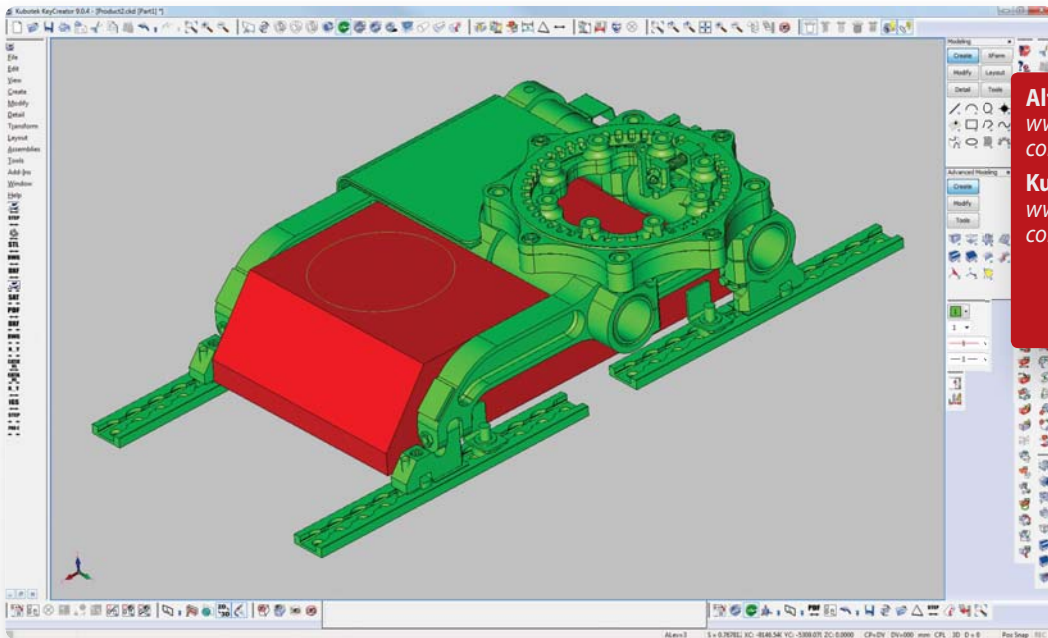


## Direct modeler, high-fidelity translator helps build aircraft audio equipment



Alto Aviation,  
[www.altoaviation.com](http://www.altoaviation.com)

Kubotek USA,  
[www.kubotekusa.com](http://www.kubotekusa.com)

Circle 406

A KeyCreator model shows where the subwoofer (red area) will sit in a seat frame.

Manufacturer **Alto Aviation** in Leominster, Mass., uses a direct modeler to design audio equipment for corporate aircraft. The equipment must often fit in such small spaces, including seat frames. Seat-frame models typically come in native Catia V5 format. The models are translated via KeyCreator software from **Kubotek USA**, Marlborough, Mass., which also provides direct modeling.

"KeyCreator lets us quickly change almost any aspect of geometry without worrying about a history tree," says Alto Senior Engineer Jim Gutterman. "In addition, the translators flawlessly import and export Catia V5 files, letting us go back and forth with customers until we get a final design."

Gutterman creates the initial enclosure volume in a file translated in KeyCreator from the customer's geometry. "I add details and convert the single file into a multiple-file assembly," he says.

The customer then accepts the design or sends a new model with additional parts. This process repeats until Alto has something that works.

"Translation accuracy is critical because it would be a disaster if errors crept in during repeated cycles," says Gutterman. "Fortunately, Catia translators are accurate. In fact, we have never had a translation error."

A more-detailed model is created after customer approval. "At this stage, the last thing I need is a layer of abstraction between me and the geometry," says Gutterman. "It's much faster to work directly with the geometry. The software lets me, for instance, quickly slice off portions of the enclosure and add flanges to make the cover, then shell the rest of the volume to convert it into an enclosure. Adding various components and assemblies completes the audio system."

The software lets users quickly edit geometry without worrying about how the model was parametrically defined. "For example, speaker drivers typically require a grille — a piece of sheet metal with a series of punched-out quarter or half-inch holes," says Gutterman. "The pattern has one hole in the middle and the rest in concentric circles. KeyCreator lets me copy a part with this pattern into the enclosure, position it where the speaker will be, trim the material, and combine it with the surrounding material. These steps would be much more difficult in a history-based system. The software recognizes holes as features, so pointing to one hole selects all of them, letting me change their diameter or perform other edits on all of them at once." **MD**