Department of the Navy SBIR/STTR Transition Program

Statement A: Approved for Release. Distribution is unlimited.

Topic # N121-070

SIGINT Interfaces and Processing Infrastructure for Submarines

Accipiter Systems, Inc.

WHO

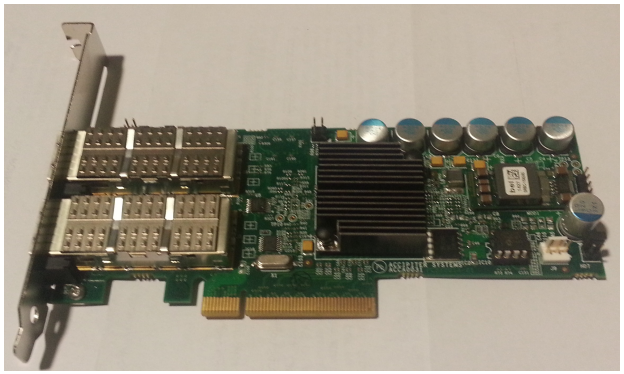
SYSCOM: NAVSEA

Sponsoring Program: PMS-435

Transition Target: Next Generation EW Systems, Submarine EW Systems, Tactical EW Systems

TPOC:
(401)832-7849

Other transition opportunities: NRO, NAVAIR, NAVSEA, AFRL, DOJ, IC



Notes: Warfighter Value (cont.): Further, since PCI Express natively transports networking protocols within a computer today, it can be used as a networking protocol independent transport as it is extended out-of-the-box into a rack area network. This allows for the migration of disparate systems onto a single networking platform and provides an elegant networking solution for high performance computing clusters, including heterogeneous clusters.

WHAT

Operational Need and Improvement: Current electronic warfare (EW) are being augmented to provide increased capabilities for detection and response to threats on submarines. Throughput requirements of terabytes of data per second on the network are targeted to address the future needs of EW systems where full RF spectrum data will be evaluated rather than sweeping through a portion of the range. Current networking technologies are insufficient of supporting these ultra-high throughput improvements in a space, power and cost effective manner. New networking solutions need to be developed to bridge the gap and meet this operational improvement requirement.

Specifications Required: Reduce SWaP of the BLQ-10 architecture by greater than 40%. Transfer data over 200 feet from the digitization equipment to the processing equipment. Support the analysis of frequency spectrum from DC to 50 GHz (up to 5 million pulses per second). Support transfer rates of Terabytes per second. Provide point to point and point to multi-point transfers. Support packetized data for processor to processor, processor to storage, and DSP to processor communications.

Technology Developed: Accipiter Systems is developing a computer networking solution based on the ubiquitous PCI Express protocol found in desktop computers and servers. This solution includes the development of PCIe network interface cards and switching solutions that provide significant improvements in data throughput while reducing the latency of data traversing the network. The technology is targeted at systems that are populated in a rack area network (or cluster).

Warfighter Value: The use of PCI Express as a networking technology leverages the existing ecosystem that supports and furthers development of PCI Express in computing platforms. PCI Express provides a low latency, high throughput interconnect that has better performance than today's switch fabric technologies at a reduced cost.

WHEN

Contract Number: N00024-14-C-4084 **Ending on:** June 23, 2016

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Development of PCI Express Network Interface Card	N/A	Passing traffic in customer environment	6	December 2014
Manufacture and assembly of PCI Express switch printed circuit board	Low	Hardware testing complete	4	November 2015
Software development for PCI Express switch completed	Low	Software integration complete	4	April 2016
Complete the development effort for a PCI Express Switch	Low	Demonstration and delivery	5	June 2016

HOW

Projected Business Model: Accipiter Systems intends to manufacture and sell networking system solutions based on the PCI Express technology being developed on this program to both governmental and commercial customers. Within the government, Accipiter Systems will target sales for platform upgrades within the services as well as data center solutions for agencies requiring improved networking capabilities for their high performance computer clusters, including the defense, intelligence, and energy communities.

Company Objectives: Accipiter Systems will become a world-class manufacturer of PCI Express based computer networking systems that provide disruptive performance and user benefits for governmental and commercial customers.

Potential Commercial Applications: High performance compute, High frequency trading, Feature extraction, Big data analytics, Image matching

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