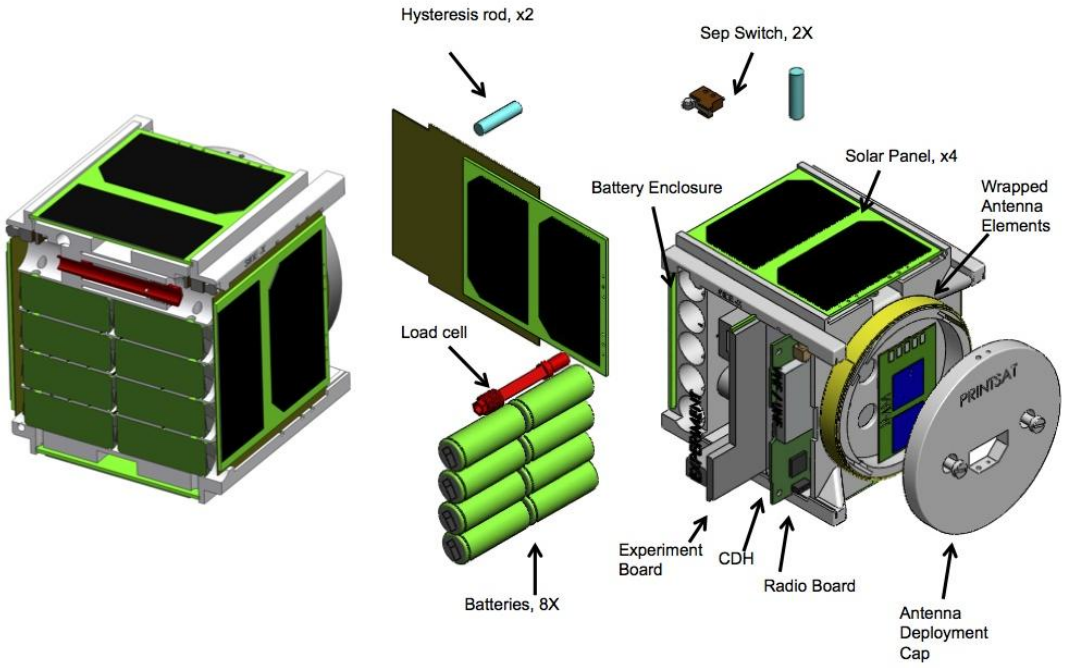
ELaNa VII Mission Description

PrintSat – MSU – 1U



Overview: PrintSat demonstrates the utility of using Additive Manufacturing (aka 3D printing) for space structures and mechanisms. The structure is printed from Windform XT2.0 material. PrintSat will measure the performance of the material during a nominal 1-year mission life, possibly extended beyond that time. Earthbound measurements will be made on an identical structure during the mission to allow comparisons. The manufacturing and testing process is being documented so advantages and issues can be published.

CONOPS: After 45 minutes of P-POD separation, the PrintSat antennas will be deployed and beacon will start transmitting. For the first couple weeks, the ground station team will attempt to make contact and differentiate between objects. For the next 3 years, the performance of the WindFormXT 2.0 material will be evaluated and compared to a control.

Materials: The primary CubeSat structure is made of WindFormXT 2.0. All exterior surfaces, with the exception of the rails are Nickel-plated. PrintSat otherwise contains all standard commercial off the shelf (COTS) materials, electrical components, PCBs and solar cells.

Hazards: There are no pressure vessels, hazardous or exotic materials.

Batteries: The electrical power storage system consists of common nickel-cadmium batteries with over-charge/current protection circuitry.