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Many companies take advantage of the region’s unique resources and industry assets and choose to call Orlando home. See below for a snapshot of the photonics cluster in our region.

Orlando. You don’t know the half of it.

Orlando.org
Many companies that supply and utilize the technological developments coming out of the microelectronics and semiconductor industry also call Orlando home.

**SUPPLIERS:**


**MANUFACTURERS:**

Lockheed Martin, Northrop Grumman, Micross Components, Inc., Luminar, Qorvo

**BUYERS:**

FOR EVERY ONE GRADUATE FROM THE ORLANDO REGION THERE ARE 11 REGIONAL JOBS. COMPARE TO THE SAN FRANCISCO REGION – THERE IS ONE GRADUATE FOR EVERY 30 JOBS.

THE ORLANDO REGION POSSESSES A HIGH CONCENTRATION OF TALENTED EMPLOYEES WITH THE DEDICATION, EDUCATION AND EXPERIENCE NECESSARY TO MEET THE SKILL NEEDS OF THE REGION, FROM INDUSTRY PARTNERSHIPS AT THE K-12 LEVEL TO NATIONALLY RECOGNIZED UNIVERSITY PROGRAMS, COMPANIES FIND THE TALENT THEY NEED IN ORLANDO WITHOUT FACING THE FIERCE COMPETITION THEIR PEERS ENCOUNTER IN OTHER CITIES.

23,360
hardware engineers, electronics engineering technicians, electronic equipment assemblers, semiconductor processors, etc.

2,170
annual graduates with degrees applicable in these fields.

11% Employment in these fields experienced growth since 2013.

SOURCE: FLORIDA DEPARTMENT OF ECONOMIC OPPORTUNITY, LOCAL AREA UNEMPLOYMENT STATISTICS (LAUS)

SOURCE: NATIONAL CENTER FOR EDUCATION STATISTICS

Orlando. You don’t know the half of it.
The Orlando region also has unique education and training resources including the University of Central Florida's College of Optics and Photonics, as well as K-12 technical schools including the Lasers and Fiber Optics Regional Center (LASER-TEC) and the Laser Photonics Academy.

**THE COLLEGE OF OPTICS AND PHOTONICS AT THE UNIVERSITY OF CENTRAL FLORIDA (CREOL)**

- 160 graduate and 90 undergraduate students
- Home to the Florida Photonics Center of Excellence and the Townes Laser Institute
- Industrial Affiliates Program includes more than 70 member companies

**Center for laser and Fiber Optics Education (LASER-TEC)**

- Training students across the nation to become laser and fiber optic technicians
- Partnership with 34 colleges and more than 250 companies, led by Indian River State College

**LASER PHOTONICS ACADEMY AT WEKIVA HIGH SCHOOL**

- Dual-degree program designed in partnership with Orange County Schools, Valencia Community College and Northrop Grumman Laser Systems
- Engages students early in their high school career and prepares them for employment in laser and photonics occupations
INDUSTRY ASSETS

Research, community, government and business organizations in the Orlando region collaborate to provide significant value to photonics companies. With so many supportive assets, companies located in the seven county region have a competitive advantage, especially in research and development, over other businesses in the industry.

Defense contractors for simulation technologies especially have a distinct advantage in Orlando. The simulation and training command for all Department of Defense branches is located at Central Florida Research Park, the 6th largest research park in the U.S. Orlando based companies including AVT Simulation, Engineering & Computer Simulations, Raytheon and Lockheed Martin have fulfilled billions in defense contracts for simulation technologies – just in the past year alone.

Dedicated to enhancing the industry by bringing together the knowledge, expertise and service that each company or organization has to offer the cluster.

Matching Grants Research Program open to companies inside the 23-county region. Leverages the strengths of three universities: University of Central Florida, University of South Florida and University of Florida.

A new R&D design center offering IC design research for a broad set of semiconductor-based solutions, including sensing and imaging technology such as mm-wave imaging, infra-red imaging, LIDAR systems and a broad range of sensors.

One of the world’s most advanced versatile 200mm microelectronics fabrication research and development facilities accommodates a variety of partner-funded activities and hosts new manufacturing technologies.
BRIDG is an independent, U.S.-based, public-private partnership operating a new 200mm semiconductor wafer manufacturing facility within a 500-acre greenfield high-tech campus in Osceola County, Florida (called NeoCity). BRIDG is uniquely positioned to help DOD meet its critical need for trusted domestically-manufactured microelectronics.

37,485 SF
Central Utilities, Electrical Distribution, HVAC + Additional Space

26,527 SF
Main Cleanroom operating at Class 100.

109,654 SF
Total gross square footage

26,469 SF
Office space square footage

9,790 SF
Lab Space

9,383 SF
Main Cleanroom operating at Class 100.
When considering payroll, construction and real estate, utilities, state taxes and incentives, Orlando serves up savings like sunshine. Orlando is a cost-effective location for your business, whether you plan to build, buy or lease. Plus, there are a variety of office, flex and built-to-suit opportunities across the region, including Central Florida Research Park – the 6th largest research park in the country (see page 8).

$22.46

Average office rental rate.

City of Orlando

$6.88

Average industrial rental rate.

City of Orlando

Source: Cushman & Wakefield Q3 2018
Companies that want to work closely with the University of Central Florida can purchase land in the Central Florida Research Park to construct a facility or lease space for office, office/lab or light manufacturing uses. Central Florida Research Park is the sixth largest research park in the country.

Let’s do something giant.

125+ COMPANIES  9,500+ EMPLOYEES
1,027 ACRES  58 BUILDINGS
If you work with lasers anywhere in the world, you are familiar with OptiGrate Corp., a Central Florida company drastically improving the way light-based machines operate.

The company manufactures a component—a bit of glass—that makes lasers more precise and proficient. The growing business helps create high-tech employment positions, which strengthens the region’s economy. In three years, it doubled in size to more than 30 employees—including eight with PhDs and 10 with master’s degrees. Today, it has 400 customers across six continents.

Thanks to OptiGrate and its partnership with the University of Central Florida, the region has become a hub for laser technology.

“We are pretty much unmatched in the world,” said Alexei Glebov, OptiGrate president and CEO, and son of the company’s founder. “We can make holographic optical elements much better than anybody else.”

What Does OptiGrate Do?
At this point, resign yourself to this fact: Unless you have a profound knowledge of physics, you will not understand what the company produces. Nevertheless, OptiGrate’s glass bits, known as volume Bragg gratings, permit lasers to be of precise frequencies and properties to perform eye surgery; cut and weld automobile parts; and, sniff out explosives in airports. These components improve laser performance, aid laser miniaturization, and reduce laser costs used for medicine, pharmacology, and defense. The uses for these products are expanding.

OptiGrate is one of a dozen companies created by technological discoveries at the UCF and fostered to profitability in its business incubators. Approximately 130 businesses have been established, creating hundreds of jobs and pumping millions into Central Florida’s economy.

“It is a disruptive technology,” explained M.J. Soileau, vice president for research and a professor of optics at UCF. The technology offers the foundation for a new line of laser products. It gives people the ability to create innovative products. This technology is the first out of the block.

Strategic Partnerships
Soileau came to UCF in 1987 to direct the Center for Research in Electro Optics and Lasers (CREOL). His research history and contacts led Soileau to Leonid Glebov, a Russian scientist who accomplished cutting-edge work within the field in the 1970s. Soileau and Glebov met in St. Petersburg, Russia and formed a fast friendship based on their scientific interests.

When the Soviet Union collapsed in 1991, Glebov moved to the United States and worked at Ford Motor Company. When Glebov decided to re-enter the academic field, Soileau capitalized on an opportunity to bring Glebov to UCF, where he found support for his scientific work. By 1999, he had developed the technology and founded the company that became OptiGrate. The university benefitted from the partnership financially and enhanced its reputation as a research institution.
“The UCF optic program is one of the top three in the country,” Soileau stated.

In 2008, Glebov’s son, Alexei, was recruited from his job in Silicon Valley to run the company. The senior Glebov has remained on UCF’s faculty, regularly drawing more than $1 million a year in research grants to the institution.

“There is nobody else that does Glebov’s work,” Soileau said. “I do not think he has a lot of peers.”

How It Works?
The heart of the technology is a method to produce a piece of glass in which the molecules are aligned to produce a filter for light. This glass filter forms a laser of a pure frequency or color.

Silica, with a mixture of additives molded in a special process, creates an image in the glass like a hologram which filters the laser light. The result is better optical filters, beam directors, and lasers.

The foundation for the technology was developed in the Soviet Union in the 1970s. Glebov and his colleague, Vadim Smirnov, started the Florida company to commercialize the technology. With projects from NASA and the military funding much of the initial research, Glebov was the first to commercialize this process and its products.

When OptiGrate's technology was ready for market, UCF utilized its highly developed business incubator system to help Glebov build a viable company. The UCF incubator program helps scientists handle business aspects such as finding real estate, setting up an office, and maintaining utilities – simple skills often overlooked by physicists.

“We gave it a lot of care and feeding,” explained Soileau. “Companies often come around to help fund research.” OptiGrate has assisted UCF by raising research funds and building awareness of laser-based companies that might need its products.

Next Generation
The younger Glebov earned his master's degree in St. Petersburg, Russia. In 1992, he left Russia for Germany to earn a PhD in solid physics and applied physics. He began an industrial career with Lucent Technologies in New Jersey and worked 18 years in California.

“I am a Silicon Valley boy,” Glebov said. In 2008, he was called in to run OptiGrate.

“Photonics is still pretty small,” Glebov said. “The company needed leadership with an industrial background. That is why dad brought me here. I have seen the industry from the other side. I am the business guy.”

When the U.S. economy struggled, OptiGrate flourished. It grew 30 percent per year and doubled its workspace by moving into a new building.

“We are expanding in different markets,” Glebov said. “We are increasing profits year after year.”

His father's title with OptiGrate is now vice president of research and development, but the senior scientist splits his time between the company and UCF, where he teaches and conducts research.

“He brought this technology, pushed the limits, and made it fit the requirement for commercialization,” the younger Glebov said. “No one else in the world can do such work. We are working on finding new markets and new applications. We are still at the beginning. It can easily grow ten times in the next few years. My expectations are very optimistic.”
All companies, and particularly those in information technology, face the challenge of finding talent for growth in an ever-tightening labor market. Smaller, newer players like Luminar, a six-year-old manufacturer of LiDAR-based sensors for vehicles, have to woo the best of the best away from brand-name behemoths.

“We’re competing for people who could go to the Googles and Facebooks,” says co-founder and CTO Jason Eichenholz. “So what we say is, here at Luminar you’re going to get more and broader experience than you ever would in one of those companies. There, you’ll be put in your silo and you’ll know only about what you do. Here, you’re going to get that breadth and depth of experience.” He adds that the company enjoys “an unfair advantage over other companies because of where we are geographically.”

He’s not referring to Luminar’s headquarters in the heart of Silicon Valley, but rather the company’s offices in a research park in Orlando’s tech corridor, where developments in optics, photonics and laser technology have advanced far beyond other regions. “It’s one of the best-kept secrets,” says Eichenholz, who has worked in the area since 1993. He hasn’t had a difficult time luring workers away from his competitors and finding the expertise the company needs to fill out its talent pipeline. “Over the course of the last three years, we’ve added and created a team with about a millennia of man- and woman-years of experience doing what we do,” he says.

In the early days, when the company was still making a name for itself, Eichenholz would sweeten offers by including something even Google could not match: one-year family passes to the area’s world-renowned theme parks. “That was a pretty big investment, but people really liked it,” he says. “It sent the message that we wanted the family to be happy, for it to be a family move. Also that, as a company, we want there to be work-life balance.”

Today, Luminar is competitive enough that it no longer needs to invest thousands in theme park passes. But the Florida sunshine and greater affordability still appeal to potential recruits, particularly those in the later stages of their careers. “They don’t necessarily like living in a small apartment in the Bay Area, but they can’t afford to buy a house there. They’ve been priced out. The quality of life here is very interesting to them.”
The company also tries to maintain the feel of a startup by “as we call it, bringing a little Silicon Valley to Orlando.” Perks include competitive pay and great benefits, high-energy snacks and smoothies on site and a catered lunch for all employees every day of the week. “When you’re feeding 120 people at lunch time in a room that was never designed for that many, it encourages cross-department communication. It creates a buzz in the building,” he says. “So for candidates visiting, they can literally feel the energy within the building from the second they walk in.”

Luminar brings the next generation of employees through campus on a regular basis via partnerships with local schools, which is one of the corridor's benefits for employers looking to hire the right expertise. “We have more than 500,000 college students within a 100-mile radius around downtown Orlando,” adds Tim Giuliani, president and CEO of the Orlando Economic Partnership. Located a stone’s throw from University of Central Florida, the second-largest in the country, Luminar has been able to establish internship programs that very often lead to permanent hires. Eichenholz is a courtesy faculty member with UCF's College of Optics and Photonics, known as CREOL. “I know the professors personally so we can find the good ones early,” he notes.

That access to great people will be critical for Luminar’s next phase of maturity—ramping up scale in manufacturing. “The first phase was hiring all the laser physicists and electro optical engineers who have been doing this for decades,” says Eichenholz. “Now we’re bringing in the team that can bring millions of product units to market.” He adds that, with millions being spent on infrastructure in Orlando, a new performing arts center being built, and the city’s ranking as one of the highest for job growth in the nation, the question of “why Orlando?” is more easily answered. “There's a really strong story now,” he says, “and we're telling it.”

“Orlando is home to the highest concentration of LiDAR expertise in the world—all within a 10-mile radius of our building! There is a huge infrastructure and pool of talent in optics and photonics between multiple Fortune 500 companies and The University of Central Florida CREOL. The quality of talent is unbeatable, and I’ve been able to put together a world-class team to work on R&D, engineering and manufacturing. All of this has come together to build a system that meets the needs of the world’s top AV programs, including Toyota Research Institute.”
GET IN TOUCH

- Complimentary, confidential services for companies looking to relocate or expand
- Site selection assistance including location evaluation and real estate availability assessments
- In-depth market data including demographics, labor availability, transportation, taxes, cost of living comparisons, education and more
- Connections to key government, education and private partners at the local and state level
- Financial and entrepreneurial resources including the evaluation of financial incentives, grants, bonds and other support
- Assistance with workforce recruitment and training

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