Air Force SBIR STTR TRANSITION
EQUIPPING THE WARFIGHTER
DESIGNED FOR ANALYSTS FACING MASSIVE AMOUNTS OF DATA

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AF112-026

TOPIC TITLE:
Cognitive Approaches to Integrated Intelligence Production

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SBIR COMPANY NAME:
Etegent Technologies Ltd.
Cincinnati, OH

TECHNICAL PROJECT OFFICE:
AFRL Airman Systems Directorate
Wright-Patterson AFB, OH

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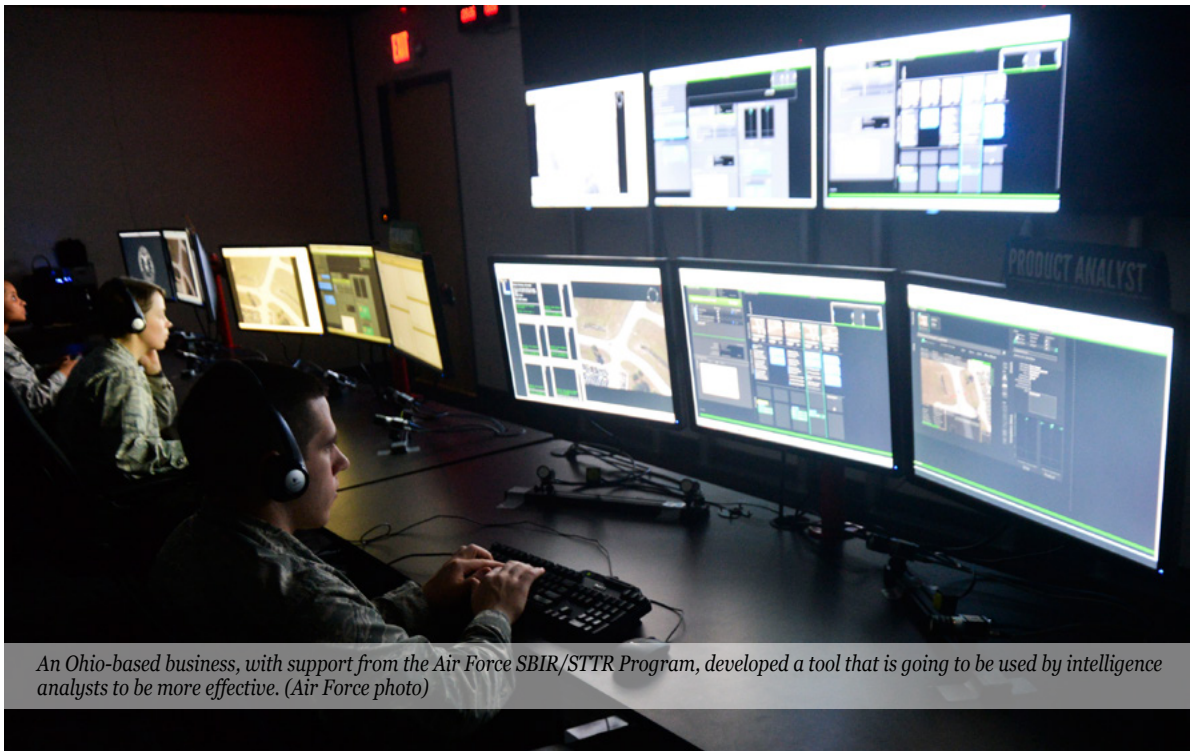

An Ohio-based business, with support from the Air Force SBIR/STTR Program, developed a tool that is going to be used by intelligence analysts to be more effective. (Air Force photo)

NEW SOFTWARE TOOL EXPECTED

TO BOOST INTELLIGENCE PRODUCTION CAPABILITIES

The Air Force Research Laboratory and an Ohio company are working to revolutionize the way critical information is processed by intelligence analysts who are increasingly overwhelmed by massive volumes of data while striving to ensure national security.

With support from the Air Force Small Business Innovation Research/Small Business Technology Transfer Program, Cincinnati-based Etegent Technologies Ltd. worked with AFRL's Airman Systems Directorate to create the NTellus Relationship Visualization tool. Also known as NTellusRV, the software allows analysts to more effectively examine and visualize information contained in large sets of location-based data. It also provides a new capability to discover and visualize relationships between different types of data sets so analysts can quickly discover relevant information in a way not previously possible.

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Based on these advancements, Etegent Technologies earned a contract to transition the tool to the National Air and Space Intelligence Center. The company is working with analysts in NASIC's Advanced Technical Exploitation Flight to deploy NTellusRV within NASIC and is also exploring new analysis products that the tool could enable.

BEHIND THE TECHNOLOGY

NTellusRV converts different types of data into a common form, computes the correlations and other relationships, and presents high-interest details with corresponding locations. These 'intensity map visualizations,' which integrate and distill information into two-dimensional images, are well suited for big data. The more data that can be integrated, the better the resulting intelligence that can be discovered and displayed.

For example, an analyst producing assessments about people traveling to a specific area can readily collect open-source data through social media and other sources. By coordinating that anecdotal evidence with more traditional surveillance resources through NTellusRV, the analyst can more accurately estimate the origin of visitors, their risk profile and possible recent activity in order to provide better intelligence for assessing potential threats.

From a technical standpoint, the NTellusRV project developed or improved upon the following capabilities:

- Exploring relationships between different data sets across time and space;
- Creating visualizations that can be easily customized by analysts;
- Flexibly integrate with different databases;
- The ability to use and integrate different data types;
- Creating efficient database calls and integration;
- Optimizing data analysis calculations and visualizations execution speeds in order to efficiently handle massive data features; and
- Writing results to images or other common formats (e.g. KML/KMZ) so they can be used by a wide range of customers in the intelligence community.

Several key factors fueled the success of this Air Force SBIR/STTR project, according to Rik Warren, an analyst test bed technical advisor at AFRL. The first was identifying and collaborating with a NASIC customer that could use the product immediately and saw enough value to provide support and funding for further development. The second was participation by a company with the vision that a new type of data, hyperspectral imagery, would require a new type of cognitively-grounded visual display.

"The Airman Systems Directorate motto is 'there are no-unmanned systems,' hence the need to infuse human factors and psychology into display and system development," Warren said.

THE IMPACT OF SBIR/STTR

By participating in the Air Force SBIR/STTR Program, Etegent Technologies had the opportunity for extensive collaboration with analysts, subject matter experts and support teams to identify the real roadblocks within analytical processes at NASIC. This enabled the company to better understand and characterize NASIC's challenges, then apply its engineering and analytical expertise to develop the NTellusRV tool.

Officials from Etegent Technologies say the tool can be widely applied to different types of data, so there is a large potential for it to be deployed within other NASIC flights as well as other intelligence organizations. The company is pursuing opportunities to further develop and commercialize the technology, a critical benchmark for an Air Force SBIR/STTR project.