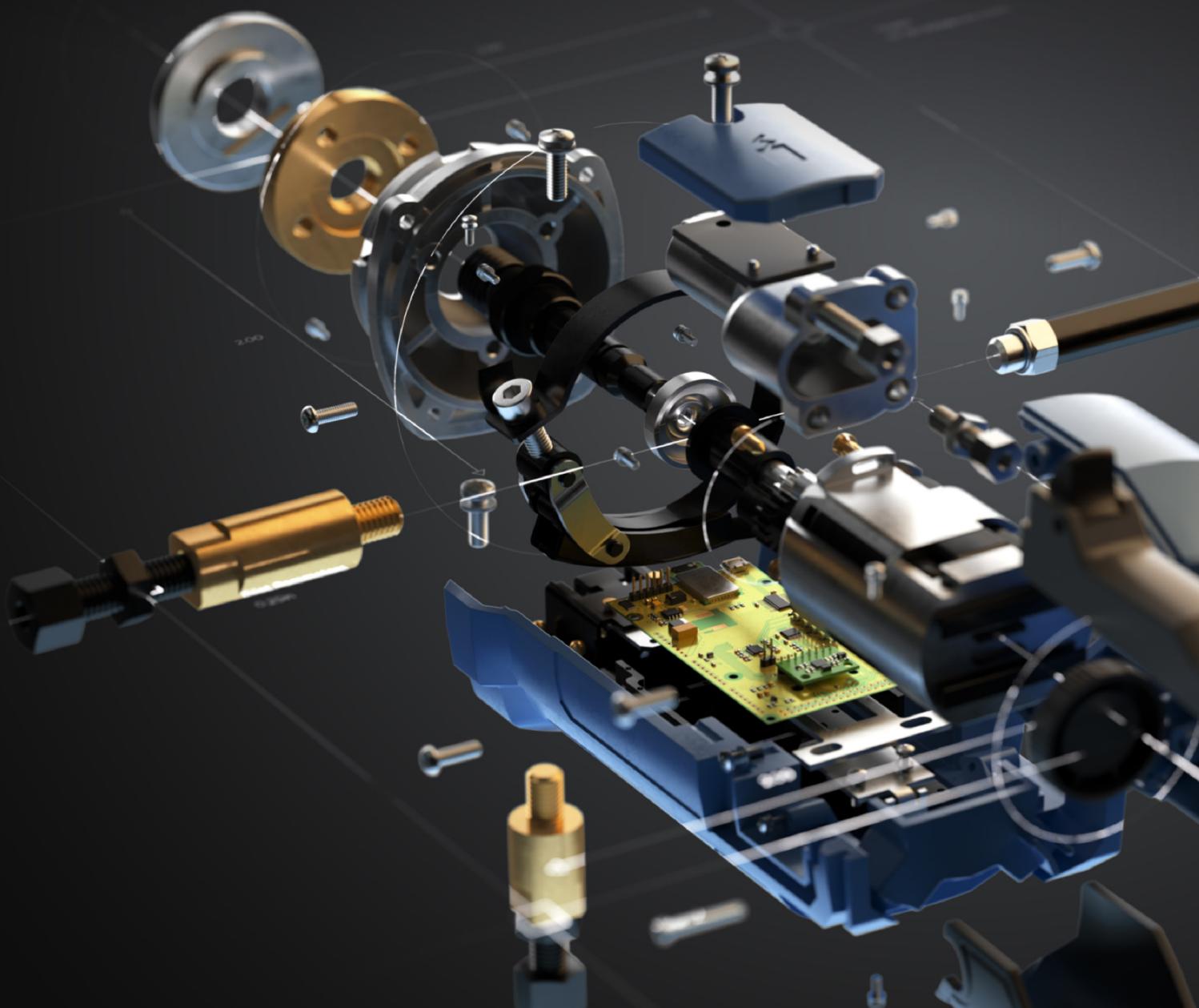




ALTIUM 365

WHITEPAPER

Collaborative Design for MCAD and PCB Designers

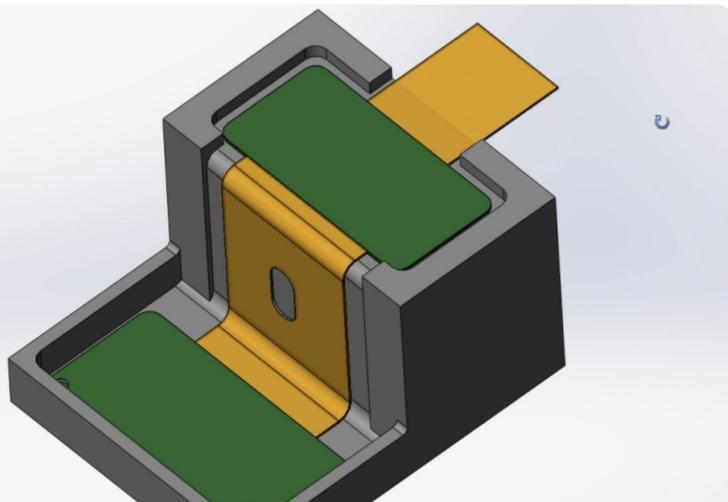
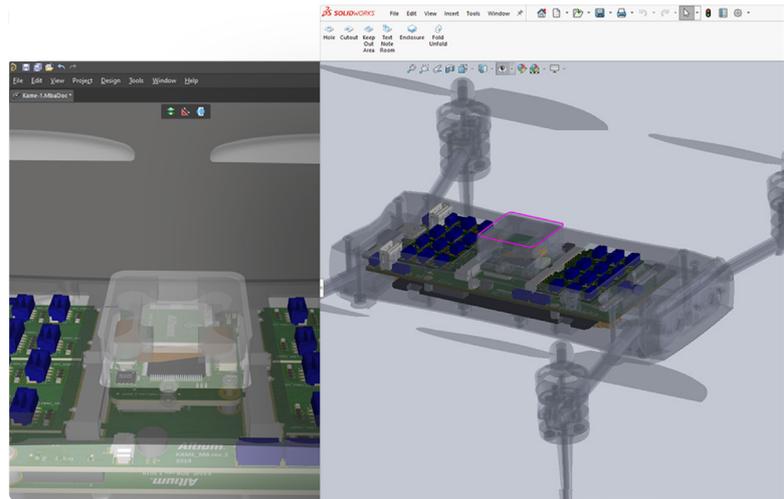


Create better products by streamlining collaboration between PCB and mechanical designers

Electromechanical Products

Do you want to design better products? Effective and efficient collaboration between mechanical and electrical design is crucial.

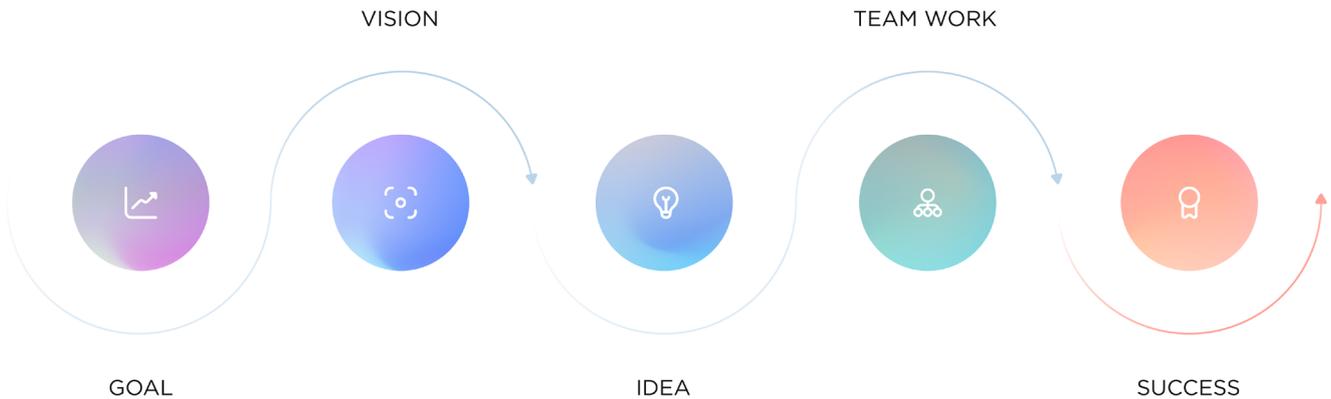
This whitepaper is for executives and designers whose companies design electromechanical products with printed circuit boards (PCBs) and who are looking for ways to increase the quality of their designs while eliminating wasted effort.



Mechanical and PCB designers share in the success of the final design. The problem is how do they work effectively together. It is like they speak different languages; well, they do. And the data exchange is not easy; it is time-consuming and, in the end, has lots of problems.

The solution is to enable better collaboration.

The Pressure is On



When did your management team last say, “take your time with that design”? That, of course, never happens. Companies are constantly under time-to-market pressures. Better, faster, cheaper is the mantra.

The lack of communication and collaboration between the two teams can lead to errors, delays, and increased costs.

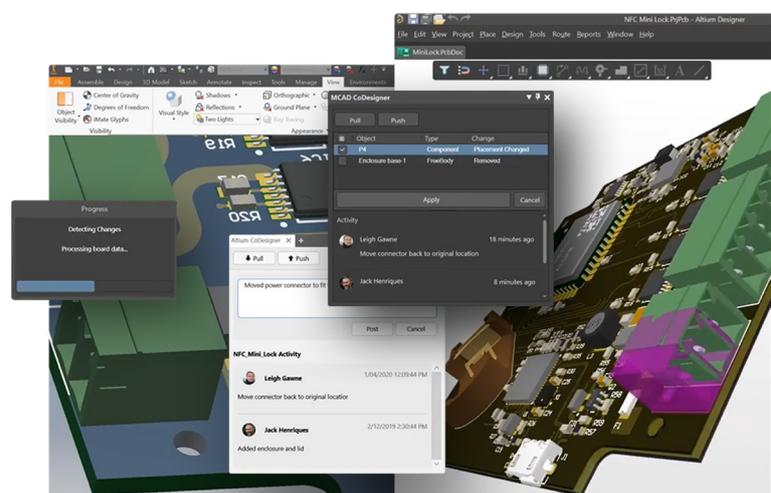
To compete, companies want the best designs of the highest quality while being quick to market. Inefficient design practices erode all of these. The mechanical designer has difficulties collaborating with the electrical designer responsible for the PCB. Yet, this is a critical interface. Each designer speaks their own language, and of course, they use different tools.

The key is enabling designers from both sides to work more efficiently, reducing or eliminating the tasks that waste time while participating in collaborative design so that each side can perform at their peak in order to design the best products.

Workflows Between PCB and Mechanical Designers are Inefficient

For most companies, the workflows are much worse than just inefficient. Inefficient design flows waste the precious time of both your electrical and mechanical designers. And still, with all of this investment of time, the results are non-optimized designs because they focus on the basics rather than improving the overall design.

Often, the communication is informal, perhaps in an email. For instance, the mechanical designer changes the mechanical enclosure and then communicates the change details in an email to the PCB designer, requesting a modification of the PCB to fit the enclosure. A better method is transferring data with formats like DXF and STEP, which are time-consuming and not collaborative. IDF and IDX are more advanced but leave a lot to be desired when it comes to enabling true collaboration.



These file exchange methods waste valuable design time for both sides and yet still do not create an environment for collaboration.

What If?

What if each designer could work solely in their native tool (PCB or MCAD) and initiate a data transfer on demand? Which lands the data into their counterpart's native design tool. And what if the changes were highlighted?

No intermediate file formats. No time was wasted setting up a transfer.

A truly collaborative environment could be enabled between the mechanical designer and the PCB designer, where there is no time wasted transferring data so that designers can focus on creating the best designs for the most competitive products.

Introducing Altium MCAD CoDesigner

Altium MCAD CoDesigner is a product for mechanical designers that is used with Altium Designer, a world-class PCB design tool.

The Altium solution unites the mechanical and PCB designers into a collaborative workspace encompassing their native design tools.

The Altium Collaborative Workspace for Mechanical & PCB Design



MCAD CoDesigner has a plug-in for the most popular mechanical CAD systems. Using this collaborative solution, the PCB design arrives directly in the native MCAD workspace. And your mechanical design can be sent to your PCB counterpart just as easily.



True ECAD-MCAD Co-design

One of its most impressive features is its ability to automatically convert design data between electrical and mechanical CADs. This allows for seamless collaboration between mechanical and electrical design teams, ensuring that both aspects of the design are accurately represented. In addition, real-time synchronization of design changes between ECAD and MCAD ensures that any modifications made by one team are immediately reflected in the other, facilitating efficient collaboration and reducing the risk of errors.

Fit, Form, and Function

With its advanced capabilities, MCAD CoDesigner is able to transfer detailed copper geometry into MCAD for thermal, vibration, and other mechanical analyses. This allows for a comprehensive understanding of how the board will perform in various mechanical scenarios. Additionally, MCAD CoDesigner enables designers to achieve a precise board shape for enclosures of any complexity, ensuring a perfect fit within the product. Another key feature of MCAD CoDesigner is its ability to transfer flex and rigid-flex board designs into MCAD, ensuring an accurate fit and optimal performance.

Digital Twin on One Platform

MCAD CoDesigner's innovative features allow designers to visualize and version-control both mechanical and electrical designs in one workspace, providing a comprehensive view of the entire design process. MCAD CoDesigner also enables the conduct and documentation of design reviews for both mechanical and electrical design, ensuring that all aspects of the design are thoroughly analyzed and optimized. Additionally, it provides visibility to non-engineering stakeholders, such as project managers and executives, facilitating improved collaboration, communication throughout the design process, improving design efficiency, and reducing time-to-market.

Designs are accomplished faster with better quality and enable both the mechanical and electrical designers to achieve their goals.

For the Mechanical Designer



It's almost like when people use email to communicate. The tone of the other person is missing, and critical information is missing with that. Before, we used 2D DXFs to exchange info, and were still missing so much key information - that's been improved now, dramatically. We can work together and understand each other's needs so much better now.

Laine McNeil

Senior Mechanical Designer, Quantel Laser



When an update is received from their PCB counterpart, a preview of the changes are presented to the mechanical designer. The changes are presented graphically and also as a list in their native MCAD tool.

In addition, MCAD CoDesigner will provide warnings of possible problems. For example, potential problems with the PCB definition on the MCAD side or potential conflicts from the PCB design will be highlighted.

Mechanical designers have a new degree of control and input over the PCB design process while using their preferred MCAD solution. Designers can easily change component placement, board shape, and mounting holes and push these changes to their electrical counterpart.

Open accurate board assemblies directly inside your mechanical workspace, complete with copper information, to get a more complete picture of the finished product design.

And when it comes to CAE, MCAD CoDesigner provides all the PCB and mechanical data required for complete analysis from thermal to mechanical simulations, enabling you to develop a more intelligent design.

Skip the hassles of importing/exporting intermediate file formats to determine form, fit, and function. Easily confirm the board design without ever leaving your existing mechanical workflow. And have accurate PCB data with your mechanical design for CAE analysis.

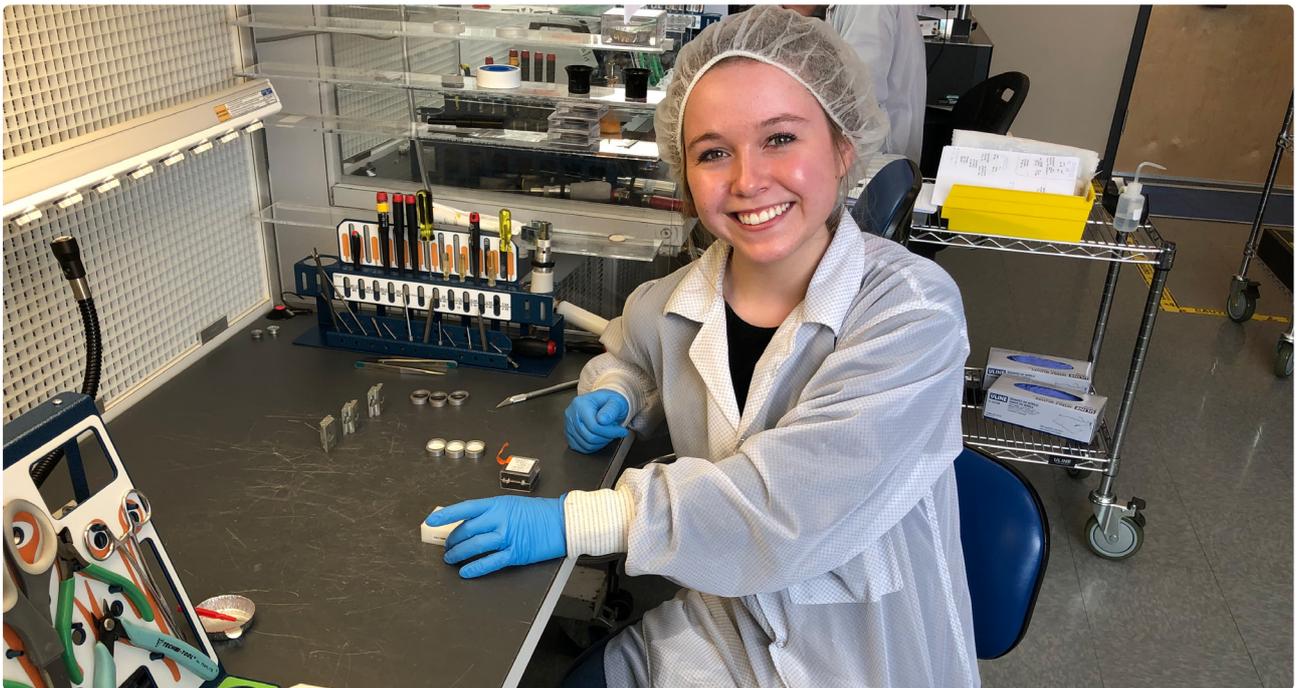
For the PCB Designer



With the CoDesigner capability, we can detect potential problems like we couldn't before. We can see silkscreens, hidden vias, make sure polarities are correct, where copper traces are—our models are now 100% complete, including overlay and copper. I don't have to worry about board shapes, or connector placements, even in very tight spaces. With the CoDesigner capability, we have the confidence that everything will fit exactly as planned when it goes to manufacturing.

Jeremie Waller

Senior Electrical Engineer, Quantel Laser



The initial board design is started in Altium Designer. The design is transferred to the mechanical designer with a single button push. And the mechanical designer will be notified of a new board design.

After that, either design side can initiate a data transfer.

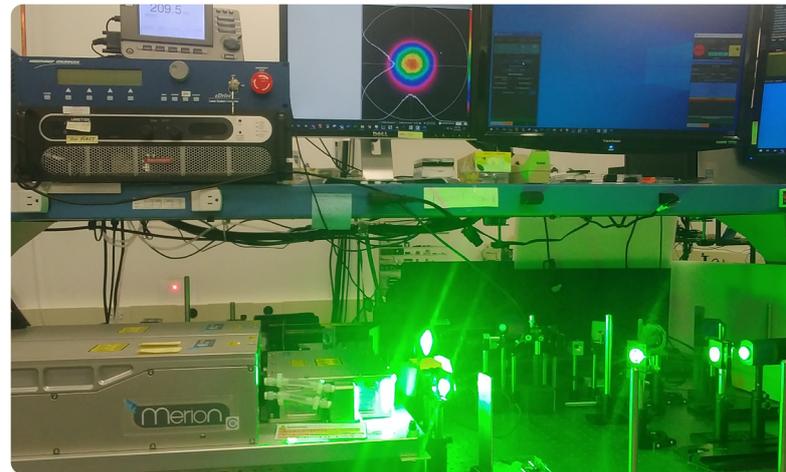
When using Altium Designer, critical physical board design data is transferred to your mechanical counterpart seamlessly and effortlessly. This data includes the PCB shape definition with the board outline, mounting holes, cutouts, keep outs, enclosure, and placement of critical electrical components.

Accurate simulations can be performed for thermal, electromagnetic, and others, with complete design information transferred to the mechanical designer.

When used with MCAD CoDesigner, Altium Designer empowers you to focus on creating the best designs in collaboration with your mechanical counterpart.

Simplified & Enhanced Design Process

Mechanical and PCB designers work in different worlds using different languages, which is a problem that degrades the design process. The degradation might be extended design time, or there could be undetected errors until later, but most certainly, the design is not as good as it could be.



With the MCAD CoDesigner capability, we can detect potential problems like we couldn't before. We can see silkscreens, hidden vias, make sure polarities are correct, where copper traces are—our models are now 100% complete, including overlay and copper. I don't have to worry about board shapes, or connector placements, even in very tight spaces. With the CoDesigner capability, we have the confidence that everything will fit exactly as planned when it goes to manufacturing.

Jeremie Waller

Senior Electrical Engineer, Quantel Laser

Ready to Learn More?



Using Altium 365 and CoDesigner has been a quantum leap in our design process. And CoDesigner is right there inside Altium Designer — I can't imagine not using it.

Jeremie Waller

Senior Electrical Engineer, Quantel Laser

Create better products and get to market sooner while saving precious design resources and improving quality using Altium's collaborative design environment for mechanical and PCB designers.

Hear directly from one of our customers, Quantel Lasers. Watch this video where the PCB and mechanical designers discuss how their design process has been transformed using MCAD CoDesigner and how they are creating better products now.

[Watch Quantel Video](#)



Then take the next step by visiting this page which contains more information and instructions for downloading a free trial.

[Learn More & Free Trial](#)