

NAVY Transition Assistance Program

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N07-023 - Applied EM Inc.

Advanced Antenna Pattern and Mutual Coupling Prediction Software

NEED & CUSTOMER REQUIREMENT

Need: The free-space characteristics of an antenna can be changed drastically by the platform on which the antenna is mounted and by the presence of other antennas on the same platform. Thus, not only antenna properties (e.g., volume coverage) may be affected but also the performance of signal processing algorithms that rely on an assumed behavior of the antenna. It is imperative then to be able to predict the behavior of an antenna on its installation platform rather than just in free space. If the platform is electrically small, this can be accomplished using an exact-physics computational electromagnetic (CEM) code. Such an approach, however, is totally impractical for electrically large platforms. For this reason the need exists for approximate electromagnetic methods that can provide usable information for an antenna that is mounted on a large platform and in the presence of other antennas.

Value to the Warfighter: Accurate predictions of antenna performance on electrically large structures such as military aircraft will result in reliable performance of various communications and electronic warfare systems on board, both of which are critical for mission success.

Operational Gap: Currently available computational tools require the platform to be approximated with canonical shapes. This can lead to inaccuracies in analysis and hence inaccurate predictions of antenna performance installed on the platform.

Customer Specifications: A fully developed EM tool which includes a suitable graphical user interface (GUI). Tool should also provide interfaces for reading common CAD formats. Demonstrate the accuracy, robustness and speed of the tool.

Technology Description: Applied EM is developing a uniform geometrical theory of diffraction (UTD) based software to predict radiation pattern and mutual coupling associated with antennas on electrically large complex platforms with material treatments.

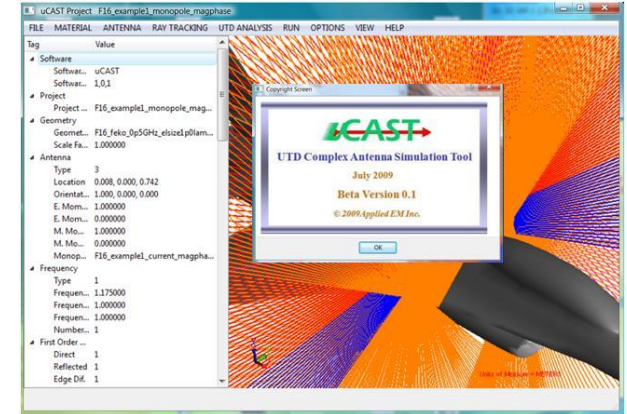
SPONSORSHIP of original SBIR/STTR Topic

SYSCOM: NAVAIR

Transition Target: Fixed Wing Aircraft

Original Sponsoring Program: TBD

TPOC Phone Number:
(631)673-8176



TECHNOLOGY DEVELOPMENT MILESTONES (SBIR/STTR)

Milestone	TRL	Risk	Measure of Success	TRL Date
Alpha Version	3	Low	Prelim GUI	June 2009
Beta Version	4	Low	Robust GUI	Dec 2009
Version 1.0	5	Low	Commercial grade version	June 2010

Open contract: N68335-08-C-0255 ending June 2010

TECHNOLOGY TRANSITION OPPORTUNITIES (PHASE III)

Other Potential Applications:

The software will also be applicable to other large complex platforms such as ships and ground vehicles. Potential transition sponsors are Navy, Boeing, Lockheed Martin, Raytheon and other DoD contractors.

Business Model:

Potential teaming with prime contractors for the platforms to integrate the tool during their design and verification process for various antennas to be installed on the platform. The tool will be licensed to prime as well as program offices. Technical support and updates will be provided.

Objective:

We are looking for potential users of the tool for various military platforms, specifically military aircraft.