# Cubesat Platform

Description

The IMT Cubesat 3U Platform meets a wide range of mission typologies: Science, Earth Observation, Technology Demonstration. Thanks to electronics miniaturization and MEMS components, currently a nanosatellite might carry out missions that, Spacecraft miniaturization involves size, mass, cost and development schedule. Currently, a new mission can be fully developed in two years' time, with low budget requirements. Thanks to the IMT know how (over 20 years in the space activity) the mechanical and electrical architecture can support a very wide range of LEO orbit altitudes and inclinations. Redundant Architecture and Radiation Mitigation by Design can increase the Satellite Life-Time up to 3 years.
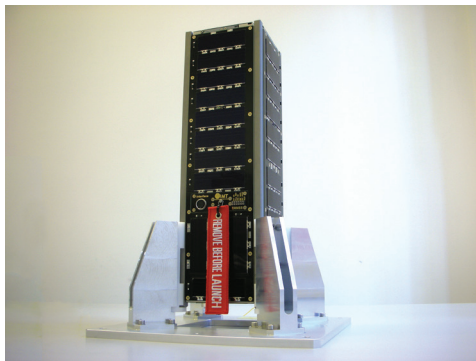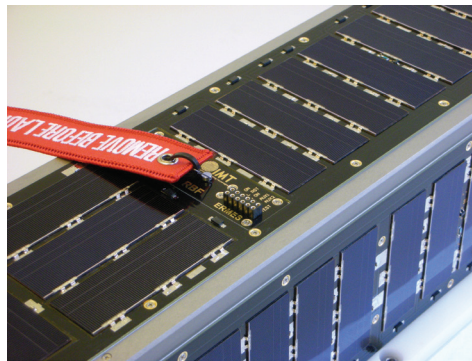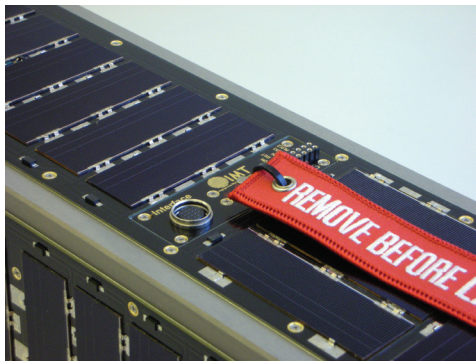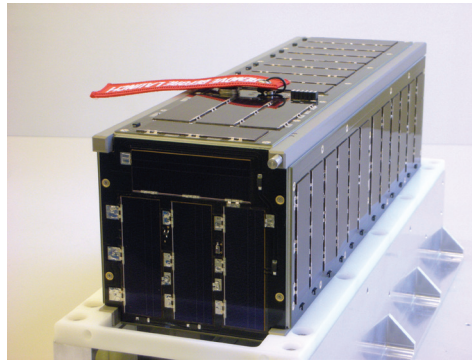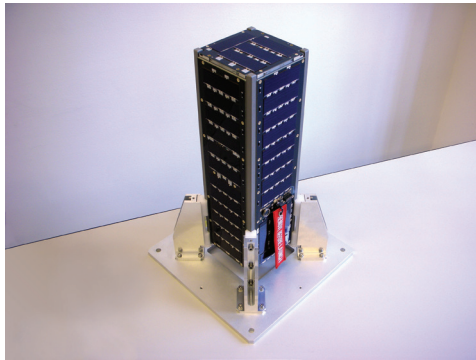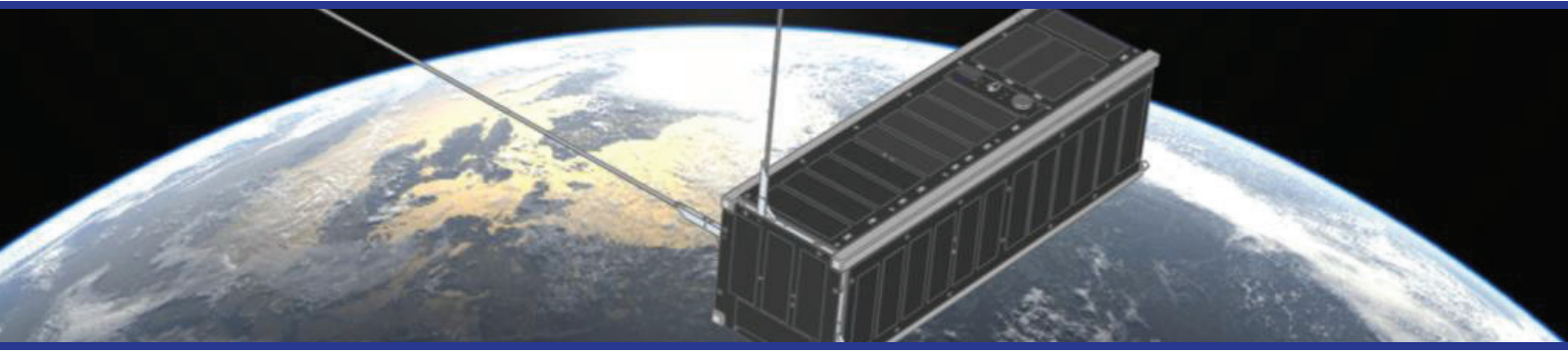

IMT Platforms

Micro/nano/pico-satellites, weighing less than 50 Kg, have become important tools for space utilization, as they have the strong merits of low-cost and quick development, which may encourage new user to exploit new ways of space utilization. Applications for nano/microsatellites are diversified, with increased foreseen for Earth observation and remote sensing missions. The IMT Platforms cover the mass range from 3 to 30 Kg thanks to NADIR Microsatellite and CUBESAT Nanosatellite. The first one is suitable for EARTH Observation and Remote Sensing, the second one for Technological Demonstration, Science and Vessel/Flight Tracking.

Applications

- Educational / Trainings
- Technology demonstration mission
- Science mission:
    - Atmospheric science
    - Earth science
    - Biological experiments
- Telecommunications:
    - Amateur communication
    - Advance modulation techniques
    - Advance cryptography systems
    - Innovative protocols
    - Innovative antennas
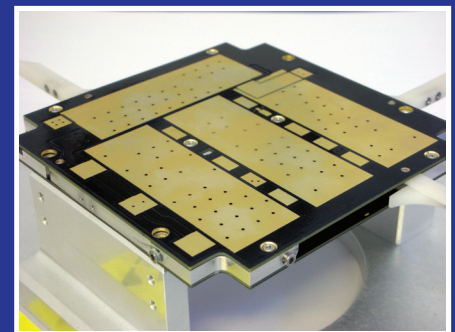   - AIS / ADS-B tracking

Cubesat Platform

Physical Characteristics

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Dimensions	Cubesat 3U compliant
Mass	< 6 Kg
Attitude Stabilization	3 axis stabilization
Attitude knowledge accuracy	5°
Attitude control accuracy	10°
Attitude Mode	Detumbling / Sun Pointing / Nadir Pointing
Solar Panels	AzurSpace 3J Solar Cells (GaInP/GaAs/Ge) 30% + CoverGlass 100 CMX* Average Power: 4W (body mounted configuration) *Also available with Monocrystalline Si Cells
Power BUS	Reg. 3.3V (±1%) Max. 5A (latch-up protected) Reg. 5.0V (±1%) Max. 5A (latch-up protected) Unregulated
Data BUS	I2C / CAN / SPI / UART
Battery Pack	43 Wh Li-ion Available configurations: 4S / 2S2P / 4P
Payload Allowance	1.5U / 3 W
Data Storage	64 MB for housekeeping data 8 GB for payload data
OS	Real Time OS - FreeRTOS
Communications	Mod. J/B Uplink VHF (1200 bps AFSK) / Downlink UHF (9600 bps GMSK) Uplink UHF (1200 bps AFSK) / Downlink VHF (1200 bps AFSK) AX.25 Protocol (Available Custom Protocol) Transmission Power: Max. 2W Beacon: UHF (20 WPM @ 500 mW)
Radiation	< 15 kRad (Si) SEU mitigation by design / SEL protection
Random Vibration	10 Grms (all axis)
Adapter:	ISIPOD
Life Time	< 3 years

Compliant Subsystems

OBC Subsystem

Antenna Deployment Subsystem
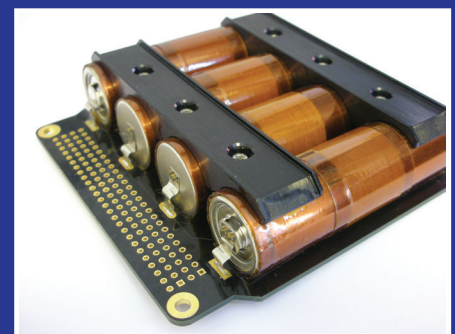
Battery Pack

Contacts

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