Blind Man 'Sees' New Home through Model

The University of Louisville's Rapid Prototyping Center and Harvest Technologies, a Parts Service Provider, teamed up to create SLA® and SLS® models of a home for a Louisville, Ky., family featured on ABC's "Extreme Makeover: Home Edition."

Nineteen-year-old Patrick Henry Hughes, the family's eldest son, is blind and disabled, overcoming challenges to become a musician and an inspiration to all those around him. The "Extreme Makeover" team rebuilt in just seven days the Hughes family home to be safe and wheelchair accessible for Patrick Henry.

Models of the home were built with 3D Systems' technology by the University's RPC and Harvest. Patrick Henry was given the DuraForm® PA and Accura® 25 models, two 'Go Pro' material solutions from 3D Systems, so he could "see" the shape and layout through touch at the same time the crowd chanted "move that bus" and his family was experiencing the thrill of visually seeing their new, improved home.

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– Tim Gornet
Manager of Operations
University of Louisville's Rapid Prototyping Center

"He would have had no idea what the house looked like or understand the floor plan to get around without our models," said Tim Gornet of the University's RPC at the J.B. Speed School of Engineering. "We did this not to show off our technology, but to help Patrick Henry, an amazing young man."

Patrick Henry, a Spanish major, is a member of the marching band at the University of Louisville who can play a song after hearing it once. During performances, Patrick Henry's father pushes him in formation with the band.

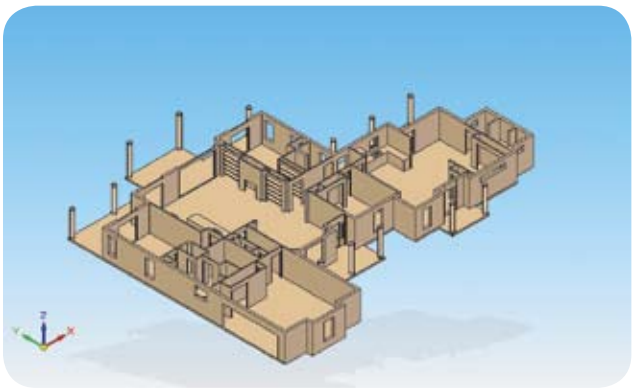
Last November, just days before the family was returning from vacation to their newly renovated home, Tim was asked by the construction company, Elite Homes of Louisville, KY., to build a model home for Patrick Henry. A camera crew and "Extreme Makeover" cast member Paul DiMeo arrived at the University's RPC to film a segment for the show on this cutting-edge 3D Systems' technology. With no time to spare, Tim called David Leigh at Harvest Technologies to build a second model. The deadline: 48 hours.

"The Extreme Makeover team came to us so late in the game that we had zero margin for error," Tim said. "David was our back-up. After sharing with his staff Patrick Henry's story, he said they would have quit if he didn't build the model for me. It is amazing how this young man inspires people."

Patrick Henry could visualize with touch, so the “Extreme Make-over” Team, led by Joe Pusateri, president of Elite Homes, had to find a way for Patrick Henry to “see” his new home.

“The models were exactly what we expected and more,” Joe said. “The roof was removable so Patrick could put his hands in the house and feel where the walls were located. He lived in a non-handicapped accessible home where he learned his way around. He was going to have to learn a new route in the new home.”

The university’s RPC created in 25 hours a three-dimensional CAD model from two-dimensional design layouts of the home.



The next step was to build a scaled-down physical model of the home with 3D Systems’ rapid prototyping and manufacturing technology. The Additive Manufacturing process cures a liquid resin (Stereolithography or SLA®) or sinters plastic powders (Selective Laser Sintering or SLS®) into solid cross-sections, layer by layer, until a three-dimensional part is built.

The RPC successfully built a nine-piece model on a 3D Systems’ SLS® System with DuraForm® PA Plastic, a durable and functional nylon material that has excellent surface resolution. It took 22 hours to build the 18 by 15 by 7 inch model and another 10 hours for finishing touches. The model was completed at midnight Tuesday, delivered to the contractors at 8 a.m. Wednesday and presented to Patrick Henry during the new home reveal later that day.

Meanwhile, Harvest Technologies, A full-service, high-capacity provider of Rapid Prototyping services, built a slightly larger three-piece model of the home. The roof and ceiling were made with Accura® 25 Plastic, a flexible material that simulates the aesthetics and properties of polypropylene, on a 3D Systems’ accurate, reliable Viper™ Pro SLA® System. A Sinterstation® Pro SLS® System, known for its high throughput and speed, created the body of the house – built in DuraForm® PA Plastic.

“We had a two-day turnaround time, and my team took ownership of this project,” said David Leigh, president of Harvest Technologies. “All three pieces ran overnight. It took very little finishing because Accura® 25 is smooth right out of the machine.”

The RPC model now sits in Patrick Henry’s bedroom, while Joe and Elite Homes are displaying the Harvest model with plans to paint it to look like a miniature version of the house.
“Building this house for the Hughes family was the highlight of our 32 years in business,” Joe said. “The model was a significant aspect of the show. It’s something we’ll always value having and a memento of that magical week.”
To read more about the University of Louisville’s Rapid Prototyping Center, visit: http://louisville.edu/speed/rpc.