An image of the dashboard used for some Syscape plug-ins. The idea is to provide a more intuitive view of simulation results to help users make better decisions. (Courtesy photo)

HIGH-TECH ANALYSIS TOOL
BOOSTING MISSION SUCCESS RATES

When the military wanted to thwart major supply problems during Hurricane Sandy, it turned to a software system created by a small business in the Midwest.

This versatile analysis engine, called Syscape, was developed by Ohio-based Edaptive Computing Inc. with assistance from the Air Force Small Business Innovation Research/ Small Business Technology Transfer (SBIR/STTR) Program. Syscape is being adapted for a variety of defense and commercial needs, which is fueling big growth at the company.

During Hurricane Sandy, for example, the Air Force kept watch on its supply chain with Syscape to determine potential availability problems with weapons system parts. The tool also has been used to simulate scenarios where the famous Stuxnet computer virus is introduced into a system.

Along the way, Edaptive won SBIR awards from the Army and Navy as well as millions of dollars in Phase III funding – investments from outside the Air Force SBIR/STTR Program – to advance the Syscape platform. The tool is currently being used at one Air Force Research Laboratory directorate, for the purpose of cyber assessment, and is being evaluated by other missions.

Syscape also has been used commercially for a variety of tasks, such as examining the supply chain for a Fortune 50 company and patient wait times at a hospital emergency department.

Edaptive, a certified small disadvantaged business and woman-owned small business, has leveraged its success with Syscape to double its staff to 70 people during the last few years and expand its office footprint.

MEETING A CRITICAL NEED

For the military, Syscape is being for used for tasks such as acquisition analysis, process analysis and cyber vulnerability.

Examining the vulnerability of an aircraft, for example, is not enough to determine if a mission will succeed. Lots of systems are interconnected – the aircraft, ground systems and missiles – so assessing their overall cyber resiliency is key. The goal under a Syscape analysis is that even if one system fails, the mission can still be completed.

Many modeling and simulation tools exist, but Edaptive officials say Syscape is unique because it can be quickly customized for different types of analysis. The tool also simulates possible mitigations, to help determine the best course for addressing problems.

Syscape started as an acquisition-based engineering tradeoff analysis tool for weapons systems, then evolved over time to evaluate trust in architecture. Air Force SBIR awards allowed the company to further the technology by applying it to specific applications.

"What we have really done is develop an analysis framework," said Praveen Chawla, president of Edaptive.

SBIR'S ROLE AS AN ECONOMIC DRIVER

Work on SBIR projects has allowed Edaptive to attract funding for other efforts, such as a risk identification tool. The data from that tool can then be plugged into Syscape for better analysis.

In recent years, Edaptive went from having much of its revenue tied to early-stage SBIR awards (Phase I and Phase II), to a majority coming from commercialization (Phase III) of its work. Edaptive has logged more than $55 million in Phase III sales to date, which includes work on Syscape and other SBIR efforts.

Additionally, Edaptive has leveraged its SBIR technologies to compete and win full and open contracts, including a recent engineering and manufacturing development award from the Air Force.

"SBIR has been a critical part of our business," Chawla said. "That's how we inject innovation into our products."

U.S. AIR FORCE

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