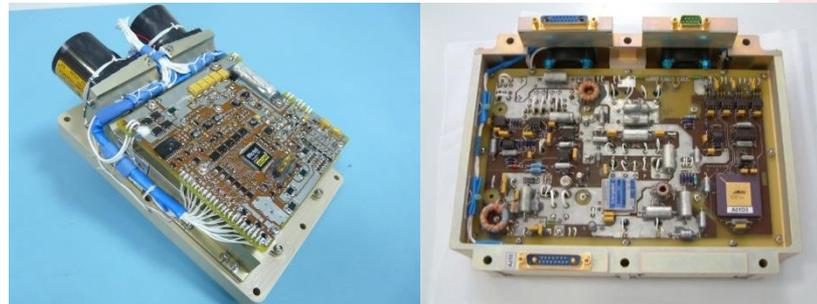
Wired and Wireless On-board Sensor Network (ESA/ASI)



EAP (ESA)
Electro-Active Polymers

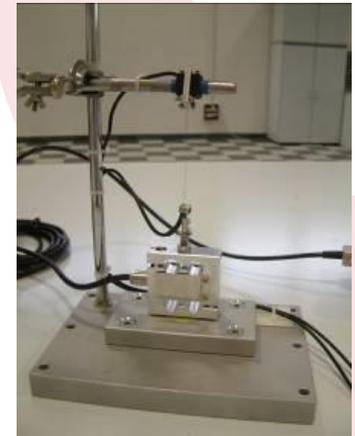


GNSS Retroreflector Arrays for satellite laser ranging (ASI)
(Sub to INFN)



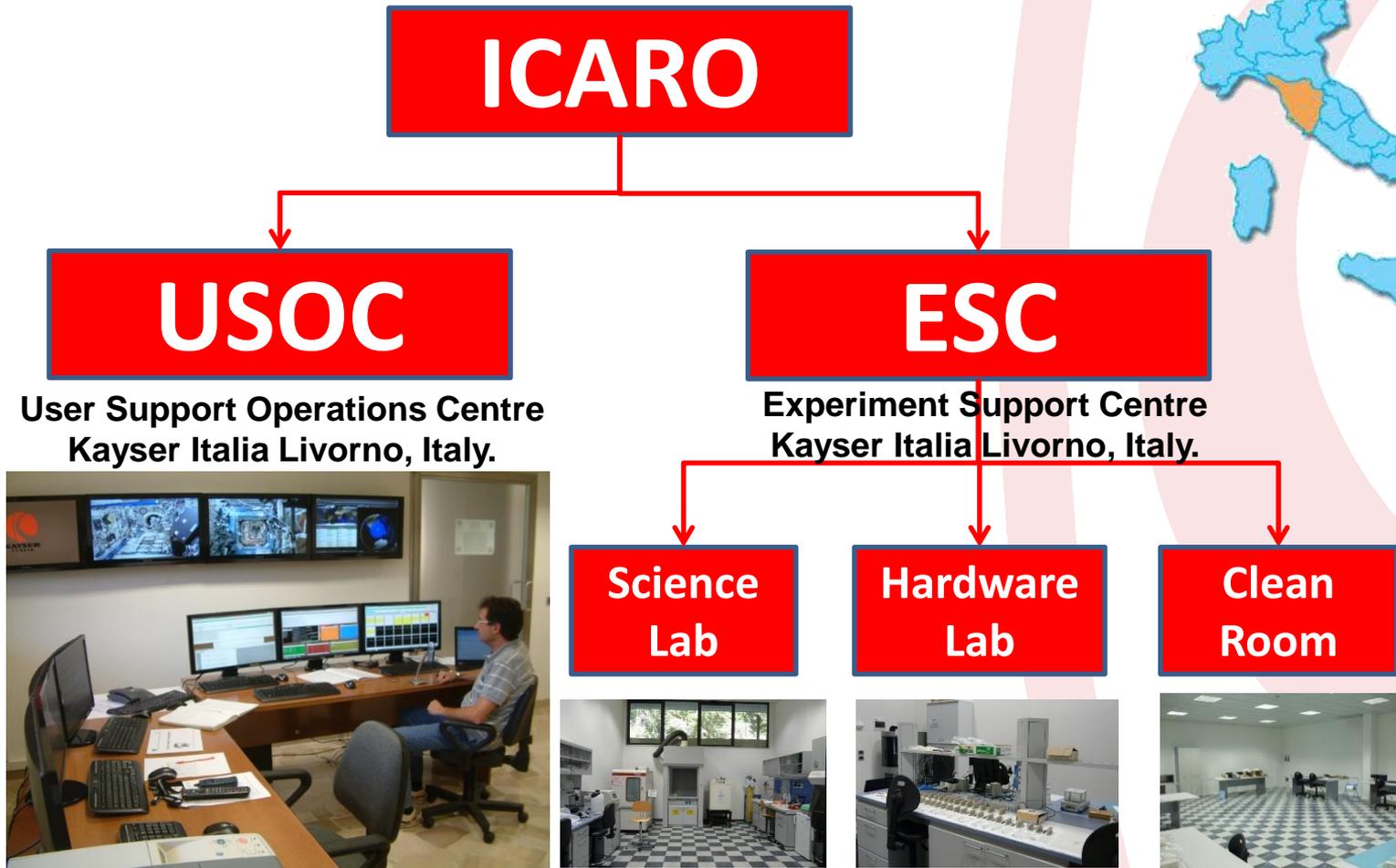
Peltier controllers from 25 W up to 250 W

SMA
Shape Memory Alloys



ICARO

ICARO - Italian Centre for Advanced Research and Operations, is the Kayser Italia centre for experiments and operations support.



Management of on-board facilities and experiments

End of presentation.