# SMDC – ONE

## Operational Nanosatellite Effect (Technology Demonstration)


*Summary*

- Nanosatellite technology demonstrator weighing less than four kilograms
- Over-the-horizon communications technology demonstrator for tactical forces
- Low cost: Less than $400K/spacecraft
- Operational life of greater than 6 months in Low Earth Orbit
- Developed and fielded in one year

**SMDC/ARSTRAT will demonstrate the ability to rapidly design and develop a militarily relevant low cost spacecraft with an operational life of 12 months or longer.**

The Technical Center is developing a nanosatellite weighing less than four kilograms that will have the capability of providing over-the-horizon communications for the Warfighter. The intent is to build a number of identical satellites and deploy them together into Low Earth Orbit to simulate enhanced tactical communications capability and evaluate its performance. The primary objective will be to receive data from multiple ground transmitters and relay that data to ground stations within the SMDC-ONE area of access. A secondary objective with be to provide real-time voice and text message data relay to and from field deployed tactical radio systems.

# SMDC – ONE

Technical Center

**Operational Nanosatellite Effect (Technology Demonstration)**

To achieve enhanced capabilities for the warfighter from space, an approach that holds great promise is the deployment of constellations of nanosat-class satellites into low earth orbit. Because the unit cost for a nanosat is low (<$1M), large numbers for each specific mission can be built and deployed on-orbit. What a nanosat may lack in performance and reliability when compared on a per-unit basis to a large traditional military satellite, it makes up by its low cost and constellation proliferation potential.

Nanosats deployed in large numbers can provide enhanced capabilities over large latitudinal swaths of the earth or even globally. Because they are low cost, they can be "refreshed" frequently by launching replacements, which allows rapid technology upgrades, reduces the unit reliability requirements, and allows for manufacturing economies of scale. A nanosat constellation populated by inexpensive spacecraft could be useful in humanitarian support, stability and support operations and nation building. If some satellites are lost, they can be rapidly reconstituted. They can provide coverage over specific regions as well as globally.

The use of nanosats in such a fashion will enable UAV-like performance for communication from space-borne assets that can provide data directly into theaters of operation.


For more information, please contact:
U.S. Army Space and Missile Defense Command/
U.S. Army Forces Strategic Command
P.O. Box 1500
ATTN: (SMDC-PA), Bldg. 5220
Huntsville, AL 35808
Phone: 256-955-3887
Fax: 256-955-1214
Email: webmaster@smdc.army.mil





0908/0111