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THE COMPLETE COMPUTING RESOURCE FOR ENGINEERS

Solid Edge V8 Reviewed

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Mark Clarkson

Although Solid Edge's feature set has filled out considerably in the last four years, Unigraphics Solutions continues to add major functionality to its mid-range 3D solid CAD program. Launched in mid-March and available for purchase in mid-April, Solid Edge V8 incorporates more than 350 enhancements and introduces abundant new functionality, including the much appreciated multiple Undo and Redo in the Part module and the direct import of Pro/E solids files.

All of Solid Edge's environments—assembly, drafting, part, plastics, tubing, and sheet metal—have been enhanced. For example, compared to earlier versions Solid Edge V8 has a better BOM (bill of materials) generation capability, and the Hole command is much improved. Solid Edge V8's lofting operations now support an unlimited number of cross sections and guide curves, while sweeping now allows nontangent paths and section anywhere along the path.

Version 8 is the eighth major release of Solid Edge in four years. When I reviewed Solid Edge 7 (***DE***, *July '99*) I ate some crow and acknowledged I had been wrong by declaring version 6 an "officially mature" product some five months earlier. While I cannot now say for certain that this is the case, it seems that with all the new stuff in Solid Edge V8 the design team at Unigraphics is intent on giving me the bird to finish off.

THE EDGEBAR TOOL

In terms of user interface, I'd say that, all in all, users of previous versions of Solid Edge will still feel right at home with V8. But that's not to say that things haven't changed.

One of the first new features you'll notice in Solid Edge V8 is the EdgeBar tool, a new, tabbed window that runs down the side of your screen. Depending on the environment, the EdgeBar tool consolidates many commonly used interface elements. With it, you access feature, part, and symbol libraries (drag-and-drop); layers; the feature and part pathfinder trees; and so forth. You can tear individual tabs off (albeit awkwardly) to make them into floating palettes, or close the EdgeBar altogether to free up screen real estate.

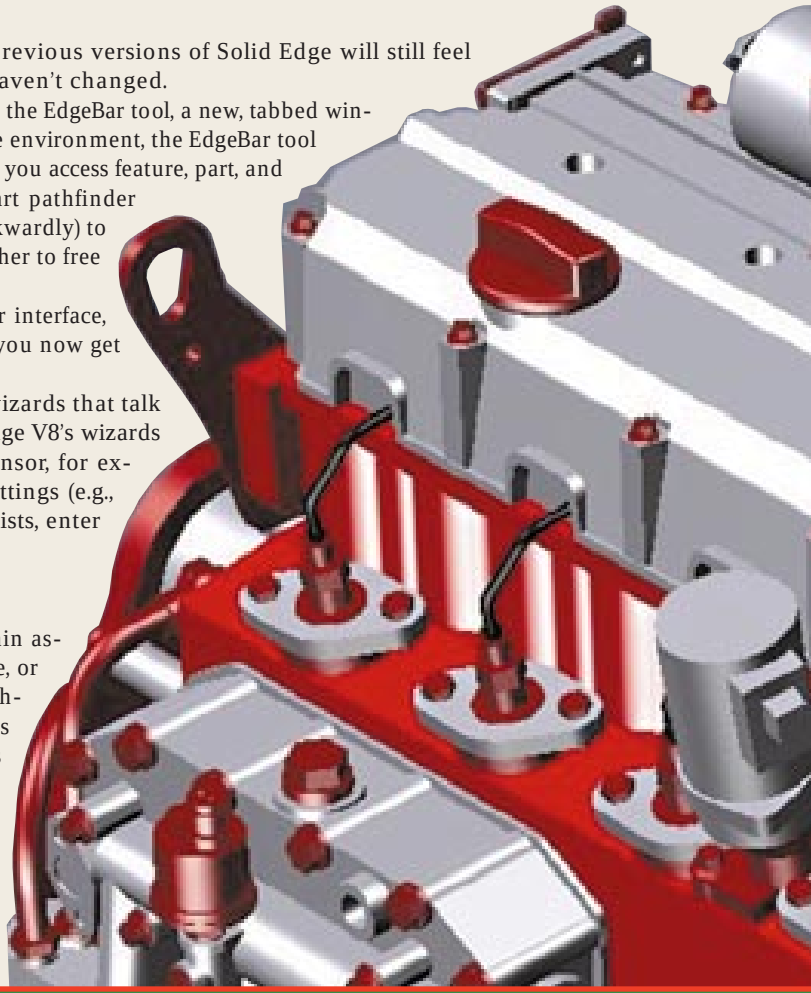
You'll notice several little additions to the Solid Edge user interface, as well. When your cursor hesitates over a part, for example, you now get a small ToolTip-type pop-up displaying that part's name.

Solid Edge V8 has more wizards than ever but, unlike wizards that talk down to you and add keystrokes and mouse clicks, Solid Edge V8's wizards actually streamline your workflow. To make a variable sensor, for example, you select a variable from a table, select a few settings (e.g., "horizontal range" and "is greater than") from drop-down lists, enter your values, and you're done.

NEW INTERPART ASSOCIATIVITY

Solid Edge has long possessed associative relationships within assemblies: parts within an assembly can be mated, face-to-face, or set to maintain a particular distance from or angle to each other, or to match the number or placement of features such as holes. You have also been able to build one part using faces and features from other parts as construction geometry, via the interpart copy command. But the interpart copy relationship was not associative.

Solid Edge V8 changes this: interpart copies can now be associative. Thus, if you change the geometry in the parent part, that geometry on the child part can update automatically.



Solid Edge V8

This major new release has mo
interactive design assistance, a

You can also associatively paste variables—e.g., hole diameter—from the variable table into a part or subassembly. This allows you to control several parts at once with one variable.

IMPORTING PARTS

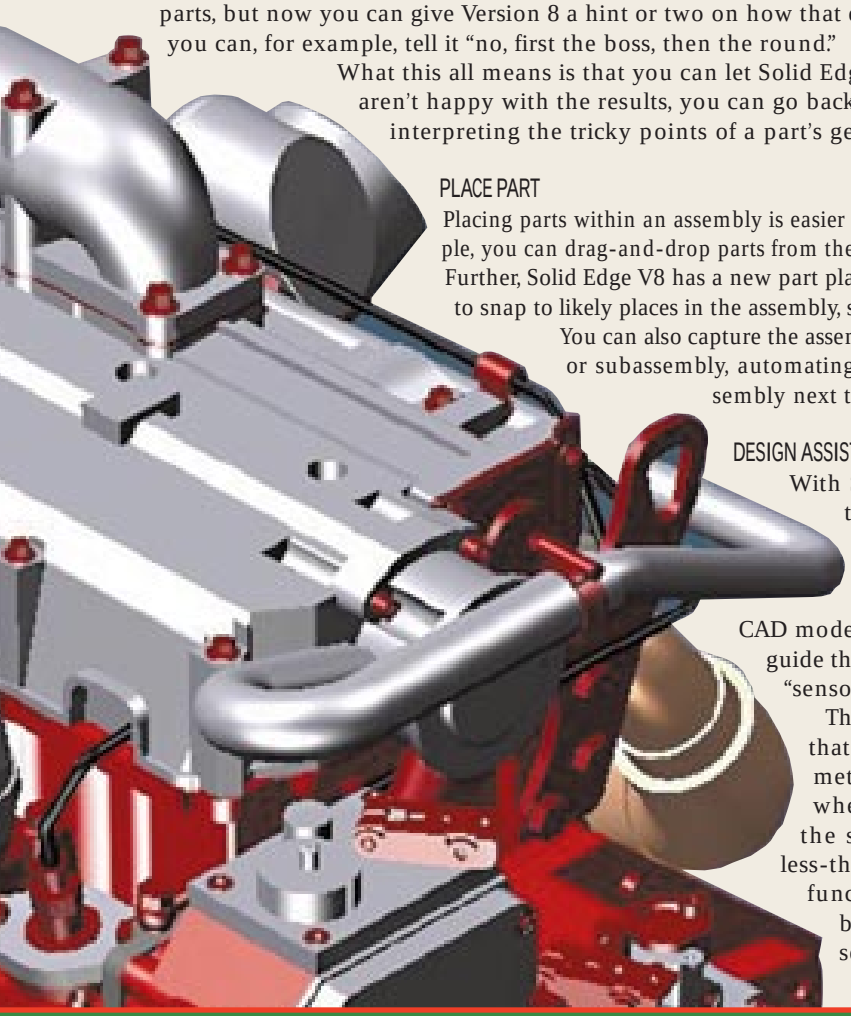
Solid Edge V8 introduces several new file-import capabilities. Among the more notable is a new AutoCAD translation wizard. This wizard enables you to set up and automate the tasks of translating and interpreting AutoCAD hatching, fonts, and line types (I don't need any orange dotted lines in my geometry, thanks).

Version 8 also performs automatic feature recognition on imported solids. Here, it attempts to reconstruct the feature set and history of an imported part rather than just presenting you with a single solid block.

Solid Edge's Feature Recognizer has been enhanced to read Unigraphics files and to better handle rounds. Ironically enough, the biggest improvement comes from allowing more interaction with the user.

Solid Edge's Feature Recognizer already did a pretty good job of correctly recognizing 80 to 90% of features on imported parts, but now you can give Version 8 a hint or two on how that extra 10 to 20% was built. By "hint" I mean that you can, for example, tell it "no, first the boss, then the round."

What this all means is that you can let Solid Edge take a stab at recognizing a part first. If you aren't happy with the results, you can go back and interactively guide the program through interpreting the tricky points of a part's geometry.



PLACE PART

Placing parts within an assembly is easier in Solid Edge V8 than previous versions. For example, you can drag-and-drop parts from the new part library directly into your assembly.

Further, Solid Edge V8 has a new part placement mode called FlashFit. FlashFit causes parts to snap to likely places in the assembly, so bolts drop automatically into holes and so forth. You can also capture the assembly relationships and faces used to position a part or subassembly, automating the process of placing that same part in an assembly next time.

DESIGN ASSISTANT SENSORS

With Solid Edge V8 Unigraphics introduces a set of technologies called Cognitive Assembly Design. This technology is designed to simplify and accelerate mechanical assembly design by capturing complex assembly intelligence within CAD models and providing detailed empirical feedback to guide the design process. Solid Edge V8 Design Assistant "sensors" exemplify this new technology.

Think of DesignAssistant sensors as virtual gauges that continually monitor minimum distances, sheet metal features, and variable values, and alert you when something is out of whack. You can set up the sensors to perform everything from simple less-than/greater-than comparisons to trigonometric functions, all via wizards. If you need capability beyond this, you can build your own custom sensors in Visual Basic.

ore than 350 enhancements, including intelligent part placement, and motion analysis.

Features Overview *

- 2D to 3D migration tools
- 2D to 3D migration wizards
- Advanced lofting and sweeping tools
- AutoCAD translation wizard
- Automatic and interactive feature recognition
- Complex and plastic part modeling
- DesignAssistant sensors
- Hole modeling
- HTML help
- Integrated motion analysis
- Interpart associativity
- Large assemblies navigation and data management tools
- Optional tubing design module
- Pro/Engineer data translation
- Reduced input for assembly component placement
- Thin region modeling
- Unlimited part undo/redo

** This is not a complete list of Solid Edge 8's features, just an overview. For detailed information, contact Unigraphics Solutions or visit the Solid Edge website at* ***www.solid-edge.com****.*

With Cognitive Assembly Design, you can also embed assembly placement intelligence within part models, which reduces the input needed to position parts in the assembly model. Solid Edge V8 lets you use a "teach-and-repeat" technique so that it captures information about part alignment and mating conditions as you place parts. It then uses this assembly intelligence in subsequent part placements, letting you place parts and establish assembly relationships with fewer commands and mouse clicks.

SIMPLY MOTION

Version 7 could do simple interference checking, but Solid Edge V8 incorporates a motion modeling environment called "Simply Motion." Actually a subset of Dynamic Designer from Mechanical Dynamics (MDI), Simply Motion allows you to perform motion simulations within the Solid Edge assembly environment, checking for gear mesh and binding, part overlap/collision, and so forth. The program creates moving parts and joints for you automatically, deriving relationships from the assembly constraints. You can add additional joints, springs, and motion generators within the Simply Motion environment, again via a wizard-style interface.

Users can purchase upgrades to the full version of Dynamic Designer directly from MDI. Find out more about MDI and Dynamic Designer at www.mdii.com.

FREE FREE FREE

Still sitting on the fence meaning to make the move to 3D? Well, you just ran out of excuses. Unigraphics Solutions is now offering a free, limited-function version of Solid Edge, called Solid Edge Origin. Intended to entice you into 3D solid modeling in general and Solid Edge in particular, Origin includes basic 3D part modeling–parametric, feature-based design of parts with holes, protrusions, cutouts, ribs, constant radius rounds, and thin-wall features—as well as a complete 2D drafting system.

Though feature-limited, Origin is definitely usable. You can save and print, import and export 2D DXF and DWG files, and automatically create and print 2D drawings from solid part models. Origin comes with demonstrations and tutorials to get you started. (*For a review of Origin, see* ***DE****, Nov. 99, or the DE Online archive of November 99 articles at www.deskeng.com.)*

The price for Solid Edge Classic remains $4,995. The Solid Edge Box set, which includes an optional tubing environment, is $5,995.

Contributing editor **Mark Clarkson** *has written a number of books on technical matters and articles for such technical publications as* ***Byte*** *and* ***Military Times****. His areas of expertise include graphics and system hardware, 3D CAD, and modeling. You can contact him via e-mail at markc@kscable.com.*

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