Integrated Topside
Innovative Naval Prototype Program

ONR Program Code 31 | **November 2010**

At a Glance

What is it?

- Integrated Topside (InTop) is an integrated, multifunctional, multibeam topside aperture construct that has a modular, open radio frequency (RF) architecture; software-defined functionality; and synchronization and optimization of RF functions for electromagnetic interference (EMI) mitigation.

How does it work?

- RF functions simultaneously share apertures and signal processing through the use of a central resource allocation manager. Requests for resources to accomplish various radio frequency functions (e.g., radar, electronic warfare, communications) are prioritized, then resources are assigned to accomplish the function. The topside is continually optimized to meet the highest priority needs at any given time.

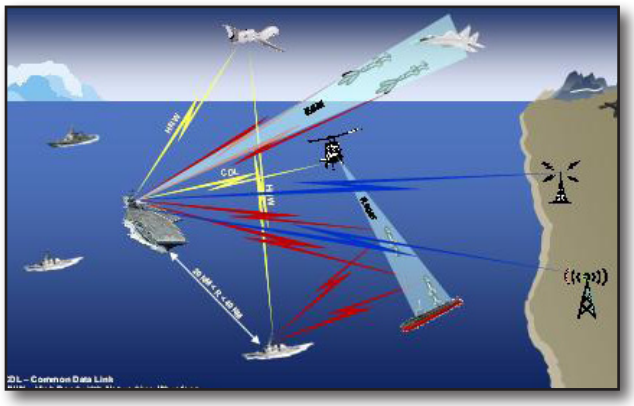
What will it accomplish?

- InTop encourages innovation in industry throughout the life cycle, increases the business base, reduces obsolescence and provides innovation incentives. It provides more capability per ship through optimized aperture placement and space, weight and power improvements. Further, it will provide the potential for new concepts of operation for using the available spectrum through mitigation of electromagnetic interference and increased RF availability

Point of Contact

Betsy DeLong
(703) 588-0069
betsy.delong@navy.mil

InTop is an Innovative Naval Prototype program that will develop a scalable family of electronic warfare, radar and communications capability to support multiple classes of ships and other Navy platforms. InTop will use a modular, open RF design to facilitate best-of-breed technology and cost-effective upgrades.



The InTop vision is to dominate the RF spectrum, enable innovation through an RF open architecture (hardware and software), and create affordable systems that are scalable across platforms.

InTop plans to reduce topside apertures present on Navy ships through the use of integrated, multifunction and multibeam arrays. In the past, the topside design approach was based on developing separate systems and associated antennas for each individual RF function, leading to a significant increase in topside antennas. This increase has led to problems with electromagnetic interference, radar cross section and the overall performance of critical ship electronic warfare and communication functions.

The InTop Program has Indefinite Delivery Indefinite Quantity contracts with 18 qualified industry partners. These contracts cover full system capability development, niche capability development and systems integration. These contracts allow the acquisition community to purchase initial production units of InTop-developed technology for implementation in combat systems.

The program has awarded six contracts for studies regarding Surface Ship EW/Information Operations (IO)/Comms systems. Multiple contract awards for development of an integrated EW/IO/Comms Advanced Development Model are anticipated in 2010. A contract for development of a Submarine Satellite Communication Multi-function Mast System was awarded in early 2010. Additional contracts in other RF functional areas are forthcoming.

Research Challenges and Opportunities:

- Development of electronics technology to improve linearity, efficiency and noise reduction while reducing size, weight and cost
- Development of multi-function, multi-band, multi-beam wide-band arrays capable of electronic warfare, communications and radar functions
- Development of a set of interface standards to be used throughout industry to allow integration and upgrades by multiple vendors