

Accipiter Systems, Inc.



TOTAL DHS SBIR INVESTMENT

\$1M through the OATS portion of the SBIR program

SBIR AWARDS

DHS, DoD

PHASE III REVENUE

Joint Phase III with the Navy is currently underway

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Speed and accuracy can often be competing priorities, but in the case of airport screening both are necessary. The screening technology collects large amounts of data to fortify the accuracy. However, delays transmitting that data between different systems would compromise the ability to take action or make critical determinations in time-sensitive environments. Improvements in this field are not possible without innovative advances for data transmission.

The Department of Homeland Security's (DHS) Science and Technology Directorate's (S&T) Screening at Speed (SaS) program pursues transformative research and development to increase security effectiveness from "curb-to-gate" while dramatically reducing wait times and improving the passenger experience. One avenue being explored by the program is the improved resolution of sensors at airport checkpoints and improved methods to share and transmit the ever-increasing amounts of data in timeframes that allow decisions to be made in real time, or within seconds. The DHS Small Business Innovation Research (SBIR) Program assisted this pursuit. After learning about a SBIR project at another



federal agency that could meet this need, the DHS S&T SaS program leveraged the technology from that SBIR through an Other Agency Technology Solutions (OATS) DHS SBIR effort. DHS SBIR OATS funds development of SBIR projects from other agencies for further development to meet DHS mission needs.

To help accomplish the goals of the SaS program, Accipiter developed several 64 Gbps Network Interface Card (NIC) form factor prototypes and a 1.5 Tbps Switch. Through the DHS OATS project, Accipiter adapted the the 1.5 terabit per second switch developed under the prior SBIR work to the SaS application in new form factors to enable faster transmission speeds. These innovations enable the fusion of data across multiple sensors to provide robust detection without false negatives and few false positives. This approach requires the flexibility to interconnect high-volume raw sensor data with new algorithmic processing units with minimal (or no) impact on current operations. Furthermore, the Accipiter solution eliminates the multiple levels of translation between compute and storage devices, which in turn reduces latency, translation overhead, and ensures maximum data transfer rates. These features enable the sharing of costly high-performance analysis systems across multiple sensor stations and the nature of the Peripheral Component Interconnect Express transport provides an inherent level of security not available with commoditized hardware. Accipiter Systems software provides the channel for transporting legacy protocols and rapid configuration of the interconnectivity of attached devices, which ensures the flexibility required into the future.

“What we have created is a new class of products, not an incremental improvement on an existing solution. We’re not only offering something faster, but customers also gain flexibility. We offer data networking products that deliver higher value to the customer using disruptive technologies that connect infrastructure together in a cost-effective way,” said company President and CEO Dan Flynn.

“S&T is focused on meeting technology needs, encompassing near-term, mid-term, and long-term requirements. This S&T project is focused on a longer-term anticipated need as part of the TSA technology-

needs roadmaps. As data amounts continue to grow and decisions must be made in shorter amounts of time, data transmission speed must be able to accommodate the loads within the time required,” said Dr. Karl Harris, S&T Program Manager. “In this case, I had worked with a DoD Center in my prior position and was aware of Accipiter’s technology. When I learned that TSA was interested in expanding checkpoints, which involves adding more sensors and more lanes, both of which generate more data, I thought this technology would be worth exploring, when data amounts become crushing. Since I knew the work was done under DoD SBIR, I approached the DHS SBIR Program Office to leverage their OATS program and further develop the technology for DHS applications.”

Today, Accipiter’s technology is being tested and used at DoD labs and several major universities and research centers. The technology is vital in delay-sensitive applications such as robotic surgery, autonomous vehicles, and, perhaps one of its most exciting applications, airport screening, where speed and security are the goal. Accipiter has received funding from a partnership between the SaS program and DoD agencies.

“Relationships forged through the SBIR program have been instrumental to furthering technology innovation,” said Mr. Flynn. “Screening at Speed, through the SBIR office, brought government and industry together to create a successful technology.”

While these relationships are highly beneficial to the SBIR awardees, they are also important within the broader context of the SBIR program. Technical know-how and relationships have been key components of Accipiter’s success – this is underscored by the successful technology transition through the DHS SBIR program, SaS, the DoD, and numerous commercial successes. Partnerships forged through these programs and efforts have helped the company address technology requirements, innovate with an eye to the future, and meet future needs in the SaS program. Through this partnership, DHS is able to fund new innovation and address the data transmission requirement that will now enable spiral development to achieve the technology’s full potential.