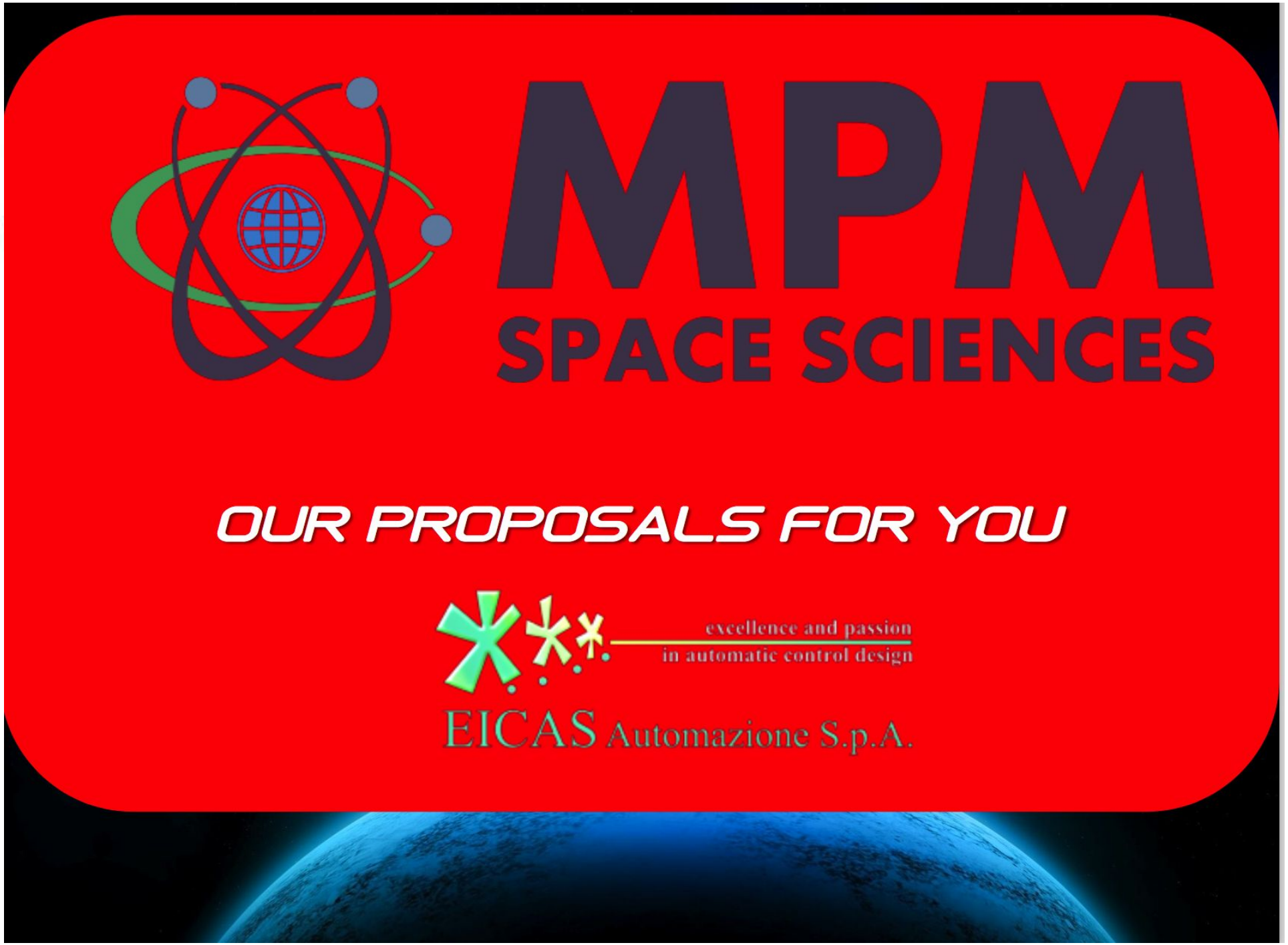

MPM
SPACE SCIENCES
OUR PROPOSALS FOR YOU
excellence and passion
in automatic control design
EICAS Automazione S.p.A.

WHO WE ARE

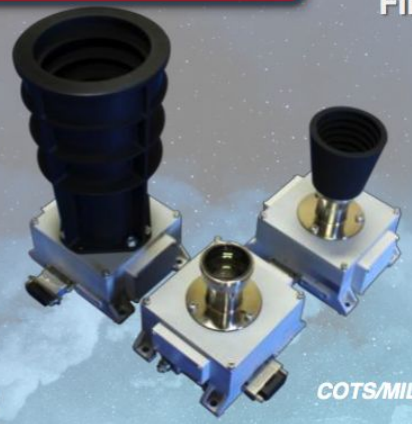
EICAS Automazione S.p.A. — excellence and passion in automatic control design — ARGO

ARGO STAR TRACKERS

Accuracy
by intelligent real-time data fusion

Performance stability in Time
by on-board re-calibration algorithms

Robustness
by multicamera architecture & FDIR



Fine in-flight calibration
by smart stars observation, the best metrological sample

Low SWAP
By a careful design suitable for SmallSats needs

Low HW cost
by smart selection of COTS/MIL-STD/Space-grade components

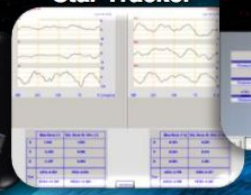
Our intelligence for the highest performance

Our ambition:
Global Leadership in the industry of ADCS for SmallSats

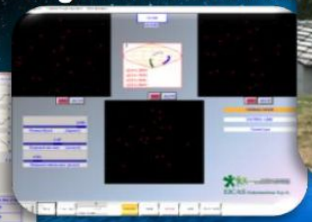
1987÷1994
HIPPARCOS MISSION

1997÷2001
MONO-HEAD ITALIAN STAR TRACKER

1998÷2001
ESA AST CONTRACT
Autonomous Star Tracker



2003÷2006
ESA MHS2 CONTRACT
Miniaturized Multiple Head High Rate Star Sensor



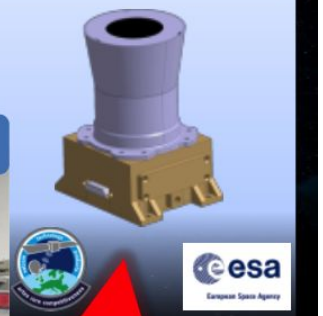
2012÷2015
REGIONE PIEMONTE CADET

2016 ÷2020
H2020
SME INSTRUMENT
Phase 2

ARGO

2020 ÷in progress
ESA – ARTES

ARGO 2.0 FOR CONSTELLATIONS



esa European Space Agency

esa

agenzia spaziale italiana

esa

REGIONE PIEMONTE

Long heritage in Spacecraft Autonomous Attitude Determination since 1984...

ARGO PRODUCT PORTFOLIO

EICAS Automazione S.p.A. — excellence and passion in automatic control design — ARGO

ARGO 2.0

- Ultra low SWAP
- Larger use of COTS
- SW on OBC
- Current TRL: 6
- Expected Flight Heritage

2022

STRIVING Malden Mission

esa European Space Agency

ARGO 1.0

- Scalable solution
- Plug & Play
- High reliability
- Flight Heritage

HORIZON 2020 SME INSTRUMENT

In orbit
since 24 Jan 2021
STARGOLD MISSION

ARGO ADCS

- Heritage of ARGO 1.0 and ARGO 2.0
- EICAS's expertise in automatic control design
- Integration of miniaturized control unit (first prototypes under development)
- Partnership with National Institute of Metrology

REGIONE PIEMONTE

INRiM ISTITUTO NAZIONALE DI RICERCA METROLOGICA

CUBESATS – LEO
< 15 kg cubesats

MICROSAT – LEO
15–75 kg

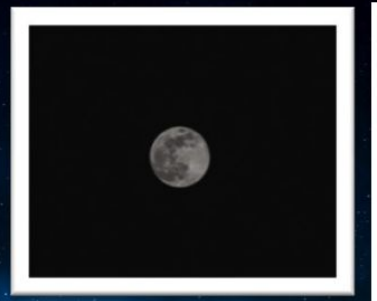
MINISAT – LEO
75–500 kg

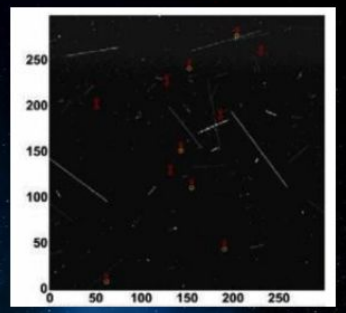
MASS & COMPLEXITY

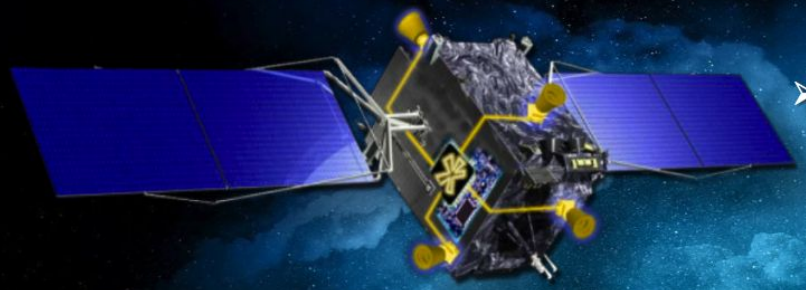
MPM SPACE SCIENCES — TOPICS

EICAS Automazione S.p.A. — excellence and passion in automatic control design — ARGO

➢ASTRONOMY:
- ✓STAR CATALOGUES
- ✓SPACE ENVIRONMENT AND EFFECTS:
  - TRANSIENT PROTONS FLUX
  - STRAY LIGHT
  - MOON IN FOV

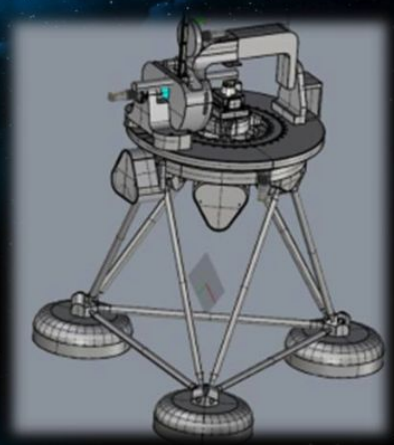


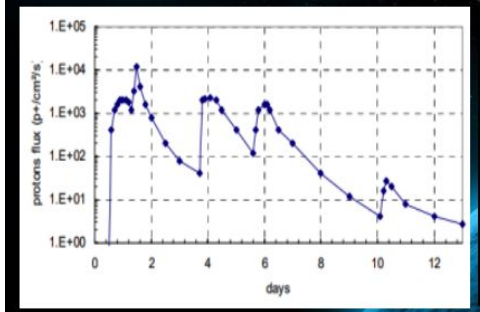




➢ INNOVATIVE ALGORITHMS
- ✓ATTITUDE DETERMINATION AND CONTROL
- ✓RESIDENT OBJECT DETECTION

➢CALIBRATION, METROLOGY:
- ➢PHOTOMETRIC CALIBRATION OF CAMERAS FOR STAR DETECTION
- ➢ALIGNMENT OF REFERENCE FRAMES
- ➢THERMAL EFFECTS ON ACCURACY ASSESSMENT
- ➢DESIGN OF METROLOGICAL BENCHES FOR CALIBRATION AND FUNCTIONAL TESTS





➢ MISSION ANALYSIS
- ✓STAR TRACKER OPTIMAL ACCOMODATION
- ✓ORBITAL PROPAGATOR
- ✓MODELING OF SPACE ENVIROMENT:
  - ✓RADIATION EFFECTS (TOTAL DOSE/SINGLE EVENT)

MPM SPACE SCIENCES — TOPICS

EICAS Automazione S.p.A. — excellence and passion in automatic control design — ARGO

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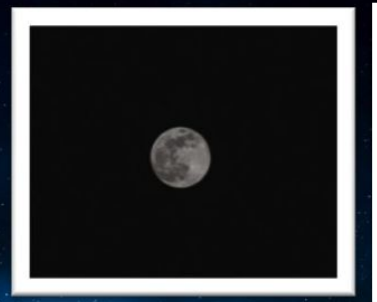

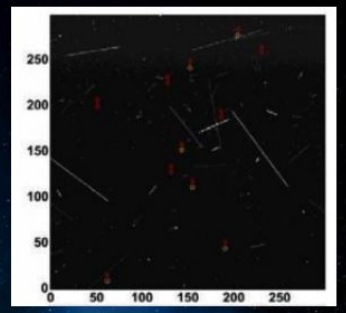

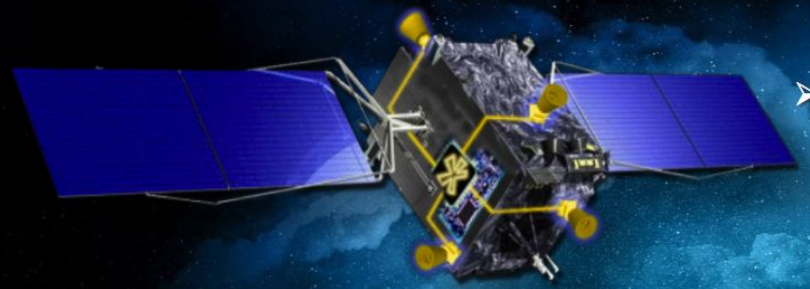

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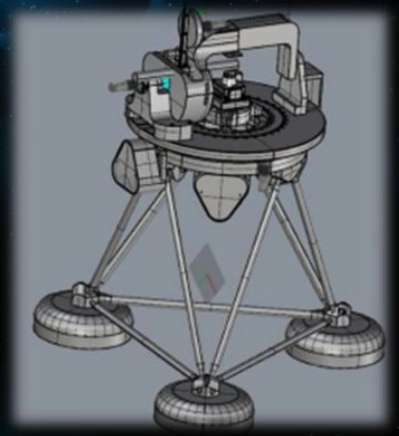

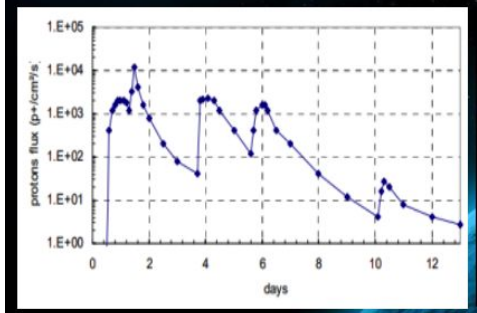

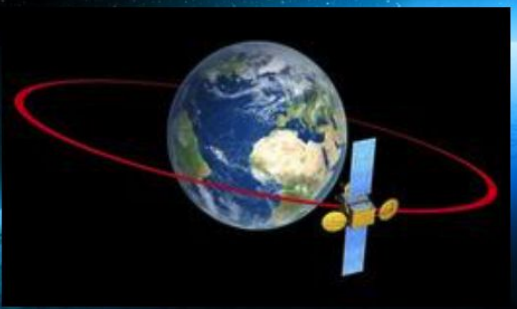

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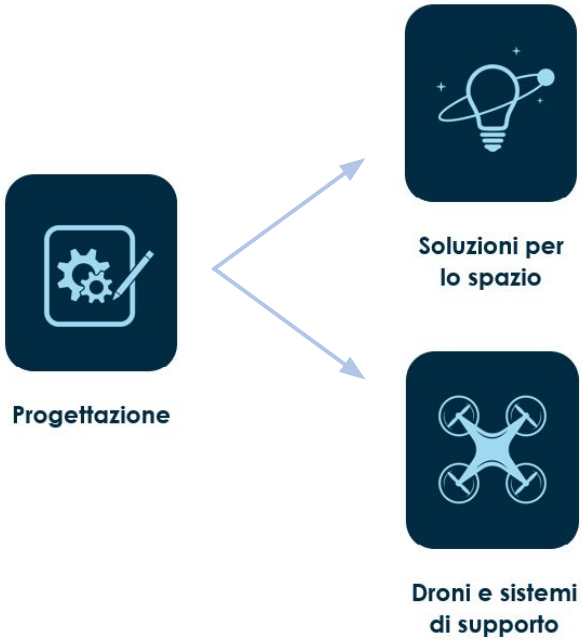
iMEX.A E POSSIBILITÀ DI STAGE

iMEX.A è una società di ingegneria operativa in particolare negli ambiti spaziale e aeronautico.



Definizione architettura di missione – Analisi di missione – Analisi termica – Analisi EPS – Progettazione strutture e meccanismi – Progettazione elettronica HW/FW/SW – Supporto nella scelta e sviluppo payload

Progettazione droni (multi-rotore, ad ala fissa, ad ala fissa ibridi, per applicazioni spaziali) – Analisi e sviluppo di modelli e applicazioni (logistica, sorveglianza e monitoraggio, supporto alla manutenzione, ecc.) – Progettazione infrastrutture di servizio (hub aeroportuali, vertiporti, hangar, piattaforme di ricarica)

Possibili argomenti di **stage**: 1) missione con drone per esplorazione lunare; 2) sistema propulsivo con vela a radioisotopi

CORSO DI MISSION DESIGN

- Introduzione al mission design e al project management
- Cenni sull'ambiente spaziale
- Cenni su fattore umano e medicina spaziale
- Controllo termico
- ECLSS
- Orbite e traiettorie
- Strutture e meccanismi
- Controllo orbitale e d'assetto
- Cenni sulla relatività speciale in astronautica
- Propulsione e cenni alla propulsione avanzata
- Potenza elettrica
- Segmento di terra
- Comunicazioni e computer di bordo
- Cenni a payload ed esperimenti