

SITUATION

VeriFone, a division of Hewlett-Packard Company, is the leading global provider of secure electronic payment solutions for financial institutions, merchants, and consumers. The company's products are typified by the small units that merchants run a credit card through to authorize a purchase, and the compact terminals at the grocery store that let customers use plastic to pay for their groceries. VeriFone has shipped more than seven million of its systems, which are used in more than 100 countries around the world.

Recently, the company had the opportunity to take on the role of an OEM when Houston-based TeleCheck Services Inc., the world's leading check acceptance company, wanted a supplier for a new check conversion appliance. After a customer writes a check, the device, called Eclipse, immediately deducts money from the customer's account and transfers it to the merchant's account. The cancelled check is returned to the customer moments later.

In the past, VeriFone's normal development cycle would require 12 to 18 months to deliver such a product to market. TeleCheck couldn't wait that long, so VeriFone designers and engineers had to find ways to work faster and smarter.

OBJECTIVE

Meet TeleCheck's requirement for fast delivery of a revolutionary payment terminal that performs check conversion at the point of sale.

PROCESS VISION

- ✓ Use the efficiencies of an integrated CAD/CAM/CAE system to compress the cycle time for the Eclipse by leveraging the solid geometry for rapid prototyping, structural analysis, and mold tool production.
- ✓ Model plastic parts completely (including draft angle, parting lines, and fillets) to simplify the job of the mold maker and minimize changes to molds.

ACTIONS

- ✓ VeriFone installed I-DEAS® design and analysis applications in 1995. Currently 100 designers and engineers use the software, which runs on powerful Hewlett-Packard VISUALIZE C-class workstations.
- ✓ The conceptual design for the Eclipse, done by an industrial design firm, was imported into I-DEAS. Using the 3D surfaces as a guide, a VeriFone designer produced a solid model that defined the exterior contours of the product as well as some of the internal structural elements.

VeriFone Checks Out New Business With I-DEAS®



"It was an aggressive schedule but TeleCheck needed the terminal ASAP. We delivered production units in only nine months by modeling the product in I-DEAS software on Hewlett-Packard workstations and using the geometry throughout the development cycle. That's about half the time it would have taken without an integrated CAD/CAM/CAE system."

- Randolph Brown
Systems Administrator for
Mechanical Design
Applications
VeriFone



Get
There
Faster®

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- ✓ Mechanical and electrical engineers used I-DEAS to model the device's internal components, including the printed circuit board, inkjet printer (supplied by HP), check imaging device (scanner), card reader, display, and touch pad. The engineers worked concurrently, creating a digital assembly, which they then placed into the original solid model of the enclosure.
- ✓ I-DEAS models of plastic parts were created to include features that the mold maker had to consider such as draft angle, parting lines, and fillets.
- ✓ While engineers were building the virtual assembly, analysts concurrently evaluated its structural performance using I-DEAS finite element analysis software.
- ✓ VeriFone produced drawings for the Eclipse by generating them from the solid models using I-DEAS Drafting™. Because most of the manufacturing was done directly from the solid geometry, the drawings needed only those dimensions that were important for quality assurance inspections.

RESULTS

- ✓ VeriFone delivered production units of the Eclipse to TeleCheck nine months after beginning the project, cutting the development cycle in half when compared to VeriFone's process prior to the installation of I-DEAS.
- ✓ By assembling the device digitally, engineers were able to spot interferences immediately, reducing time-consuming design revisions, and possibly mold rework, later on. When they wanted to verify fit with physical models, they easily obtained rapid prototypes from a stereolithography supplier within a few days, rather than the few weeks required to generate models with conventional machining techniques.
- ✓ The fact that analysts did not have to recreate geometry and could directly access digital models without having to wait for completed drawings saved VeriFone anywhere from a few hours to a few days, depending on the component.
- ✓ By including mold features in the solid models of plastic parts, the engineers ensured, as much as possible, that the parts were manufactured as designed. This substantially reduced the development cycle for the Eclipse because it minimized time-consuming changes to the molds.

PLANS

VeriFone is working to make the solid model its complete product definition. Rather than releasing drawings, they will release solid models. Also, solid models will be attached to engineering change orders instead of PDF files of drawings.

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