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Laser-guided Research

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University of Dayton, U.S. Air Force and industry leaders dedicated another center of UD research excellence that Provost Fred Pestello said will attract and retain high-technology scholars and researchers to the region.

The Ladar and Optical Communications Institute will allow students to conduct research and learn in the nation's first Air Force-funded ladar center. LOCI is on the fifth floor of College Park Center near the corner of Brown and Stewart streets.

"With this center, we want to invent the future," LOCI Director Joe Haus said.

In the new facility, Haus said UD students will continue researching improvements for ladar, such as:

- penetrating foliage. Radar may not work well in populated areas because radio waves bounce off buildings and other obstructions. Laser beams scatter only in the line of sight.?
- improving image resolution using multiple lenses and cameras.
- identifying target vibrations. Every vehicle has its own vibration signature. Ladar possibly could be use to identify whether an approaching vehicle is a tank or a family car.

Ladar, or laser detection and ranging, is similar to radar, except it typically uses infrared lasers rather than radio waves to detect targets.

Haus also said the institute has created three high-tech jobs for the region and six student assistantships. LOCI will create an additional six assistantships in the next year that will help recruit bright minds to the area, Haus added.

Raytheon, Lockheed-Martin, Textron Systems, Boeing, BAE Systems and Northrop Grumman Electronic Systems support LOCI as founding corporate members. A governing board comprising representatives from the Air Force Research Laboratories, Air Force Institute of Technology and UD, as well as a technical advisory group represented by the institute's constituencies, will guide LOCI's planning.

"One of the things that's clear is that laser applications are the wave of the future," said LOCI board member Doug Pasquan of Lockheed-Martin. "There is a greater and greater need to go to smaller wavelengths. This is one of the rare places where we can work with people who have the roadmaps to work with this. We're looking forward to the interactions here and the great things to come."

UD, the U.S. Air Force and regional businesses launched the \$3.2 million institute in 2006 to consolidate the brainpower of the region's researchers to put laser radar on a faster track to the battlefield and the marketplace.

"The Air Force Research Lab has the vision to find anything anywhere," Col. Gary Hopper said. "We need to have sensors and a way to store data. We can't do it alone. We're counting on LOCI to create high-fidelity sensors and the ability to transport that info. We also need LOCI to create a body of knowledge with bodies."

Since LOCI's establishment in 2006, students have conducted research on campus and at Wright-Patterson Air Force Base with government researchers.

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