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Spurring simulation: How this tech-forward industry is breaking out of the military mold

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At first glance, the patient rooms inside AdventHealth's training hospital in Altamonte Springs seem normal.

But look closer and you'll see the sinks are fake, the ceilings are bugged and lifeless manikins — humanlike models — are tucked into the beds.

This is just one of several simulation labs designed to train the health care system's medical personnel using realistic scenarios — and high-tech props.

Simulation is the only way to accurately and safely replicate many of the medical situations that doctors and nurses might face, said Patrick Connors, executive director for simulation at AdventHealth's Central Florida division.

"There are certain things you can't just do — you have to practice it."

It's no secret that Orlando's theme parks power a \$75 billion tourism industry, but it's less well-known that the city is home to a \$6 billion modeling, simulation and training industry. The modeling, simulation and training sector — MS&T, as it's known — is dominated by big and small military contractors that develop training products for the U.S. Armed Forces.

But the services provided by companies in the MS&T industry increasingly are in demand among civilian clients, like Altamonte Springs-based AdventHealth. This creates opportunities for Central Florida firms in entertainment, health care and other non-military or non-tech industries.

Furthermore, this trend means growth for the MS&T sector, which already provides more than 30,000 local jobs that pay an average annual salary of more than \$78,000, according to the Florida High Tech Corridor, an economic development initiative that focuses on innovative industries.

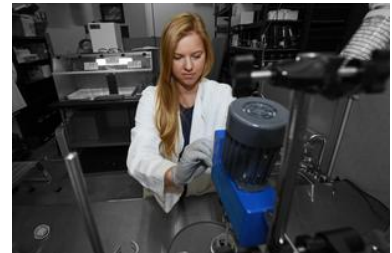
Central Florida Research Park, the MS&T cluster adjacent to the University of Central Florida in east Orlando, houses dozens of businesses and is the simulation headquarters of the U.S. Army, Navy, Air Force and Marine Corps. This hub contributes more than \$6 billion annually to Florida's gross domestic product, Florida High Tech Corridor reported.

While military work has enabled MS&T to blossom in Central Florida, companies can take what's been developed for the U.S. Department of Defense and use it in other applications, Orlando-based National Center for Simulation President and CEO George Cheros told *Orlando Business Journal*.

This stimulates growth and helps diversify the industry, protecting it from potential downturns in defense spending, Cheros said.

"Defense is the lead horse. Let's use it to spur other markets."

So how do local MS&T companies look beyond the defense industry into other areas of opportunity? Here's a closer look at what four local businesses are doing outside the defense sector:



JIM CARCHIDI

Taylor Oxford mixes the compounds that make up the Sea Dragon Gas scent used for Hagrid's Magical Creatures Motorbike Adventure at Universal Orlando's Wizarding World of Harry Potter.

Safety first

When Waymon Armstrong is on the phone with some of his customers, they often warn him not to drive during the call.

That's because these clients have completed safety training courses offered by Armstrong's company, Orlando-based Engineering & Computer Simulations Inc. The firm develops virtual-training platforms primarily for the U.S. Department of Defense. But its services increasingly have appealed to private-sector clients, such as oil and gas companies — where emergency training is critical.

Engineering & Computer Simulations in 2013 began offering a computer-based training course to customers in the oil and gas industry, and the firm studied the 2010 Deepwater Horizon oil spill to help design the product, Armstrong said. The oil and gas clients carry their concern for safety over to work calls with Armstrong because "security and safety is their life."

Today, the 23-year-old firm is Orlando's fifth-largest MS&T firm with \$12 million in 2018 revenue. It originally balanced military and commercial aviation client bases, but after Sept. 11, 2001, it shifted to being primarily military-focused, Armstrong said.

However, it offers training services — including virtual reality and computer-based courses — for police and fire departments, aviation firms and energy companies.

Armstrong described commercial markets as a double-edged sword for local simulation companies. Businesses can diversify consumer bases and potentially get their products greater exposure nationwide and globally. But in the civilian world, training budgets often are among the first to face cuts, a contrast to the high importance the military places on training.

Regardless, there will be an increasing need for MS&T expertise across commercial markets as the prevalence of technologies like augmented and virtual reality grow, Armstrong said.

In fact, AR and VR are forecast to become a \$571 billion industry by 2025, according to Portland-based industry research firm Allied Market Research.

Engineering & Computer Simulations Inc.

Headquarters: Orlando

Employees: 42

What they do: Create virtual reality and computer-based training programs for aviation, oil and health care industry clients

Smell of success

At least one company in town is taking its expertise from the MS&T and military hub in east Orlando to Universal Orlando Resort on the west side of town.

Orlando-based Global Technology Integrators Inc. creates practical effects including light, smoke and scents. Its creations traditionally are used in military training exercises. But the tourism industry also was very interested in the firm's products, namely, its scents.

Fragrances developed by the firm have been used in Hagrid's Magical Creatures Motorbike Adventure at Universal's Islands of Adventure and Minion Mayhem at Universal Studios Florida. The company created a banana scent that's sprayed during a scene in Minion Mayhem, and it made a fishy smell for the Blast-Ended Skrewt — a scorpion-like creature that riders encounter at the beginning of the Hagrid coaster.

The tourism industry provides Global Technology Integrators with a steady stream of work to complement the company's defense work, which President Tony Oxford said can fluctuate greatly depending on political factors.

In fact, the defense side of the business was down last year, so the private-sector work helped. “The military business is very volatile.”

Working for military clients has prepared the firm for handling the demands of the competitive tourism industry, Oxford told *OBJ*. Military clients have stringent requirements due to the extreme scenarios and life-or-death situations they face.

Similarly, the success of a theme park is dependent on attractions working correctly every time, Oxford said. “All it takes is one tweet to go out and people don’t go on the ride.”

Scents have been particularly successful for the company because it connects a user to an immersive experience — whether a training exercise or a ride — unlike any other scent, Oxford said.

“The brain works like a superhighway; you have all these interchanges. Our noses are the only direct route to our brains.”

Global Technology Integrators Inc.

Headquarters: Orlando

Employees: 12

What they do: Manufacture scents used in theme park rides

A helping hand

Angela Alban’s office is covered in dismembered arms and legs — but it’s no cause for alarm.

Alban is CEO of Winter Park-based Simetri Inc., which designs and manufactures moulage — products that fit on medical manikins to simulate conditions and injuries. Since its founding in 2009, the firm has grown to 28 employees — and it’s getting bigger. It typically adds two to three workers per year, and is seeking a new, bigger office in Winter Park, Alban said.

Products developed by Simetri are valuable for hospitals and military divisions because they allow manikin customization, as opposed to how manikins typically are manufactured in a uniform style. Moulage can be used to give a manikin a mangled leg, simulate arteries or change its gender.

Branching out into new markets helps insulate Simetri from ongoing changes in the defense industry’s medical training field, and the company will continue to diversify, Alban told *OBJ*.

“Military and medicine is undergoing a lot of change and reorganization, so we have to protect ourselves with respect to any changes that might limit our ability to grow in that area.”

The company wants to expand into research-based projects for defense clients, as well as private medical customers.

Simetri in 2018 won a contract from Laerdal, a Norwegian company that’s one of the top producers of medical manikins. Simetri also is helping AdventHealth prototype medical training products. Diversification is common in the simulation industry, Alban said.

“It’s about survival. If you find that what you do has a lot of opportunity in the next three to five years, then you pursue that. And if there isn’t, try and find partners that might complement what you do so you can have a wider net to cast.”

Simetri Inc.

Headquarters: Orlando

Employees: 28

What they do: Design and manufacture pieces that customize manikins for the medical industry

Not for dummies

When Patrick Connors came to AdventHealth from the U.S. Army six years ago, the health care system's simulation team included fewer than five people. Since then, it has grown to a team of more than 50 workers in eight simulation labs throughout Central Florida.

Nurses and doctors in the simulation labs are trained on medical procedures ranging from inserting IVs to resuscitation in a hyper-realistic environment. This atmosphere is crafted using sophisticated manikins and live actors.

It's no coincidence that Altamonte Springs-based AdventHealth operates a robust simulation program. The MS&T appetite was brought by Connors, who worked in the Army's simulation operations at Central Florida Research Park. "Training soldiers and nurses is very similar. The techniques in simulated learning all are the same."

What's more, the health care system can rely on local companies, such as Simetri, to provide customized products.

AdventHealth's simulation division also wants to embrace virtual reality as a tool, but Connors said it will build up to that point. AdventHealth is taking part in a pilot program with Menlo Park, California-based VR firm STRIVR to train personnel in sedating patients.

The AdventHealth simulation program still is rapidly growth. The division needs to add another 18 employees this year and plans to open simulation labs in at least four other Central Florida hospitals, Connors told *OBJ*.

AdventHealth simulation labs

Location: Altamonte Springs

Employees: 53

What they do: Create medical scenarios using manikins and live actors to train medical personnel

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Alex Soderstrom

Staff Writer

Orlando Business Journal

