

Case Study

Perplexus

Perplexus Solves the Modeling Puzzle With SpaceClaim

Perplexus is a 3D puzzle that challenges players to navigate a ball through a labyrinth contained in a clear plastic sphere they turn and flip, using gravity and their own steady hands. It's innovative design and addictive game play has won Perplexus more than a dozen awards and inspired a whole new category of gameplay. Currently available are Original, Rookie, Twist, Warp and the challenging Epic with 125 steps to conquer.

Based on the process Perplexus' creator, Michael McGinnis, used to create the first game, you might imagine he'd never create another, regardless of the success of the first. McGinnis teaches sculpture and design at a local junior college and spends his free time in his shop, designing and building. Since he was a high school student in the 1970's he has been working on 3D mazes built by hand from wood. Working through multiple designs and dreaming of mass-production for decades, McGinnis found a partner in the toy industry in 1997 that inspired several product changes and connected with potential manufacturers and distributors.

The first prototype for what would become Perplexus Original was built from styrene plastic sheets, as was every iteration until it was time to send the final version to manufacturing, at which point, the manufacturer hired a CAD expert to work with Michael during the modeling process. After several false starts and near misses, Perplexus found worldwide distribution in 2002, nearly 25 years after he built his first 3D maze.

"I use SpaceClaim for everything I want to do in 3D."

– Michael McGinnis

Even with a success in his hands, modeling remained a tedious and time-consuming process, and he knew there had to be a better way. McGinnis was spending hundreds of hours on his designs. He had seen a few CAD packages, but knew he couldn't learn to use them, and couldn't rely on others to model his very intricate hand-built designs. "There was a lot of frustration. I needed to do it myself, and couldn't," McGinnis says.

A Student Educated the Teacher

McGinnis hired one of his students familiar with CAD to assist him in building a large-scale sculpture. That student showed him SpaceClaim. "As soon as I saw SpaceClaim, I knew this was what I was looking for," he says. When he got his next commission for an art piece, he was able to buy SpaceClaim to help design it, and that experience carried over immediately to his work on Perplexus.



His first SpaceClaim-based maze project was designing Epic. He taught himself how to use the software, and built the entire concept design from scratch. Now he creates his prototypes with 3D printing or waterjet cutting, then sends the completed design to partners in Utah to prepare them for manufacturing. Gone are the days of wood and holding the CAD expert's hand hoping he doesn't make a mistake.

About Perplexus

- A line of 3D labyrinths created by designer Michael McGinnis
- Inspired by dozens of designs McGinnis created from 1979 to 2002, when the maze first achieved world-wide distribution and acclaim
- Winner of 16 toy industry awards including Game of the Year for Perplexus Epic

Goals

- Find an easy to learn and use modeling software that could handle a unique design challenge he could previously only accomplish himself in wood
- Take designs through concept modeling to prototyping to prep for manufacturing
- Design everything from children's toys to museum pieces

Results

- Replaced physical design process with 3D modeling and saved many hours in every iteration of a design
- Using SpaceClaim to accomplish any 3D task, and only relies on outside help for manufacturing prep
- Pushes the limits of his imagination with 3D-modeled art pieces



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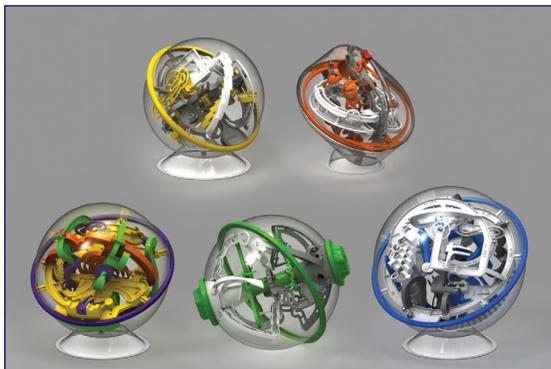
– Michael McGinnis



From Games to Museum Pieces and More

Though it is an astounding leap to go from an idea to a successful product line, Michael hasn't stopped there. He has used SpaceClaim to design many largescale artworks, including a four-foot wide stainless steel labyrinth for a sculpture exhibition and is currently designing an entire room full of interactive exhibits for a children's museum.

Over the years since discovering SpaceClaim, he has refined his software-design skills, creating models that are more complex, and need fewer modifications for printing. In fact, his 3D printing service has commented that McGinnis' models never need to be prepped for printing, compared to other customers that require significant amounts of work. From carving wood to flawless 3D models, McGinnis has become an accidental expert in creating concepts in SpaceClaim, regardless of if they end up in a museum, gallery or a child's hands.



About Perplexus:

The concept behind Perplexus was created by 3-D design teacher Michael McGinnis in the late 1970's as a project for a high school art class. From the outset, he envisioned turning his creation into a toy, a vision that would turn into a decades-long odyssey to get the game to market.

In 1997, McGinnis met the inventors at KID Interactive, one of the premier inventing houses in the toy industry. They collaborated on the design to make it more suitable for consumers and after five years of work, the original product was marketed globally as Superperplexus.

In 2008, a group of enthusiasts contacted KID Interactive about licensing Superperplexus. Perplexus, LLC acquired the rights to Superperplexus and launched PERPLEXUS in its current form.



About SpaceClaim

SpaceClaim, the flexible and affordable 3D modeling software for engineers from ANSYS, Inc., is easy to learn and use and is completely CAD-neutral. It enables engineers and other manufacturing professionals to rapidly create new designs or manipulate and edit existing 2D and 3D geometry, without the complexity of traditional CAD.

For more information on SpaceClaim, please visit www.spaceclaim.com.



150 Baker Ave. Ext.,
Concord, MA 01742 USA
Tel: +1 978.482.2100
Fax: +1 978.369.5864

www.spaceclaim.com