



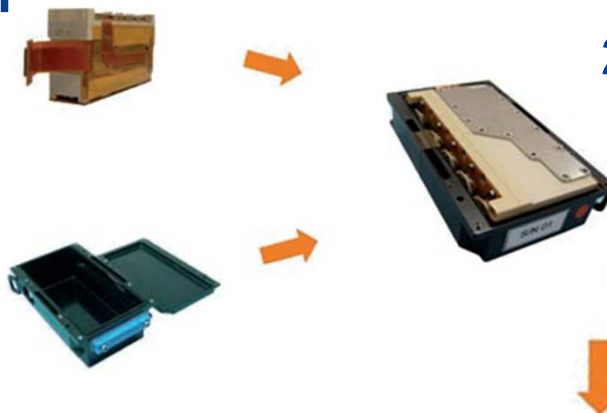
Spin-off benefits of space technologies

Space Life Sciences
The fall-out on Earth

Introduction to a “space experiment”

Experiment Life Cycle

1- Experiment integration



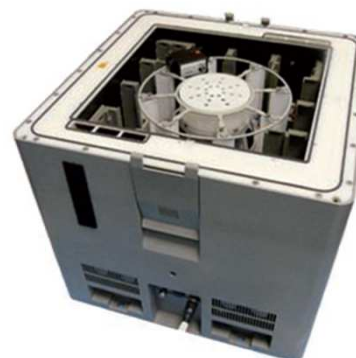
2- Experiment upload



5- Experiment analyses



4- Experiment download



3- Experiment execution, incubation, and storage



Life science: human physiology facilities

HPA (ASI) Hand Posture Analyser



*Hand Grip
Dynamometer (HGD)*



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



*Target
Objects*

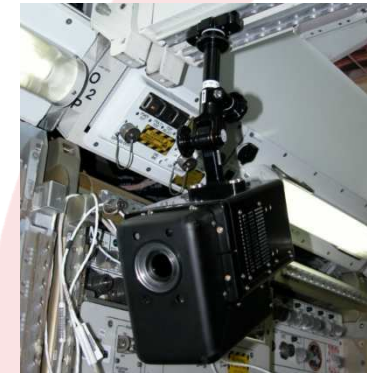
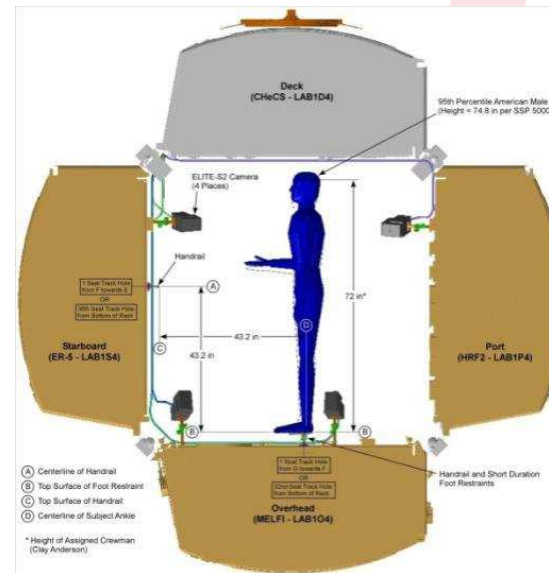


*Pinch
Force
Dynamometer
(PFD)*

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



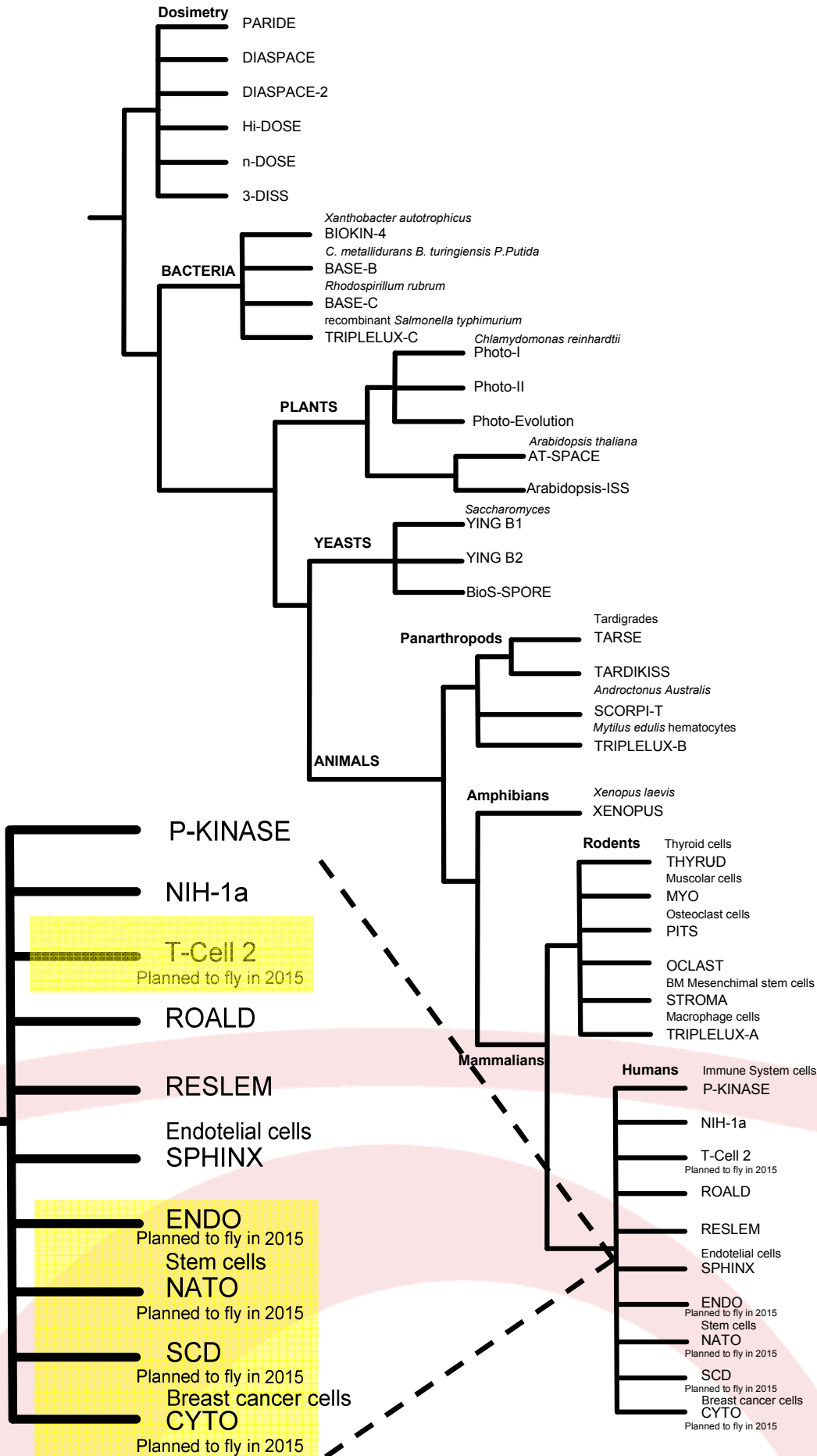
*ELITE-S2 camera in
the USLab of ISS*



*ELITE-S2 integrated in EXPRESS
rack at KSC*



ELITE-S2 cameras at KSC



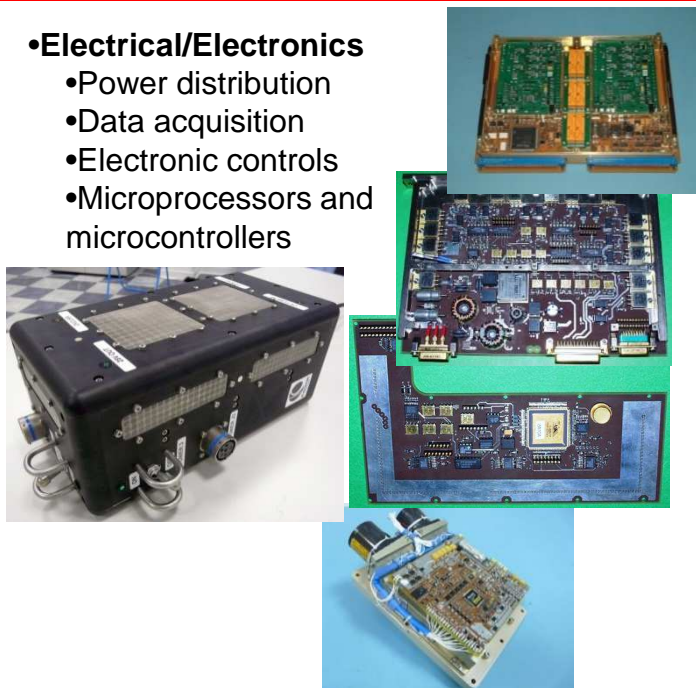
KI performed and next coming experiments



Multi-disciplinarity

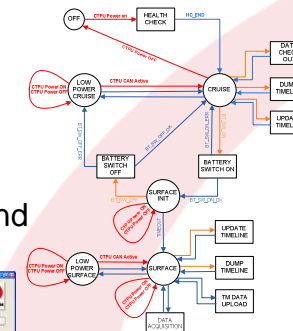
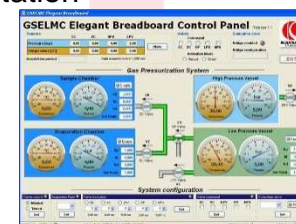
•Electrical/Electronics

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



•Software

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



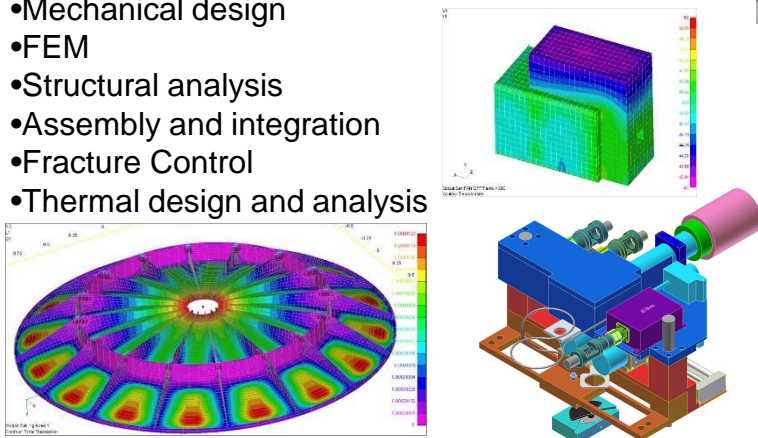
•Ground support equipment

- Electrical GSE
- Mechanical GSE
- Thermal GSE

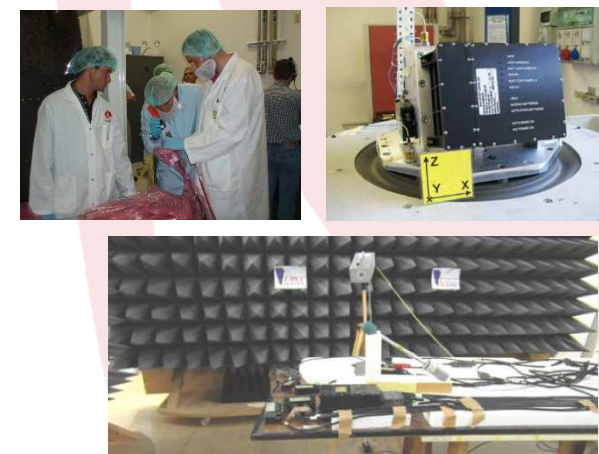


•Mechanics/Structural/Thermal

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



•System AIV



Life science: biology facilities

BIOKON (ASI)

Containers for autonomous experiments



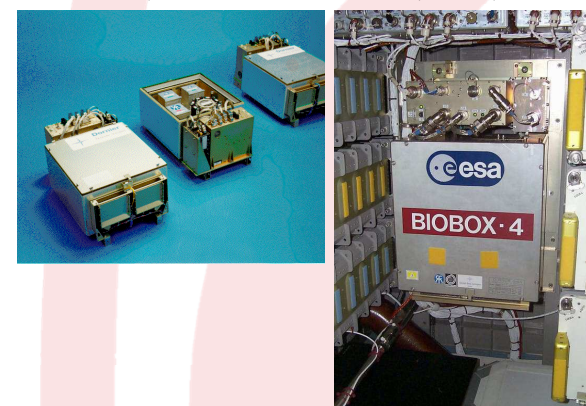
MATROSHKA (ESA/DLR)

(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)

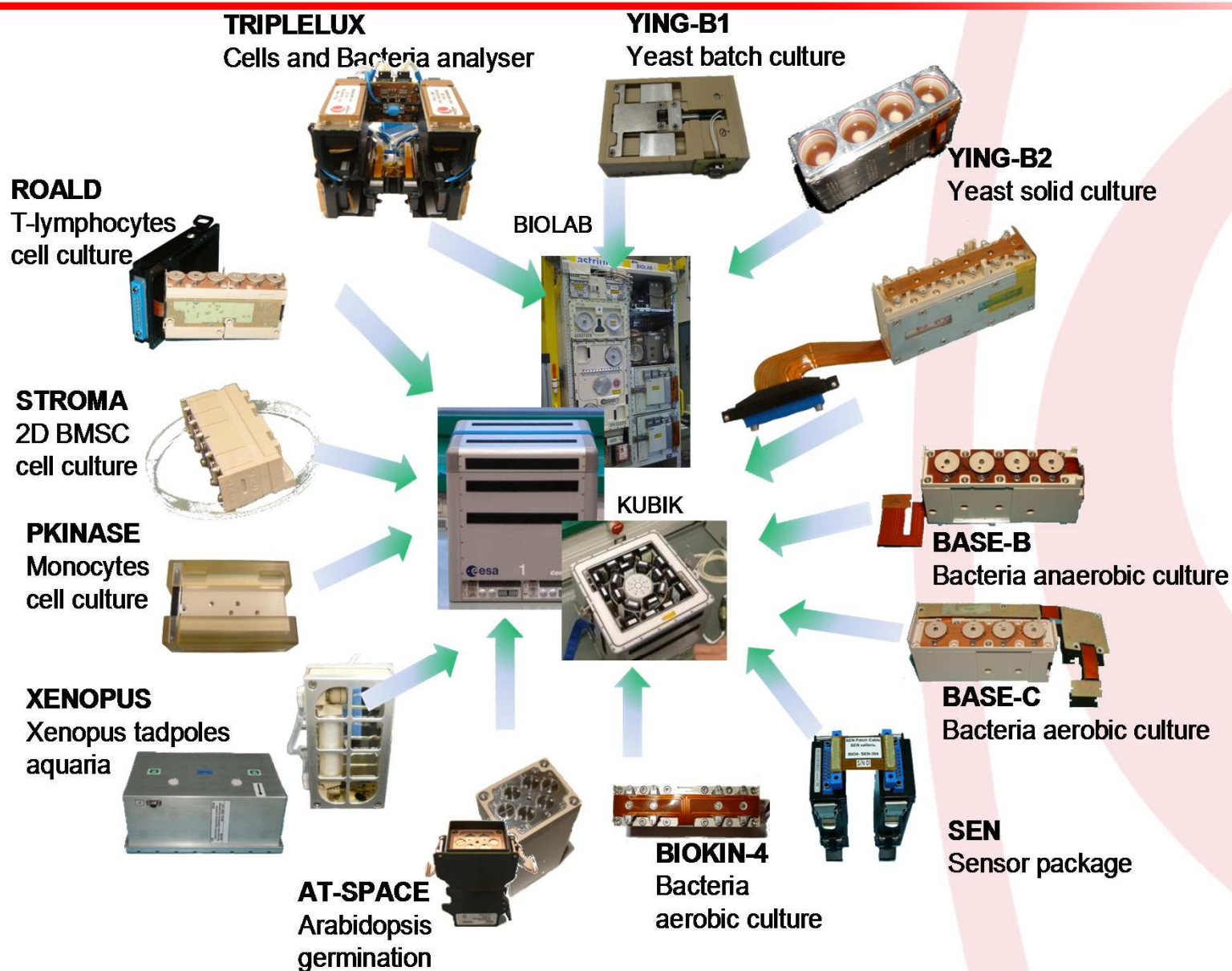
Flight Thermal Transport Containers

KIC (ESA)

Experiment Containers



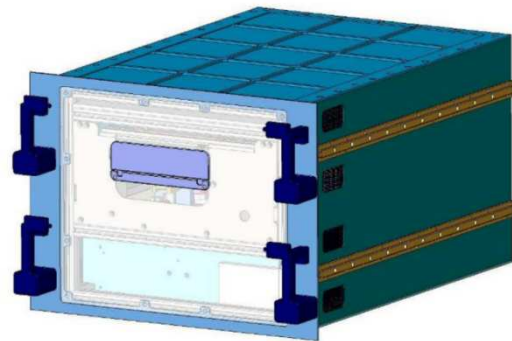
Life science: biology experiments



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)

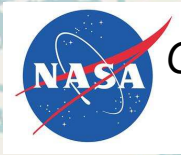
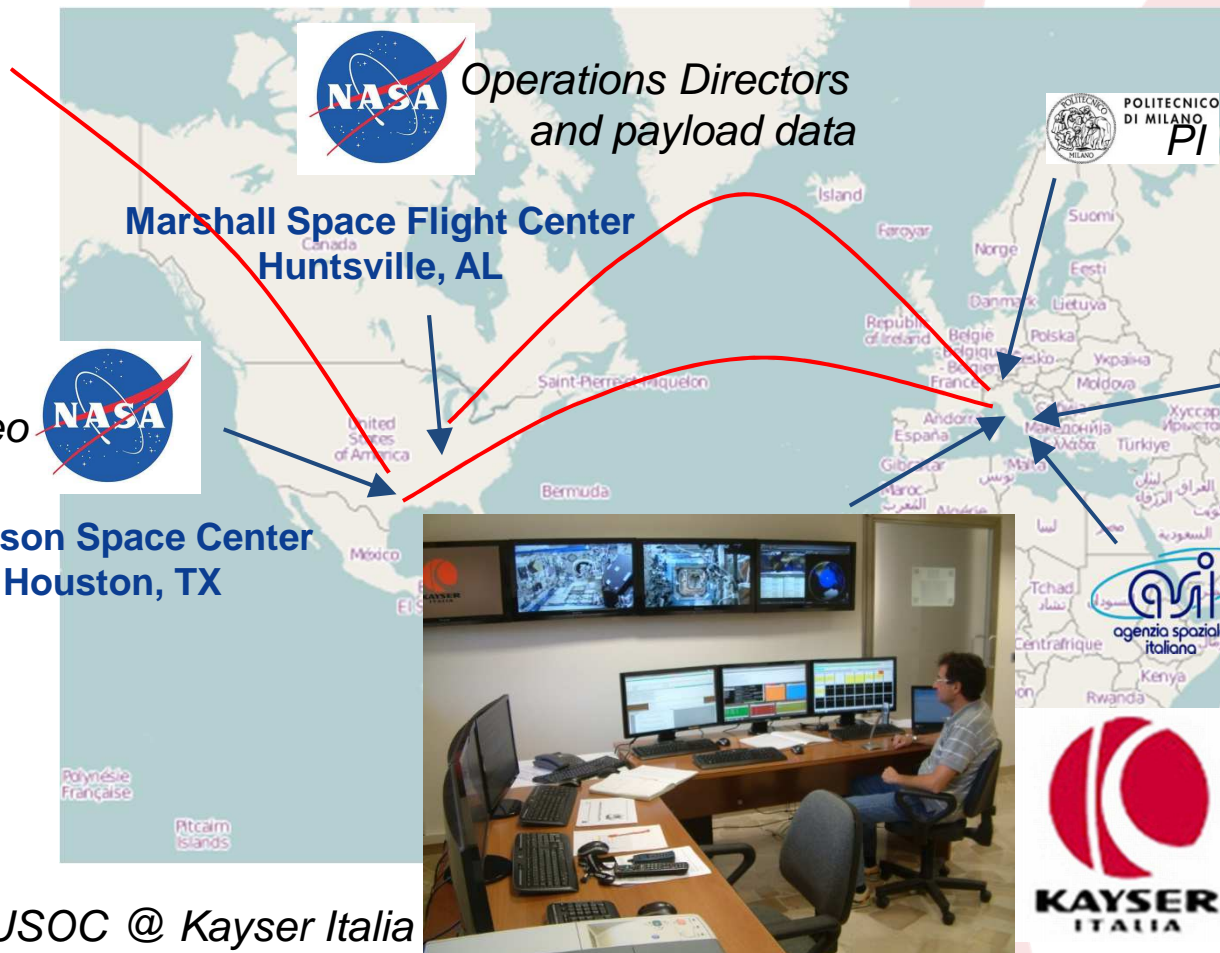


ICARO

ICARO - Italian Centre for Advanced Research and Operations

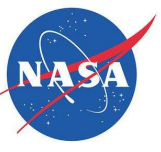


ISS



Operations Directors
and payload data

Marshall Space Flight Center
Huntsville, AL



Science video

Johnson Space Center
Houston, TX

USOC @ Kayser Italia



Space Life Science



Kayser Italia, an Italian Independent Space SME (Small Medium Enterprise), founded 30 years ago, with a record of more than 60 space missions, and over 90 experiments flown on Russian, Chinese, European, USA, and Italian platforms, is fully available to support scientists, industries and space agencies of countries which are now entering into this challenging Space Life Science scenario.

Contacts



Thank you for your attention.

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President**

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