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GEOMETRIC SOLUTIONS

Consumer products and retail

SurfaceInk

From concept to production, NX delivers

Product

NX

Business challenges

Develop ergonomic grip accessory for Zodiac game consoles

Have prototype ready for trade show just two months away

Keys to success

Perform entire digital development process within NX software

Import game console data (created in Pro/E) as reference geometry

Check for interferences and analyze NX model for manufacturability

Send NX files to manufacturer

Results

Design process completed in only two weeks – 50 percent faster than other digital product lifecycle management (PLM) tools

Large shape changes accommodated in one day with pinpoint accuracy

From shape creation to manufacturing geometry, SurfaceInk found NX to be "the perfect product lifecycle solution" for every stage in the development of a video game accessory

SurfaceInk wanted to create the first after-market accessory for Tapwave's Zodiac game controller. The firm had to work fast to have the device ready for a major tradeshow.

Mechanical engineering for Silicon Valley

SurfaceInk Corp., founded in 1999, is a mechanical engineering and design consulting firm. Its engineers perform high-end mechanical engineering for the Silicon Valley's leading industrial design groups, computer companies and product manufacturers. Clients include palmOne, Tapwave, AlphaSmart and Sun Microsystems. SurfaceInk was instrumental in the design of products such as palmOne's i705. The firm also designs accessories for existing products, including Tapwave's Zodiac and Zodiac 2 multimedia handheld.

Zodiac handhelds are small enough to fit in a shirt pocket, which is great for portability. But their small size makes them difficult for some people to hold comfortably, particularly after hours of playing Doom II or Stuntcar Extreme. SurfaceInk decided to remedy that by creating an after-market accessory called the CommandPlay. The idea behind the CommandPlay was that it would be something you could slip the Zodiac into, creating a larger controller with a more practical grip. The development of CommandPlay had to be done quickly because SurfaceInk wanted to debut the product at an upcoming tradeshow just two months away.

Start to finish in NX

From the creation of the device's external shape to the delivery of production-ready geometry, SurfaceInk did all of the

Results *(continued)*

Accurate NX data created a prototype that fit the Zodiac perfectly

The "must have" accessory debuted on time at E3

development work for the CommandPlay in NX™. After taking some initial measurements from an actual Zodiac handheld, Jeremy Yaekel, a SurfaceInk co-founder and principal, and his team began sculpting the CommandPlay's external contours using NX industrial design and styling solutions. This is SurfaceInk's surface-creation tool of choice because it gives the company the flexibility of working with parameterized and nonparameterized surfaces. "If Tapwave had a family of Zodiacs, we would have used more parametric modeling," explains Yaekel. "But for this project, we worked mostly nonparametrically. That's a great feature of NX industrial design solutions. Because of NX modeling flexibility, you can choose the best way of modeling for any given project."

After modeling the initial surfaces, the team imported the geometry of the Zodiac, supplied by Tapwave. This geometry had been created in Pro/Engineer; it was imported in STEP format. "NX imports geometry from other systems with complete accuracy," says Yaekel. "Not all digital product development solutions do that. Because NX supports both third-order and fifth-order surfaces, it doesn't have to approximate surfaces as some systems do. The Pro/E data we imported was highly accurate and we were able to use it as reference geometry." With both models

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Jeremy Yaekel
Principal
SurfaceInk

Solutions/Services

NX
www.siemens.com/nx

Customer's primary business

SurfaceInk Corporation, a product design consulting firm that specializes in integrating mechanical design with emerging industrial design.
www.surfaceink.com

Customer location

Saratoga, California
United States

"NX is the perfect digital product lifecycle solution. You can go from surface creation all the way through to manufacturing geometry without leaving NX."

Jeremy Yaekel
Principal
SurfaceInk

visible onscreen, SurfaceInk engineers were able to spot a few areas of interference. They quickly adjusted these. "NX is a phenomenal package for surfacing," says Yaekel. "I can't imagine a better program that's also integrated with the rest of the development process. It's really the only program on the market that capably handles each step of the process, from surface creation to manufacturing data."

Fast turnaround after changes

Creating the external surfaces of the CommandPlay was "the easy part," according to Yaekel. Next came the challenging mechanical engineering tasks – SurfaceInk's specialty – such as figuring out how the rubber overmold would fit onto the plastic portion of the device. "In NX you have excellent control and state-of-the-art analysis tools to determine if your surfaces are manufacturable," Yaekel notes. Getting to the point where SurfaceInk had ready-to-manufacture products took just two weeks. Then the company went through two more design iterations when the first two prototypes showed that the hand grip needed to be deeper and longer. Yaekel points out, "The flexibility of the parametric and nonparametric modeling capabilities of NX helped us make these significant changes rapidly."

For SurfaceInk, the beauty of using NX on this project was the fact that the company was able to do all its design and engineering work within a single system. "We did everything in NX, from surface creation through mechanical design and making it completely manufacturable," says Yaekel. "We analyzed the geometry for manufacturability and shipped the NX data to the manufacturer who then used that data to create their machine paths. NX is an awesome product for complete digital product development."

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