Air Force SBIR

Transition

An example of Air Force supported SBIR technology that has been transitioned into an Air Force or other DoD system or subsystem or used by Air Force test ranges and facilities or maintenance depots.

SBIR Topic Number:
AF01-216

Title:
Tactical User Antenna – Global Broadcast Service (TUA-GBS)

Contract Number:
F19628-03-C-0039

Company Name:
Windmill International, Inc., Nashua, NH

Technical Project Office:
AFRL Sensors Directorate, AFRL/SNHA Hanscom AFB, MA

SPO Transition Office:
Electronic Systems Center, ESC/NI4G Hanscom, AFB, MA

Size Reduction and Portability of Receive Unit Broadens Availability to Battlefields Intelligence

- **Delivering immediate battlefield intelligence to front line troops is vital.**
- **Receiver units enabling receipt of intelligence, like UAV Predator video feeds, are heavy and bulky.**
- **SBIR supported technology is being developed and transitioned to decrease the size and increase the portability of receiver units aimed at supporting fast moving front line combat units.**

Air Force Requirements

At the conclusion of the Gulf War, the Air Force identified a requirement to provide all available intelligence information on battlefield conditions directly to troops on the front line who could then use the information immediately and effectively. To meet this need the Global Broadcast Service (GBS) program was developed. The GBS capitalizes on the commercial direct broadcast satellite technology to provide critical information to the nation's warfighters. The GBS system is a space-based, high data rate communications link for the asymmetric flow of information from the United States or rear echelon locations to deployed forces. The GBS system will "push" a high volume of intelligence, weather and other information to widely dispersed, low cost receive terminals. Current ground station receiver units are shipped in several large crates requiring a number of people to unload and set-up. The next generation of receiver station, scheduled for delivery in 2005, will be lighter and easier to set-up. However, there still remains a critical need for a truly portable system capable of receiving direct UAV Predator video feeds of the battlefield suitable for fast moving Special Operations Forces.

SBIR Technology

The Air Force was looking for a system that included the following user-driven capabilities:

- No loose parts
- No tools required for set-up
- Minimum user set-up needed
- Fully automated search, lock, and track capability by the receiver unit and, the use of an innovative, collapsible positioner structure and wave-guide array antenna package to minimize stowed size.

Windmill International won SBIR Phase I and II contracts to research design and build the portable unit. The unit the company developed for the Air Force makes extensive use of available technologies from the commercial marketplace, which speeded the development process while lowering costs.

Air Force Transition Payoff

The reduction in size and portability of the receive segment of this system will open up the availability of high quality video and data intelligence information to the lowest levels of the battlefield worldwide. This technology is currently under evaluation for rapid development and deployment in support of multiple GBS users, particularly by Air Force Combat Weather teams and the Special Operations Command (SOCOM).

The AF transition office, ESC/NI4G, the GBS Joint Program Office, will fund an "enhancement" to the SBIR Phase II contract. On this effort the company will transition the current prototype to a production ready antenna system. A follow on SBIR Phase III contract will produce several antenna systems for evaluation by the warfighters.

Company Benefit

Windmill International has traditionally been a professional services company. The SBIR program allowed the company to create a robust R&D arm that broadened its business offerings in new areas and has a greater applicability to the commercial marketplace. This SBIR project, in particular, allowed Windmill to become a more agile and innovative small scale integration company with the ability to develop communications hardware solutions for the military. The company teamed with AntennaSys, Inc. and contracted with a number of innovative one-man companies in order to realize this new SBIR supported capability.

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