Boeing Announces Agreement to Commercialize Software

The Boeing Company (NYSE: BA) has signed an agreement with Unigraphics Solutions Inc. to commercialize the Boeing Parametric Composite Knowledge System (PACKS).

The agreement grants Unigraphics Solutions (NYSE: UGS) the right to enhance the Boeing-patented process with additional improvements, and to exclusively market and sell PACKS software. The tool will become the core of a new composite module that will be integrated with the Unigraphics high-end CAD/CAM/CAE application.

"PACKS provides design consistency and embedded knowledge capturing proven engineering practice," said John Coyle, Director of Lean Engineering, Boeing Military Aircraft and Missile Systems. "Unigraphics Solutions will combine this knowledge with their robust modeling system."

"Unigraphics Solutions' technical expertise in the design, development and integration of CAD tools and Boeing's composites expertise make this relationship a win-win for both," Coyle added.

PACKS was developed by Boeing as an affordability initiative to reduce the design cost of structural composites by at least 50 percent. Developing links to manufacturing early in the design cycle exceeded the goals of the initiative. Studies conducted by Boeing have found that promotion of concurrent engineering improves quality while reducing cost and time to release.

Some of the key features of PACKS include:

- user embedded transition rules
- auto connectivity (employs engineering design rules that will join plies from different thickness regions throughout the part)
- auto ply extensions
- auto cross-sections and ply tables
- weight and cost reports
- ply sequence and dash number tracking
- exploded view of each ply in sequence
- splice visualization

The tool's versatility allows it to be customized to fit individual product needs or locked-in to ensure consistency throughout the design of the entire vehicle and/or subsystem.

"Unigraphics Solutions' new composite module embodying the Boeing PACKS will be effective for any composite structure, aerospace and non-aerospace," said George Peters, Director, Aerospace Region at UGS. "And since the process is generic, it applies to a wide variety of applications. Savings metrics are directly proportional to part difficulty; the greater the part thickness and complexity, the greater the savings. Future enhancements of the composite module will take advantage of Knowledge Based Engineering and include a flattener, laser projection and links to Finite Element Analysis software."

Peters added that aerospace, automotive, boating, and other industries dealing with structural laminates will soon realize that they can afford to design in composites and create optimal high quality parts with the consistency that the UG Composite Module offers.

"The PACKS software leads the way in composite design efficiency at Boeing," Coyle said. "PACKS has already achieved 60 percent or greater cost and cycle time reduction on multiple production and prototype development programs."

A full discussion of the actual application of PACKS can be obtained from the AIAA technical paper AIAA -2000-1478.

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