Start a Workflow Revolution

Computer-aided design (CAD) software modernized drafting, bringing it into the digital age. But while it increased productivity and merged the roles of draftsmen, designers and engineers, it did little to empower those outside these specialized fields. Software for other fields however, has enabled a wide range of people to do things previously limited to a small group of experts. With a word processor and a self-publishing tool, almost anyone can be an author. Instagram lets amateur photographers share their photos with the world. Similarly, 3-D modeling software should be so easy to learn that anyone can mock up an idea.

John Graham, Senior Product Marketing Manager, ANSYS SpaceClaim

"You shouldn't have to drag in an expert just to suggest design changes," says Frank DeSimone, senior director of ANSYS' Software Development Geometry business unit.

Ideally, design software should be built on the democratization of geometry, so that every idea can be mocked up in a professional format. The marketing manager should be able to add a decal, for example, and the engineer should be able to modify a flange so it can support more weight. A limited pool of experts shouldn't hold up a company when the whole firm could innovate on the fly. With the right 3-D modeling software, essential elements remain fixed, while others can be edited.

Beware of Bottlenecks

The traditional design bottleneck is a function of overly complicated 3-D modeling software. Feature trees of traditional CAD programs, in particular, are often times a barrier for those who aren't CAD specialists. By tying aspects of a design together in obscure ways, feature trees make traditional models fragile. It's easy to accidentally break a model when the relationships between features are obscure. Experts sometimes avoid making changes in front of others, because a simple change could break a model and ruin weeks of work.

"It's not just annoying when a model falls apart. It's embarrassing," DeSimone says. "It goes to the core of who you are. It becomes a creeping fear that stops you from being open about your design." Users become less willing to make changes, and colleagues wait days to see if a small change is even worth pursuing.

Waiting for a designer to find time to make adjustments can be costly. Long delays can give competitors the opportunity to get to market first and can cause you to miss critical opportunities. With the right software, fear of failure is eliminated. Ideas can be quickly mocked up in a meeting, so all possibilities can be debated by the team in the moment. When all the key players can weigh in early in the design process, considerable time and money are saved on ideas that might otherwise have been tied up in the CAD expert's project queue for weeks before critical issues

became apparent. With less time lost to poor ideas, companies can gain a competitive edge.

Avoid Frivolous Features

Great 3-D modeling software shouldn't require lengthy, expensive training seminars. Training should take days, not weeks, and be available anytime. Look for a program that pays careful consideration to the user interface. Superfluous ribbons, tool guides or panels around the edges of the screen are likely to confuse new users. The software should focus on the model itself, so you can work fullscreen. A straightforward approach to 3-D design encourages everyone to create and dream big.

Jakob Nielsen, one of the fathers of modern usability theory and co-founder of the Nielsen Norman Group, believes simplicity may be the single most important user experience guideline. According to Nielsen, users are confused by elaborate choices. "The less stuff you show users, the less they'll have to scan and comprehend, and the better the odds that they'll pick the correct option at any given stage," he writes in a blog post.

"You shouldn't have to drag in an expert just to suggest design changes"

Frank DeSimone
Senior director of ANSYS' Software Development Geometry business unit

Good 3-D modeling software also prioritizes previews, making them a routine operation after most changes. It should ensure that if a change doesn't work out, there's an easy way to revert to an earlier iteration of the model.

"I can't emphasize enough how important it is to model without restriction — that's where the big deal comes in," says Jacob Grainger, owner of Alpha Grainger, a Massachusetts company that uses 3-D modeling software to make machine parts.

Prioritize Flexibility

Designers have a number of options when saving a model. Make sure your 3-D modeling software is designed with compatibility in mind, so you never have to turn a customer away because they don't use the same type of file.

Many 3-D modeling software platforms won't work with other file formats, like 2-D files and facets, limiting users. Be sure to select software that allows you to work with any geometry, no matter where it comes from. The program should also be able to easily reverse engineer real-world objects, so that old parts can be used as a basis for new designs. The platform should make the process of converting 2-D files to 3-D fast and easy. The best software is platform and file-format neutral. The user should be able to choose based on personal preferences. Technology should never dictate workflow.

The software should make it easy to share design ideas with clients, too, even if they don't own any CAD tools. Some programs feature browser-based viewers, so that anyone can open and view models without downloading files.

Liberate Creativity
Great technology eases the flow and evolution of ideas. ANSYS SpaceClaim, for example, lets everyone contribute to product design without the fear of breaking the model.

Training is quick and easy, too. “Within two days of actually implementing ANSYS SpaceClaim, we were up and running, and making very, very complex models,” says Gene Garbaccio, chief operations officer of 3Discovered. His engineers didn’t need to go offsite for training, either. They were ready to start modeling after a few tutorials, included with the software.

That’s one reason why ANSYS SpaceClaim software works well for any challenge, be it designing a new product, mocking up a porch, or adding a screw hole. It makes creating and modifying designs straightforward, so there’s no need to wait for a CAD expert to get the job done.

ANSYS, Inc.
Southpointe
2600 ANSYS Drive
Canonsburg, PA 15317
U.S.A.
724.746.3304
ansysinfo@ansys.com

If you’ve ever seen a rocket launch, flown on an airplane, driven a car, used a computer, touched a mobile device, crossed a bridge or put on wearable technology, chances are you’ve used a product where ANSYS software played a critical role in its creation. ANSYS is the global leader in engineering simulation. We help the world’s most innovative companies deliver radically better products to their customers. By offering the best and broadest portfolio of engineering simulation software, we help them solve the most complex design challenges and engineer products limited only by imagination.
Visit www.ansys.com for more information.