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World Leaders in Product Data Interoperability



Theorem's TPM Helps Detroit Diesel Division Automate CAD Translations

The MTU Division of Detroit Diesel is responsible for selling the engines produced by Detroit Diesel to manufacturers of off-highway vehicles. These off-road applications include military, marine, mining, and construction.

One of the tasks of the Engineering Sales and Support group within MTU is to provide its customers with the CAD data necessary for them to ascertain the dimensions of the engines so they can build the corresponding vehicle around it. What compounds the difficulty of this task is that these customers need this CAD data in numerous CAD formats, including CATIA, Pro/ENGINEER, and NX (Unigraphics), among others.

To make things more problematic is the fact that these files are often enormous in size, making them difficult to translate and exchange with customers in an easy-to-handle format. One such CAD translation would often tie up hardware resources at MTU for an entire day. Even though the customer just needs enough data to resolve form and fit issues, re-processing the original CAD data was a laborious and tedious task that tied up valuable computing resources and manpower.

Wellington Savage, a designer in Project Management for Engineering Sales and Support, MTU, Detroit Diesel, points out that another issue that must be dealt with on these translations is the removal of valuable Intellectual Property, a manufacturers' most valued asset. "Having data in a number of CAD formats, we needed a vehicle to translate that into something that would be accessible to our customer base and strip out any of the intellectual property. DaimlerChrysler and MTU as well as Detroit Diesel are very concerned about protecting intellectual property so we need to remove sensitive intellectual property out of the 3D models before we send them to our customers."

Automation: Key to Faster Turnaround Times

Savage says the tedious task of translating these CAD files lead to prohibitively long turnaround time for customers. "Because the data is used to manufacture the engine itself—the block, the turbo charger, the intake manifold, etc—there's a lot of detail in it so the file size becomes enormous," says Savage. "The customer doesn't need that amount of detail, so we take out as much out as we can and we're still left with a pretty large dataset."

The current turnaround time at MTU for getting this product data to customers is six to eight weeks and, according to Savage, “the customers aren’t happy” about that. “There’s a lot of room for improvement. A lot of constraints have been placed upon our group; we have to verify each component before we send it out so it involves assembling or re-assembling the configuration that the customer has ordered to make sure it is right.”

Another complication is the fact that MTU offer specific engine configurations to a variety of customers. While the company offers default engines, many customers want the engines customized to fit their specific needs. “Very seldom do I send out the same configuration so I have to have a database of all our components that the customer may require and be able to give that to the customer in a timely fashion in the format they need.”

Savage says that the goal of his department is to decrease the turnaround time for customer requests to 48 hours. To help in this effort, MTU brought in Theorem Solutions to help automate the process of CAD translations. Two years ago the company began working with Theorem Solutions to install the Theorem Process Manager (TPM), a process management and automation tool. TPM automates, manages, schedules and controls tasks or processes helping to eliminate manual intervention and monitoring.

“We started running translations through it, and we immediately saw the actual time savings the TPM product could afford us,” says Savage. “Hardware and software costs a lot of money. One of the biggest benefits was that TPM can run jobs while I’m not here. In the off hours, it takes full advantage of our CATIA or Pro/ENGINEER licenses so it was working well while we were sleeping.”

Bridging the Gap Between Business Cultures

Yet another challenge for MTU is dealing with the various business cultures of their customers. Manufacturers in the European Union (EU) were slower to adopt 3D CAD systems and have been historically very cautious about sharing 3D product data with those outside their corporate walls.

According to Savage, MTU has sent “dumb data” or neutral files (STEP, IGES) of the company’s engines to its customers in the Americas for years. “Our German counterparts are very touchy about IP. They are shocked with the data we sent out so they give us data in a shrink-wrap format, which our customer base found unacceptable,” says Savage. “I guess the biggest thing I like about Theorem is that they have been actively working with us and to come up with solutions that deal with the many different constraints that our counterparts from the EU have placed upon us.”

Faster, Off-Hours Translations Translate into Big Savings

MTU has realized significant time and manpower savings as a result of TPM. Previously MTU had two engineers working to complete these manual translations. "I would say we've saved 60% of the man-hours by using TPM," says Savage.

Currently MTU has TPM running on four workstations, one of which was acting as a server. A dedicated server, however, has been ordered to run the TPM system in the future. In addition to more computing horsepower, Savage says that others changes are coming that will lead to faster, more efficient CAD data translations.

"I think a lot of the advancements are going to come from the ability to truly deliver to customers—new or existing—and be able to process a file and turn around an engine in a format that they can open right away," says Savage. "In the past we've struggled with that because not only of the large file size and also because of the constraints that have been put in place by the MTU management. From a security standpoint, that's made it more difficult."

Despite the hurdles Savage sees changes being made corporate-wide that will vastly improve the company's ability to safely share product data with its customers in a timely fashion. "Our senior vice president's goal is to supply this data to customers over the Web through our corporate extranet. I definitely see a larger web-based access in the future, because it's getting more and more secure and the mindset is slowly changing among management," says Savage. "With technology, we're not that far off. I'm building a database of redundant parts or components, and once that's complete the turnaround time will significantly improve."

MTU looks forward to working with Theorem Solutions to expand the use of TPM into other departments. "There's a lot of functionality that we could take advantage of but we aren't yet," says Savage. Throughout the project, Savage credits the hard work and dedication of the Theorem Solutions team in getting the process up and running. "To Theorem's credit, they worked really hard to provide a solution that our customer base could digest. They really have gone out of their way to meet our needs and staying in contact with us to see where we want to take this to the next step."