

Leica Geosystems – Agriculture

This is about an outsourced design gone wrong, a new product launch and how it changed the way Leica Geosystems Agriculture completes its electronic designs.



Altium has completely changed the way we design our electronics. The integrated database libraries have streamlined our designs, allowing our engineers to just drag and drop components, pre-approved schematic symbols and footprints straight onto the schematic. The regular updates are also great. The new MCAD ECAD real-time collaboration technology means we can fit our boards first time, every time.

Scott Gemmell

Engineering Manager,
Leica Geosystems Agriculture

You've heard the disaster stories and the tales of those who have fallen before you, except you never thought that it would ever happen to you. But then one day it does: and there you are, staring at a mess of a PCB wondering, "what was the contractor thinking?"

The story may seem familiar enough, but for Leica Geosystems this was no lunchtime gossip. During the development of the Leica mojoRTK (an auto-steer guidance system for precision farming applications) the company outsourced one of its boards to a contractor. It was a decision the company soon regretted. The board was returned behind schedule and failed to meet any of its design and manufacturing requirements. Left with a defunct PCB and a looming product launch, Leica Geosystems had to ask itself one question: risk going back to the contractor, or overhaul the design and complete it in-house?

Challenge or unexpected opportunity?

It didn't take long for Scott Gemmell, Engineering Manager at Leica Geosystems Agriculture to make up his mind. The motto at Leica Geosystems is "when it has to be right," so it was clear to Scott that this design had to be completed in-house. However, the process was not going to be easy. The engineers needed to recapture the board design, translate files, and carefully recreate the PCB.

Scott remembers the project clearly:

"It was a major challenge. The product was at a pre-production stage, but it was in no condition to be manufactured. We had to recapture the entire design and completely rearrange it so it could be reliably manufactured and sent to market. This was our flagship product, so it had to be right."

However, challenges sometimes offer unexpected opportunities. Scott's team had recently upgraded to Altium Designer and was starting to make the most of its latest features – features that completely changed the team's design methodology.

The biggest change: integrated database libraries. These allowed Scott and his team of engineers to link directly to inventory and components stored

in their external databases. Using this feature, engineers could choose and place components from various databases, while creating a library specific to the project. They could also easily update and manage these databases from within their own design space.

"We can just drag and drop components, pre-approved schematic symbols and footprints straight onto the schematic. Using this feature and others in Altium Designer, we were able to review our design processes, change our philosophy and develop a much more lean development strategy," comments Scott.

Integrated libraries also helped Scott and his team to source and cost components. "We have heavy production cycles, so we use integrated libraries to cost our products and reduce our product turn-around time."

It was time to stop guessing and close that revision loop

During product development, the design team would often suffer through a number of iterations as the PCB and product enclosures were brought together. The typically sequential process consisted of several clumsy, time consuming revisions. But with Altium's new MCAD-ECAD collaboration technology, Scott and his team could reduce these revisions. The team could finally work more closely with its industrial design team by using Altium's IGES format and STEP format files import-export function. This opened up new data sharing capabilities and allowed the electronics and mechanical teams to collaborate on the final design.

This, alongside Altium's 3D visualization engine, helped build confidence around the design of the Leica mojoRTK. Scott has seen a big difference in his team's prototypes and says that the feature allows them to accurately visualize the PCB in its final form.

"The 3D interface is really speeding up the development phase and increasing our confidence in our prototypes. It just gives us that final assurance before we commit to any serious money."



The only constant is change

Using these Altium features, Leica Geosystems completed the mojoRTK product and released it to the market in January 2008. The product has gone on to be implemented across the agriculture industry.

However, as with any successful product launch, there will always be opportunities to update the product or expand the product range. For example, Scott's team is currently moving multiple PCBs to a flatter, more economic design to capitalize on new market opportunities.

"We are moving multiple PCBs across onto a flat design. We've been able to generate a quick design by using Altium's signal harness feature," comments Scott.

Scott and his team also use Altium's new 3D MCAD-ECAD real-time dynamic clearance checking between the mechanical design and the PCB. And coupled with Altium's unified design environment, Scott and his team can make changes on the spot knowing that they will be reflected throughout the schematic and board designs.

"It used to take several revisions before we could finalise electronics and their mechanicals – now we only have one design cycle, and it fits perfectly."

This is just one example of the design improvements experienced by Scott's team.

Remaining up-to-date with the latest Altium technology has also improved efficiency and overall performance for the team.

"Since staying ahead of the changes in technology and using the latest features in Altium Designer, we've seen productivity and output increase by 25%. Altium's regular updates have also made significant design improvements. The team has found the features easy to learn and adopt, and we are eager to see more."

About Leica Geosystems – Agriculture

When it has to be right – Leica Geosystems. For more information about the Leica mojoRTK auto-steer platform, or Leica Geosystems agriculture solutions, visit www.mojoRTK.com

Altium's solutions implemented in the precision agriculture industry

About Altium

Altium Limited (ASX:ALU) provides world-leading unified design solutions that break down the barriers to innovation, and help organisations easily harness the latest devices and technologies, to create their next generation of electronic products.

Altium's solutions are unique because they unify the separate processes of electronics design, all within a single electronics design environment, working off a single data model, which links all the aspects of electronics product design into one process.

Founded in 1985, Altium has headquarters in Sydney, Australia, sales offices in the United States, Europe, Japan, China, and resellers in all other major markets. For more information, please visit www.altium.com