

## Success Can Hide Inefficiency

By David Greenfield

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*Regardless of company size, lack of insight into operations data can inhibit growth and create problems. Virgin Orbit and Vecima Networks—two very different companies — are leveraging data gathering, analysis and use to ensure optimal efficiencies in both operations and business decision-making.*

The saying “success can hide inefficiency” may seem relatively obvious; but it’s connection to ingrained thought processes, such as “if it isn’t broke, don’t fix it,” can be a problem. It’s often the reason why it’s so difficult for companies to move forward when they need to—an issue which can ultimately lead to their demise.

This statement—“success can hide inefficiency”—was mentioned by Paul Little, business intelligence analyst at Vecima Networks, in a presentation at the MESA 2018 North America conference in Raleigh, N.C. Based in Canada, Vecima Networks designs and manufactures cable network hardware and software for companies like Comcast, Cox, Charter Communications, Time Warner and others. Though it supplies several industry behemoths, Vecima would be considered a small to medium-sized business with its CAD \$71 million in annual revenues. The company has plans for more growth, but it’s certainly not doing poorly.

Vecima discovered that the key to unlocking its growth potential was in understanding all the data it collects. And Vecima collects a lot of data. In its testing system alone it houses 66 million records and adds another 3 million records every year.

To turn all of that data into information that would help the company not only grow but become more profitable, Little says the company wanted to “change the conversation.” It saw the need for this change since so many of the business’s decisions were being made, as Little put it, “by gut feel based on experience.”

Vecima wanted its new business conversation to be based on knowing “what we’re doing and getting real ideas of what customers want,” Little said. “The conversation we want to be having is based on knowing how well we’re performing; are there patterns and/or anomalies in our processes we can identify; what happens if these trends continue; what are the contributing factors; what path is most profitable, and what will happen next?”

To get these answers, Vecima began using the BI (business intelligence) appliance from SAS. According to Little, Vecima’s use of the SAS BI appliance to track volume produced and first pass yield enabled the company to determine that 20 percent of weekly production failures were due to human error, such as worker distraction, lack of training, not using standard operating procedures, etc. Armed with this information, “we have executed mitigation plans to reduce human errors from 20 percent to 2 percent and have saved CAD \$32,000 per year,” he said.

Based on this success, the company is now looking to analyze other failure categories that could drive up to CAD \$112,000 in annual savings.

With annual revenues in excess of £5 billion, Virgin Group is a company on the opposite end of the business size spectrum from Vecima Networks. Recognizing that success could hide Virgin’s own inefficiencies as much as it could for a company Vecima’s size is the force behind an interesting integration of software applications at Virgin Orbit—a Virgin Group company launched in 2017 to deliver small satellites into low Earth orbit. The

company is currently in the final stages of testing LauncherOne, its two-stage, LOX/RP-1 rocket that launches from Virgin's mobile air launch pad—a dedicated 747-400.

The design and production processes surrounding LauncherOne are driving Virgin Orbit's approach to mitigate and eliminate inefficiencies in current operations, as well as when those operations scale, via a PLM-MES-ERP software integration.

Andrzej Goryca, Virgin Orbit's senior enterprise systems manager, who also presented at the MESA 2016 North American Conference along with Vecima's Little, noted that Virgin's goal is to "achieve the enterprise of 2030 by 2020. And we've determined that, to achieve this goal, all data should be digitally stored and correlated to create a digital thread [across our software systems]. The idea is to have our systems improve our operations' efficiencies as we scale up so that we don't have to [commensurately] scale up facilities and headcount."

Goryca said that working toward this goal led to the realization that we "need to have a vision of one user, one system—one application that ties everything together. We need the right solution to the right problem, which doesn't mean putting a machine everywhere. Put humans where they need to be and introduce systematic solutions only when and where they're needed."

With an ERP and PLM system already in place at Virgin Orbit when Goryca joined in early 2016, Goryca focused on selecting and quickly implementing a manufacturing execution system. The selection of a manufacturing execution system (MES) from iBaset was made by December 2016.

"We started implementation of the MES in late January 2017," Goryca said. "The MES' process planning capabilities were in place by May 2017, allowing us to convert eBOMs (electronic bills of materials) to mBOMs (manufacturing bills of materials) in the MES and create work orders. Today we have the MES's quality processes implemented as well as some integration between MES and ERP to automate processes behind the scenes."

Though a full, automated product lifecycle management (PLM) to MES connection is planned, Virgin Orbit currently pulls data from its PLM system as needed. "We're not sending information from the MES to the PLM yet," Goryca says. He added that most of the custom coding Virgin Orbit has done between the PLM and MES was due to the PLM system's requirements. "However, the middleware we chose for this task allowed us to do this coding ourselves," Goryca said, adding that the MES to ERP interfaces are "far less complex and do not require much custom coding."

As for achieving the one system that will connect all these applications for Virgin Orbit's users, Goryca said the data will be shared as needed [and as allowed] via the "system agnostic middleware" they are currently using to connect their software systems. "We will develop custom front end apps that talk to APIs to deliver a tailored user experience based on job function," he said.

A key aspect of these front-end apps will be their ability to support collaboration across job functions, according to Goryca. "We will leverage social app functions to supplement the data provided by the MES, ERP and PLM systems."