

SUCCESS STORY

Lasers Enable the Latest in High-Resolution 3D Image Sensors

DEVELOP A SMALL PITCH LADAR RECEIVER FOR LOW SWAP SENSING

TOPIC NUMBER: AF171-118

CONTRACT NUMBER: FA8650-18-C-1726

SBIR COMPANY NAME: VOXTEL OPTO

TECHNICAL PROJECT OFFICE: AFRL/
RYMM, WRIGHT PATTERSON AFB, OH

SPONSORING ORGANIZATION: AFLCMC/
WIN

PUBLISHED: SEPTEMBER 2021

THE BASICS

- Sensor technology that helps collect 3D video footage at medium to long range.
- Better able to deal with obscurants like trees or other partial obstructions, and may even have civilian commercial applications.

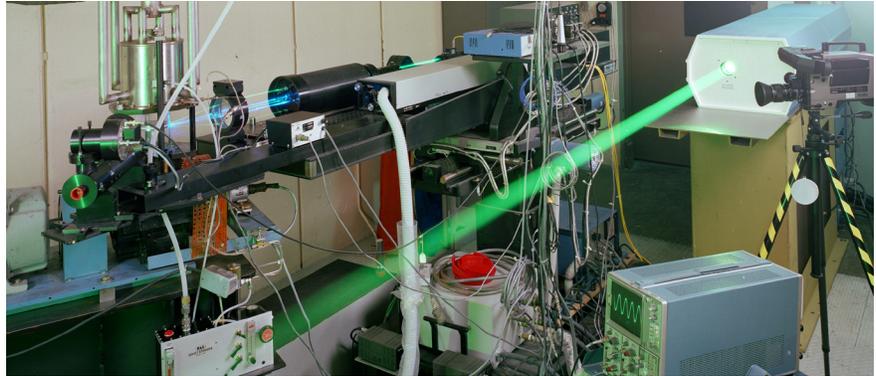


Photo courtesy of NASA

WITH THE SUPPORT OF SBIR/STTR, OREGON-BASED VOXTEL OPTO HAS DEVELOPED SENSOR TECHNOLOGY THAT HELPS COLLECT 3D VIDEO FOOTAGE AT MEDIUM TO LONG RANGE.

Using sensors, which transmit a laser flash to record fast motion, this technology enables the warfighter to create higher resolution 3D video images for surveillance and target acquisition. Compared to current technology, these sensors are better able to deal with obscurants like tree or other partial obstruction, and may even have civilian commercial applications.

With the success of this project, Voxel Opto has been able to advance their manufacturing capabilities and the readiness of their technology to the point of being able to create custom sensors.

Voxel Opto has also become ready for acquisition by a larger manufacturer through the development of this technology.

BEHIND THE TECHNOLOGY

Before the development of this project, creating 3D images for targeting and surveillance was difficult and time consuming, especially at long range.

Targets could be easily hidden by other objects or light cover such as foliage, which cost the operators' valuable time and effort in reconstruction to create a clear image.

Voxel Opto sensors are able to overcome these challenges by use of a laser flash that reflects back to the camera from different locations within its field-of-view.

Its medium to long range capabilities enables it to be used both in military applications and in civilian commercial applications such as automotive safety.

The technology is being evaluated for the Air Force Next Generation Sensors program for incorporation into future laser detection and ranging (LADAR) systems for the warfighter.

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With this technology, the weapon acquisition lifecycle can become much faster and more efficient because of the accelerated timeline of data gathering and analysis, as well as a standardized method of comparison across the acquisition lifecycle.

The system was created by researching AFRL's information needs and constraints, to create a language-based data collaboration platform based on models of complex systems. When data is added, the platform updates in real-time, in order to give the user the most up-to-date analysis.

Mobi-SRE was tested for its ability to link different data types across multiple systems and engineering artifacts, in order to give the user information on cost, performance, schedule, design, and quantity trade-offs and tailor the system for the most utility in AFRL's data needs.

The Mobi-SRE system is currently being used at the AFRL Materials and Manufacturing Directorate, as well as in commercial organizations, such as Raytheon Technologies.

SBIR FUNDING AND AFRL'S EXPERTISE WERE CRITICAL

The Air Force SBIR funding was essential to the final development of the technology and overcoming manufacturing obstacles. It allowed Voxel Opto to investigate solutions to several prohibitive stumbling blocks that had previously prevented their success, and allowed the company to build the physical hardware from the concept.

After investing \$900,000 in Phase I & II SBIR contracts, the project has seen a return of \$2.5 million in Phase III contracts and stands to save the Air Force an estimated \$1 million.



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