

Supply Chain Management

For Outer Space

Remember what Toyota did for the auto industry with just-in-time? What Dell did for the computer industry with mass customization? How about Wal-Mart's transformation of the retail industry with its vendor management system? Impressive innovations, you'd say, that make enterprises more efficient, productive and profitable.

Now imagine combining these three breakthroughs into one system, increasing the supply chain complexity at least tenfold, extending the cycle to several years, and defining the distribution area from somewhere on Earth to somewhere in space. Impossible, right? Yet, this is exactly what one Florida-based company is doing.

Pushing the Boundaries of Supply Chain Simulation

As supply chain simulation moves from modeling only the processes within a single organization to environments involving multiple entities and multiple distribution points, the complexity of the models increases exponentially. To deal with this issue, providers of supply chain modeling have traditionally resorted to building multiple models of similar systems with only minor variations. This practice has resulted in often duplicated efforts and many custom-built programs, but no solutions flexible enough to apply across an industry range.

Productivity Apex, Inc. (PAI), a simulation and modeling firm founded at the University of Central Florida Technology Incubator in Orlando, Florida, has focused on resolving this issue with the development of a generic simulation environment that is able to accept various design

characteristics and operational inputs and automatically generate a simulation model based on them.

An Innovative New Product in the Field

PAI's unique simulation program includes a flexible and easy to use graphical interface through which users can add discrete events, execute, and evaluate any model designs. Thus, the software provides end users with a one-stop input/output experimentation dashboard that allows them to manage and run a variety of supply chain scenarios.

PAI's modeling, simulation and analysis tool is currently helping NASA evaluate several designs for a future space vehicle, intended to replace the Space Shuttle around 2010. For each proposed vehicle design, NASA's staff can simulate events throughout the supply chain, arrange them in different sequences, identify potential bottlenecks, determine costs and, ultimately, look for the best ways to design the processes that will define space launches for a decade or longer.

As if this feat were not impressive enough, PAI has already expanded its innovative model to encompass one of the longest and most complex supply chains ever developed, capturing events from NASA's lowest tier supplier on Earth all the way to operations in space and on the surfaces of the Moon and Mars.

In addition, the company is developing similar toolsets for other modes of transportation, including air, long haul trucks, and trains, and for other industries, such as manufacturing, logistics and healthcare.

The Florida Advantage

It is no coincidence that this innovative product was developed in Florida, and specifically Central Florida, the home of one of the largest centers in the world for innovation in Modeling, Simulation and Training (MS&T). Anchored by the Orlando-based National Center for Simulation and the MS&T-related activities of all branches of America's armed forces located around it, the area's MS&T cluster has grown to over 300 firms employing over 16,000 workers. Benefiting from the proximity of some of the world's most popular entertainment parks, a third of those companies are developing a variety of entertainment, gaming, and amusement applications, among others.

From degrees specifically tailored to the needs of the industry, including one of the only three PhD programs in MS&T in the world, to fruitful partnerships between government, academic and private-sector institutions, Florida has developed one of the most welcoming environments for MS&T innovation. In addition, the state's unmatched quality of life, cost-competitive business climate, and pro-business government continue to contribute to the success and profitability of local MS&T companies.

It's clear to see why industry leaders such as Lockheed Martin and SAIC, as well as innovative startups such as PAI, find it easy to thrive in the state. Every MS&T company can benefit from being in Florida. Innovation Hub of the Americas.®

Stay in touch with all that's new in Florida's Space cluster by registering for My eFlorida to receive the Innovation Quarterly e-newsletter. Register now at www.eflorida.com/sn.

