

Cisco Consumer Business Group

CISCO SETS NEW CONSUMER ELECTRONICS DESIGN STANDARD WITH SUPPORT FROM DASSAULT SYSTÈMES SOLIDWORKS CORP. AND Z CORPORATION 3D TECHNOLOGIES



- The Cisco Consumer Business Group believes networking gear shouldn't be an ugly black box. Rather, it should reflect a *connected life* with all the aesthetic, ergonomic, and functional values that implies.
- Designers need tools as intuitive as hammers and chisels but as powerful as today's computers. The answer: SolidWorks 3D CAD software.
- And though it's crucial for a designer to hold a prototype in his or her hands, hand-crafted prototypes are time-consuming and expensive to create. Cisco solved the problem by investing in the ZPrinter 450 multicolor 3D printer from Z Corporation, maker of the world's fastest 3D printers.
- With the help of SolidWorks and ZPrinting, the Cisco Consumer Business Group produces elegant consumer electronics products in a fraction of the time and cost of other approaches.
- The result is enhanced product quality, deeper customer satisfaction, and quicker time to market.

This is the story of how professional designers combined time-honored aesthetic principles with advanced 3D design and printing technologies to produce some of the world's most elegant consumer electronic equipment.

Devices like wireless routers, Media Hub, and the Wireless Home Audio system create what the Cisco Consumer Business Group calls the *connected life*, a life that's more personal, more social, and more visual than ever. Constant network connectivity is a cornerstone, and the focus is on the content – music, video, photo, and Internet content coursing through the home.

As these devices further infiltrate the home, they become more central to our lives, moving from the "computer room" to the living room. Like a stainless steel refrigerator, electronics must be aesthetically pleasing with sleeker, less boxy lines while increasing connectivity, reliability, and intuitive operation. Thus, making functional objects both simple and beautiful is the challenge Cisco engineers face every day.

'It's inspiring to see what can be done with something the world has always received as a basic black box.'

Eskild Hansen
Head of Cisco's European Design Centre
in Denmark



Consumer electronics devices create a
'connected life.'

Challenge: Upholding traditional design standards in the fast-growing consumer electronics world

Since design excellence is paramount for the Consumer Business Group, it has established design centers in Europe (Copenhagen, Denmark) and in North America (Irvine, Calif.). Drawing on the Danish influence of Scandinavian design, the company emphasizes functionality, minimalism, and affordability without compromising design aesthetics. Executing on these principles requires design tools that are as intuitive as pencil, paper, hammer, and chisel but harness the power of today's powerful computers. For Cisco, that's SolidWorks® 3D CAD software.

"We love using SolidWorks," says Sandro Klein, Senior Manager, Industrial Design, for the Cisco Consumer Business Group, based in the United States. "It has a robust, user-friendly interface and enhanced surfacing features. We no longer have to turn to other software for complex surfaces. SolidWorks handles it elegantly and is becoming a top choice for industrial designers."

Another key design principle, which also happens to be a Scandinavian ideal, is that the designer must hold a prototype of his or her creation in their hands, sense the proportions, heed what the object has to tell them, and ensure that the form ultimately follows the function. The designer may then modify the design, create another prototype, and examine the new design just like the first.

The problem is that traditional handcrafted prototypes are time-consuming and expensive to create. Most automated rapid prototyping technologies are just as costly, and the prototypes must be outsourced, adding time and inconvenience to the process. And though many designers rely on screen images alone, they are simply insufficient to create the quality the Consumer Business Group demands. The challenge, then, is upholding the highest aesthetic standards while meeting deadlines in the highly competitive consumer electronics business, where time to market is critical.

Strategy: Investing in 3D printing technology from Z Corporation

Cisco's solution was to invest in an office-friendly 3D printer from Z Corporation that would enable designers to create their own physical prototypes. This technology helps Cisco quickly and inexpensively create the physical models it needs, creating tangible objects from SolidWorks 3D data much as a 2D printer creates documents from word-processing text. The Consumer Business Group can apply its exacting design standards in a manner that keeps the development cycle humming, helping products get to market on schedule. ZPrinting pumps out prototypes in hours instead of weeks and for one-fifth the cost.

"Proportions and ergonomics are paramount, yet too many designers rely on computer screens alone as their design medium," says Eskild Hansen, head of Cisco's European Design Centre in Denmark. "For our strategic design approach, we depend on physical prototypes and the ZPrinter® 450 for each design review, both locally and globally in concert with our design partners in the United States. ZPrinting is an easy and effective way to conduct a productive global design review."



As many as 14 colleagues at a time can review ZPrinted models in global design conferences.

Results: Lots of models for productive design reviews

The Consumer Business Group uses the ZPrinter 450 to create 10 models per week, on average, for design review. Models are printed directly from SolidWorks files submitted by designers around the world.

Designers, executives, and marketers in the team's North American office frequently join Hansen's team in Denmark in design reviews using the Cisco TelePresence teleconferencing solution on 50-inch plasma screens. As many as 14 colleagues at a time review the models, as well as 3D PDFs, interactive eDrawings, and photorealistic renderings, all created in SolidWorks. Since TelePresence displays meeting counterparts at their actual size, not miniature versions, it's truly as though everyone were in the same room.

"The global design reviews around the SolidWorks artifacts and 3D printed models are important and fruitful," says Klein. "We leverage each other's strengths, as well as those of the JDM (joint development manufacturing) engineers in Taiwan. Our goal is to define a global brand identity for Cisco that is synonymous with superior design, and galvanize our position as a leader in this market."

"Denmark is our window to Europe, much as we are their window into America," adds his colleague, Senior Industrial Designer Eran Weinberg.

Designers pass around the ZPrinted models, mark them up with pencil, revise designs in SolidWorks software, print out new models, and repeat the cycle as necessary. The hands-on step is an absolute must, according to Hansen. "We get prototypes quickly, we refine them quickly, we create new ones, and we derive our elite designs," he says.

Z Corporation is the only company that makes a 3D printer capable of simultaneously printing in multiple colors. Color dramatically communicates the proposed look, feel and style of engineering product designs, architectural concepts, landscapes, entertainment figures, and medical information. Hansen selected Z Corporation's technology because of his confidence in the brand owing to his experience using it in other settings.

The printer works seamlessly with SolidWorks software. "We can easily save our SolidWorks 3D models as STL files for quick 3D printing on the Z Corporation 3D printer or any rapid prototyping device," says Klein.

"We do a lot of sketches and a lot of 3D concept prototypes," says Weinberg. "It's critical to get the design on the screen with SolidWorks and then off the screen in three tangible dimensions as a 3D printed model."

"It's inspiring to see what can be done with something the world has always received as a basic black box," says Hansen. "Designs like these don't just emerge from a computer screen. Because design is such an important element of our strategy, 3D design and printing capabilities are extremely valuable tools in our development cycle."

For more information....

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