



NanoEye



Summary

- A small, low-cost, electro-optical imagery satellite
- Submeter resolution imagery
- Tasked by and resulting images sent to the tactical ground Warfighter
- On-board propulsion
- Propellant tank is the primary spacecraft structure
- Military relevance/Warfighter impact – NanoEye will support multiple military missions
- NanoEye will de-orbit using its propulsion system when its useful life is completed to avoid becoming orbital debris
- Lower vulnerability to anti-satellite weapons than traditional imaging satellites

NanoEye is a low-cost microsatellite providing responsive, tactical imaging from Low Earth Orbit to the ground component Warfighter.

The NanoEye program is a research and development effort to support future theater operations. The Technical Center is developing NanoEye as a low cost, maneuvering, electro-optical, microsatellite-class imagery satellite that will be tasked directly by the tactical ground component Warfighter, who will then receive the desired images minutes later. The on-board propulsion system can take the satellite to lower altitudes for finer ground resolution imagery necessary to support the mission.

The intent is to demonstrate a tactical space-based imagery microsat that, due to its low production cost, could be proliferated in large numbers to provide a persistent capability to ground forces –particularly to the dismounted Warfighter. The primary objective of the demonstration will be to show the on-orbit maneuverability and tasking of the satellite to take a picture of a designated ground object of interest and have that image relayed back to the ground Warfighter during the same satellite pass (i.e., less than a 10-minute tasking-to-product cycle).

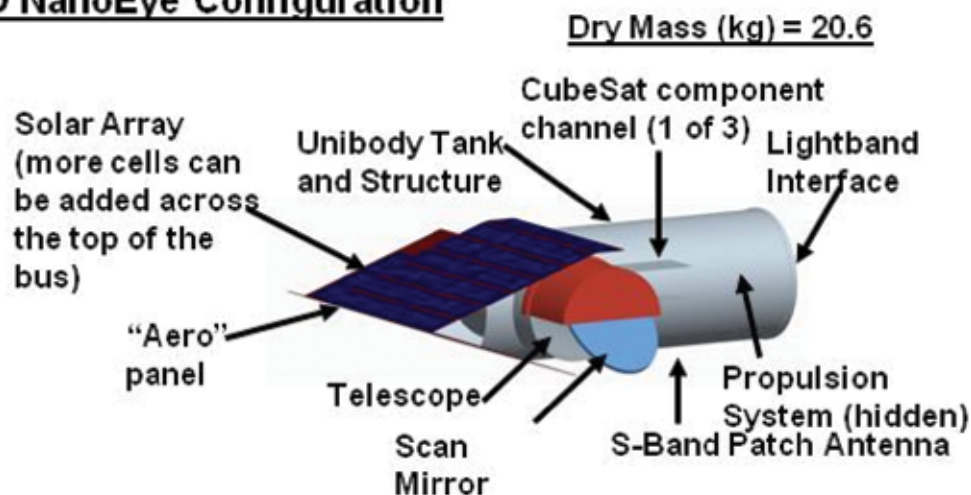
The NanoEye program will lead to dramatically lower cost maneuvering, imaging satellites. These satellites, which are operated by Warfighters in the field, provide tactical data to the land component Warfighter at the combat brigade team level or below in a timely manner. The eventual goal is persistent coverage available to every Soldier on a hand-held device. The concept of operations for this experiment

involves very small satellites, laptops, and radios/antennas.

NanoEye is currently under development as a Small Business Innovative Research effort. Functional integrated subsystem testing is expected to be conducted through the next year.

NanoEye will have a dry (no propellant) mass of about 20 kg. With a wet mass (propellant included) of several times its dry mass, NanoEye has significant delta V available, allowing the spacecraft to change altitude to provide ground image resolution as needed. Aerodynamic shaping of the solar array structure in the spacecraft velocity direction lowers the drag factor, providing a longer life on orbit. These combined factors allow for low-cost tactical imaging support to the field tactical units and Warfighters.

EO NanoEye Configuration



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