



TOPIC NUMBER: N04-138

SBIR INVESTMENT: \$3,582,336

PHASE III FUNDING: \$146,189,993

DEPARTMENT OF THE NAVY

NAVY SBIR/STTR SUCCESS STORY



REAL-TIME DATA FUSION AND VISUALIZATION INTERFACE FOR ENVIRONMENTAL RESEARCH DATA

Ultra Electronics delivered data-fusion technology for Navy submarines' towed-array sensors, improving target detection and tracking.

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THE CHALLENGE

The Navy focuses on developing technologies that enhance system performance and availability while reducing cost. Navy sonar experts are exploring data-fusion technology to blend information from several different towed-array sensors to improve target detection and tracking. The ability to acquire data from disparate sensors while time synchronizing and fusing data from different sources and sensors is also important since it allows for quicker threat analysis.

THE TECHNOLOGY

3 Phoenix Inc. (acquired by Ultra Electronics) developed a system for time-synchronizing data from various sensors, enabling data fusion and transport, using an inverted Passive Optical Network (iPON) and an inverted Passive Electrical Network (iPEN). The technology provides the ability to merge and aggregate data from a wide range of disparate sensors and systems while maintaining close synchronization of data onto a single network. Telemetry data from the iPEN system acts as a data fusion point for integrating sonar data from towed arrays on Navy submarines and surface ships.

THE TRANSITION

On this topic, 3 Phoenix was awarded Phase III contracts from NAVSEA PMS 450 VIRGINIA Class Program Office starting in FY2006 and also ONR via the Naval Surface Warfare Center (NSWC), Port Hueneme Division for assembling, integrating, testing and delivering multiple units and spares in support of the Radar Data Processor (RDP) Periscope Detection Radar (PDR) sub-system. The funds helped to improve designs to support program Preliminary Design Reviews (PDRs) and Critical Design Reviews (CDRs). The technology has been successfully transitioned to a number of Navy sonar, radar and imaging applications.

THE NAVAL BENEFIT

3 Phoenix/Ultra's patented iPON/iPEN technologies support a broad range of sensors and actuators in an open standard network infrastructure. This enhances the overall capability of towed arrays, allowing them to provide accurate information on potentially hostile submarines, surface ships, and other marine targets. The simplicity of the architecture enhances reliability as well as lowers manufacturing costs by allowing for less frequent maintenance and reducing overall life cycle costs. The synchronicity of the technology is an important component since deployed analog and digital sonar sensors often produce data at different rates using different protocols. The iPEN system controls that timing and fuses the data, making the job of the analyst much easier.

THE FUTURE

Under this topic, the technology transitioned to support AN/SPS-74 Anti-submarine surface radar and will be expanded to next generation systems. The NGSSR (Next Generation Surface Search Radar) will offer ship defense against surface and limited low altitude air threats. NGSSR also addresses risks inherent in operating in littoral waters and vulnerabilities such as submarine attacks. The NGSSR will be installed on US Navy platforms.