

CUSTOMER SUCCESS STORY

ESTERLINE - DESIGN INTEGRATION GIVES ESTERLINE MORE CONTROL OVER AEROSPACE AND MILITARY SYSTEM REQUIREMENTS



The Problem

Aerospace and military systems require a special form of innovation. Engineers seek to base their designs on familiar technology already proven in rigorous environments, yet almost every application also requires some degree of redesign to satisfy specific new or extended requirements.

At Esterline Control Systems, Mason, the engineers developing their various product lines face that very challenge every day.

“ Altium Designer was the synergetic catalyst that helped transform Esterline Control Systems, MASON Engineering. ”

Jorge J. Sanguinetti, MSEE, Director of R&D and Systems Engineering, Esterline

ECS, Mason develops flight controllers and other various products for aerospace and military applications systems. These items generally run in small lots — think 200 helicopters or perhaps 300 airplanes — and thus can't support a full-custom design approach. Instead, engineers modify their existing standard product configurations, already well qualified for quality and reliability, to the needs of each customer.

In this process, ECS, Mason electrical and mechanical engineers iterate extensively on the design, passing design data among teams and tools to meet the many constraints of the application. Unfortunately, the electrical design suite originally based on OrCAD workstations was too inefficient.

Importing and exporting design files to simulation, 3D modeling and other analysis tools required a manual process that was slow and error-prone. Lack of integrated simulation and program management tools also hampered design and discouraged exploration of design alternatives.

Upon receiving a demo of Altium Designer, the ECS, Mason Engineering Design Team saw a tool that could enhance their creativity instead of restraining it.

The Solution

At first, Altium Designer was used to streamline the schematic capture, simulation and board design processes. Each of these tools has provided an improvement in its own right. But the larger productivity gains come through the integration of all the tools in one design environment.

“We definitely have a more integrated design process; in fact, it's now a unified design process” says Jorge J. Sanguinetti, Director of R&D and Systems Engineering for the ECS, MASON product group.

In one example, the engineers found the centralized components libraries not just extensive, but also easy to extend. “The controllers for radically different aircraft are very similar, electronically speaking,” explains Sanguinetti. “We've created libraries of components that we have simulated, validated and saved for future use. By not recreating the same device, we save time and reduce risks in the projects.” With help from the built-in wizard, library customization also helps the company stay compliant with the different documentation guidelines of the markets they serve.

The teams also found the integration with mechanical design to be very helpful. “It is crucial that we do frequent checks,” says Sanguinetti. “The mechanical capabilities are very good and the export process to Solid-Works works great.”

In fact, Altium Designer works as a complete electrical design solution for Esterline Control Systems, Mason by integrating seamlessly with all the analysis and product lifecycle management (PLM) applications:

- SolidWorks and CATIA for 3D Modeling and analysis;
- COSMOS for vibrational analysis; and
- Infor PLM system for the documentation and manufacturing process.

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Integration from electrical design to mechanical design and manufacturing reduces the time and cost to produce new designs by as much as 50%, and helps to streamline the process in other ways.

For example, being able to employ simulation extensively makes it easier to meet DO-254 documentation requirements. Unification also helps ensure designs are continuously in sync, improving communication among the company and its customers, and helping to prevent human error within the projects.

The Results

ECS, Mason is able to meet the widely varying requirements of its customers with a relatively modest number of seats (six). The company is doing it faster as well: according to Sanguinetti, "design turnaround is a market differentiator for us, and projects that would have taken eight weeks before are now a four-week proposition." Faster design turns also encourages the engineers to experiment more and find innovative ways to meet their customer's appetites for new and innovative features.

At the same time, Altium Designer features and integration provide virtual "elimination of 'toolset' induced errors" according to him. As a result, they report these benefits as well:

- Reducing risks by leveraging "lessonslearned";
- Higher end-product reliability; and
- Generally shorter qualification processes.

Overall, Esterline Control Systems, Mason has found that using the broad suite of Altium Designer tools has lowered costs. "Usability is more than the sum of the parts," says Sanguinetti. "With just one environment, one software suite designed along the same requirements, there is no way you can't save time."

Product Information

The Mason Engineering Design Team at Esterline Control Systems develops active and passive inceptors and control systems custom designed for a variety of standard configurations to satisfy specific customer requirements. They are used in such iconic application as the Blackhawk helicopters, F-18 fighter, C-5 transport planes, and Gulfstream, Embraer and Boeing aircraft.

About Esterline

Esterline Control Systems, Mason offers world-class aerospace components, manned, unmanned and robotic control devices and associated sub-systems since 1942. The company is known for thoroughly and elegantly engineered designs, integrating human factors, DO-178B embedded software, multiple interfaces, power conservation designs, environmental ruggedness, weight savings, maintainability, and more. With more types and styles than any other manufacturer, ECS, Mason customdesigned CCD(s) and sub-systems offer unparalleled performance for today's advanced aircraft cockpits in civilian and military vehicles: Boeing (C-130, B737, Bell Boeing V-22) Gulfstream (G150, G250, G280, G5XX, G600), Eurocopter (EC 175, EC125), Sikorsky UH-60, and more.

ABOUT ALTIUM

Altium Limited (ASX:ALU) creates electronics design software. Altium's unified electronics design environment links all aspects of electronics product design in a single application that is priced as affordable as possible. This enables electronics designers to innovate, harness the latest devices and technologies, manage their projects across broad design 'ecosystems', and create connected, intelligent designs.

Founded in 1985, Altium has offices in San Diego, Sydney, Karlsruhe, Shanghai, Tokyo, Kiev, with value added resellers worldwide. For more information, visit www.altium.com. You can also follow and engage with Altium via [Facebook](#), [Twitter](#) and [YouTube](#).