Task 1: Literature review about 2-3 cube satellites

Literature Review

1. spiRIT - Space Industry – Responsive – Intelligent – Thermal Nanosatellite

Mission : Detect Gamma Ray Bursts and electromagnetic counterparts of gravitational wave mergers, and localise them in the sky to arcmin-level precision through time delays. A technology development mission for the SkyHopper rapid-response infrared space telescope. To demonstrate new capabilities for high-performance autonomous operations, low-latency communications, and thermal management that will enable nanosatellite constellations to play a growing role to advance astrophysics and remote sensing from space in the next decade

Payload : The HERMES payload - an X-ray and gamma-ray spectrometer with associated control electronics.

Subsystems : The Payload Management System (PMS) includes a payload computer, a power supply, and a visible and infrared (IR) camera. The Thermal Management Integrated System (TheMIS) provides active cooling for all instrumentation onboard the satellite. The communication module named “Mercury”, will carry both Iridium and Globalstar transceivers, and autonomously switch between them for optimal coverage. The propulsion system is a lightweight ion thruster.

Orbit : Sun-synchronous, with an altitude of 550 km.

2. CSTB1 - CubeSat TestBed 1

Mission : The primary mission goals of CSTB1 were to mature and evaluate commercial low power processors, CMOS ultra low power imagers, and associated software algorithms in the space environment, and to provide validation of using integrated attitude determination sensors as part of the multifunctional side panels. Secondary missions included validation of the mission operations center and rapid prototyping processes in a small team environment.

Payload : Imagers

Subsystems : 1) Command and Data Handling : 4 microcontrollers 2) Attitude Determination and Control : 4 sun sensor suites and 5 two-axis magnetic sensors integrated into the side panels of the satellite. magnetic torque coils 3) Telemetry and Command 4) Electrical Power Subsystem 5) Structure 6) Mechanisms 7) Thermal management 8) Bus Flight Software

Orbit : at altitude 745km, sun synchronous orbit

3. HawkSat - 1

Mission : platform for experimental research

Payload : A commercial material exposure research payload for an undisclosed "major aerospace company", which exposes a number of material samples to space, and records the effects of exposure on the materials

Orbit : at altitude 426 km

4. STUDSAT

Mission : The objective of this system was to obtain a monochrome image of the Earth with resolution of 90 meters covering a swath of 65 km x 45 km.

Payload : a CMOS panchromatic camera.

Orbit : 630km, sun synchronous