Success Story

Visualization Technology Gives Thomson a Competitive Edge

SGI® Reality Center™ Technology Shortens Product Development Cycles and Speeds Time to Market

The Challenge
- Find a 3D visualization solution that would leverage the company's existing digital assets to reduce outside development costs, specifically, physical prototyping
- Shorten product development cycles and improve time to market

The Solution
- SGI Reality Center technology
- Silicon Graphics® Onyx2® system with InfiniteReality3™ graphics
- Mechdyne™ MD Wall™ (18x8-ft rigid screen with rear projection)
- Barco® 1209s CRT and BarcoReality 6300 LCD projectors

The Result
- Outside physical prototyping and related expenses were eliminated
- Virtual prototyping relegated (internal) physical prototyping to one per project, typically
- Product development cycles were shortened by nearly 30%, improving time to market
- Enhanced interdepartmental collaboration
- Fewer production problems in the latter stages of product development
- Higher-quality, better-engineered products

Thomson, a company with roots that date back to 1880, has a presence in more than 30 countries and boasts a Consumer Products Division that ranks as the world's fourth-largest supplier of consumer electronics, featuring brands such as Thomson, RCA, and Technicolor. The company provides industrial design for the entire line of RCA consumer electronics products, from broadcast satellite systems, broadband products, and cable modems to HDTVs, projection TVs, DVD players, VCRs, and more. This work is handled by Thomson's Industrial Design Group, which has design centers in Indianapolis, Indiana, and Paris, France.

In Search of a Solution

In 1998, Thomson's global design development manager, Mike Squillace, was looking for a visualization solution with which he could leverage the company's digital assets—3D images—to reduce outside development costs—specifically, that of physical prototypes. With the cost of appearance-only prototypes ranging from $15,000 for a telephone to $25,000 for a large television set, the desire to trim those costs was sizeable. Also, the need for fewer prototypes would shorten development cycles and improve time to market, thereby extending the period for which new-product profit margins are at their highest for retailers.

"Our model shop still builds a significant number of new product models every year, but prior to having the SGI Reality Center facility, we also had substantial outside mock-up expenses. These have largely been eliminated. In addition, we also have found that we are now typically building only one prototype for each new product. This is because the realism of our virtual prototypes in the SGI Reality Center facility are high enough that we can make accurate aesthetic judgments and iterative design changes prior to construction of the model."

—Ted Woerner, Director of Design Visualization, Thomson

That's when Squillace turned to virtual prototyping. "Visualization technologies give Thomson a competitive edge against other consumer electronic companies because we use it to leverage our digital assets across the entire product development process, starting with initial design concepts, design approval, packaging, promotional literature, and rapid prototyping," said Squillace. "The same files are sent to engineering to develop the core of the product, and to the tool vendor, who cuts the steel from which production parts are created for the product that eventually ends up on a retail shelf."

The Choice: SGI Reality Center Technology

The visualization solution Thomson chose for the job was an SGI Reality Center facility. These facilities seamlessly integrate advanced visualization hardware and software technologies to create immersive environments that envelop participants in a state of virtual reality. Within the manufacturing industry, virtual reality has a significant impact on the areas of conceptual design, digital prototyping, engineering analysis, and production planning and training, and it serves as an increasingly effective business tool for sales and marketing. By making decisions based on digital models, companies can save developmental time and money while significantly reducing time to market.

According to Squillace, "SGI was selected as our hardware provider, in part, because of their reputation as a leader in visualization. SGI was also the first hardware platform that the Industrial Design Group purchased when we made the initial decision to use CAD to create our products. SGI people were passionate about what they did, just like us. They helped us brainstorm how to take a technology that we saw the oil and gas industry and automotive industry using successfully and apply it to consumer electronics."

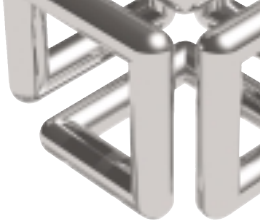
Inside the Facility

The visualization hardware within the SGI Reality Center facility is a Silicon Graphics Onyx2 high-performance computing system with InfiniteReality3 graphics. Silicon Graphics® Octane2™ systems and other desktop workstations are tasked with creating CAD and other types of 3D drawings, animation renderings, and QuickTime® VR productions. The SGI Reality Center facility accommodates an audience of 12 in front of its 18x8-foot flat-panel projection wall.

Thomson System Configuration

- Onyx2 system with 4x R12000® 300 MHz processors
- 2GB RAM, 54GB disk storage
- 1x InfiniteReality3 graphics pipe x 2 channels
- 1x DG5-2 (2-channel display generator)
- 1x DIVO graphics-to-video option for SGI® Onyx® family systems
- 2x Barco 1209S CRT and 1x BarcoReality 6300 LCD projectors
- Mechdyne MD Wall (18x8-ft rigid screen with rear projection)

Thomson's Industrial Design Group transitioned easily into the SGI Reality Center facility, as its design engineers continued to use many of the same software applications, which are based on the IRIX® and Macintosh® operating systems. SGI Professional



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—Mike Squillace, Multimedia Global Design Development Manager, Thomson

Services managed the overall integration of the computer and projection hardware and provided training and ongoing technical support.

Using SGI Reality Center Technology

In the first year of operation, the SGI Reality Center facility helped to eliminate nearly all outside prototyping expenses. "The cost savings alone paid for the center's first-year operating expenses," said Ted Woerner, director of design visualization at Thomson. "Our model shop still builds a significant number of new product models every year, but prior to having the SGI Reality Center facility, we also had substantial outside mockup expenses. These have largely been eliminated. In addition, we also have found that we are now typically building only one prototype for each new product. This is because the realism of our virtual prototypes in the SGI Reality Center facility are high enough that we can make accurate aesthetic judgments and iterative design changes prior to construction of the model." As the facility enters its third year of operation, no outside prototyping is expected to take place.

Thomson's decision to move from physical prototypes to a fully digital approval process has also helped shorten the product development cycle by nearly 30%. "By eliminating the need for first round physical prototypes," said Woerner, "the entire product design and development process is now a much shorter timeframe. Our ability to get products approved in a digital state and into production at a much accelerated pace can actually impact initial sales once the products land in a retail environment." Typically, getting a product to market even one week sooner means not only additional profits, but also higher per-unit profit margins, until competition drives them down.

Collaborative Achievements

Working in a fully digital environment has also enhanced the collaborative efforts of Thomson designers, engineers, developers, and sales and marketing representatives. This increased interdependency is most apparent as projects transition from one phase to the next, culminating in product acceptance meetings. The meetings serve as Thomson milestones for final product sign-off before actual production begins.

Several unforeseen collaborative efforts also have taken root in the SGI Reality Center facility since its installation. Among them is the creation of multimedia presentations used to promote RCA consumer electronics products to existing and potential customers.

Within Thomson these presentations are known as retail visualization—entire digital retail settings in which RCA consumer electronics products would appear. Retail visualizations are a combination of digital photography, digital video, and animation that feature virtual [not yet manufactured] products, complete with detailed graphic representations of

virtual (not yet printed) packaging. Every attention to detail is afforded to each customer presentation, from shelf height, display configuration, and light placement to where and how the product should be positioned in the actual store for maximum sales impact.

For sales and marketing, this new collaborative venture with the SGI Reality Center facility has helped to provide sales insights and merchandising opportunities that can be of direct benefit to Thomson customers. In return, retail visualization has helped to accelerate customer buy-in, lock down retail shelf space, and bolster RCA consumer electronics sales for Thomson.

Return on Investment

At Thomson, criteria for measuring return on investment are not restricted to financial profit. Time is also a critical factor, as are the resources required to generate ROI.

As has been pointed out, among the most quantifiable benefits brought about by SGI Reality Center facility usage is the elimination of both the need to create outside physical prototypes and the significant costs associated with their creation. However, the biggest benefit for Thomson has been the cumulative effect of drastically reduced physical prototyping and significantly shorter development cycles—improved time to market. In the fast-paced world of consumer electronics, that means competitive advantage.

The SGI Reality Center facility also provides Thomson sales and marketing teams with the ability to sell more effectively. In fact, the sales and marketing departments within Thomson all see their SGI Reality Center facilities as essential tools for winning new contracts.

Finally, it is clear that the interdepartmental collaboration that takes place within the SGI Reality Center facility has made its mark on product design and development. Solving what appear to be minor complications in the early stages of development can mitigate costly production errors and, ultimately, lead to higher-quality, better-engineered products.

Woerner summed up ROI potential with an insightful comment: “I strongly feel that you cannot underestimate the effect that Reality Center technology has on our customers, not just in the way we design our products, but in the way we present our products. It lets them know that they are dealing with a company on the cutting edge. What it says to them is, ‘If [Thomson] puts this much thought and effort and professionalism into presenting new products [to us], think about what that says about how they handle the rest of their business.’ For our customers, it establishes a level of confidence in our company that our competitors simply are not able to match.”

INNOVATION

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