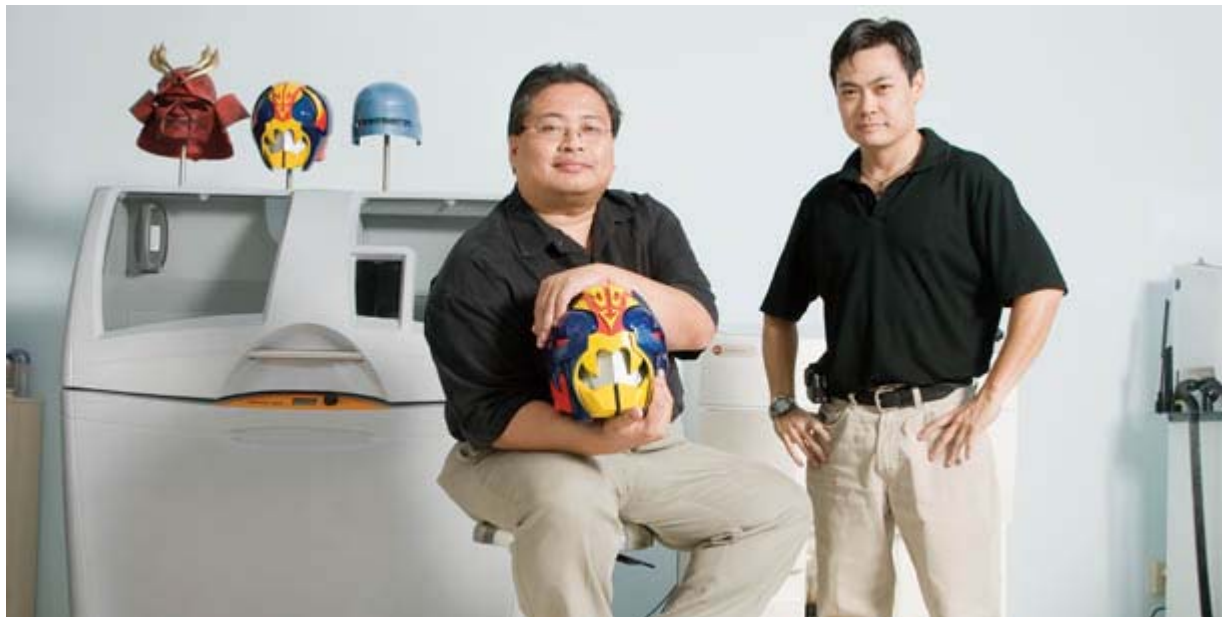


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Super Modeling

How one company's belief in little plastic models could boost Hawaii's production and manufacturing

CASEY CHIN



Emil Reyes (left) and Russ Ogi (right) pose with masks created by the 3-D printers behind them.

Inside the studio of RAPID Technology LLC is Honolulu's most haphazard collection of plastic figurines and models. There's Luke's light saber, a blanched skull, a five-inch-tall Aloha Tower, a palm-sized section of the Grand Canyon and a snarling samurai mask from feudal Japan. The creations seem to be pulled from a restless dream, but each one was actually pulled from one of the machines against the wall.

They are called 3-D printers and they take computer data, say from the computer model of Toy Story's Woody, and lay down thin layers of a material, repeating the process hundreds or thousands of times until a three-dimensional Woody is built inside the machine. It's like stacking slices of bread until you get the whole loaf.

Emil Reyes, founder of RAPID Technology, says the selling points for 3-D printing, also

called rapid prototyping, are the affordability, accuracy and speed with which it creates models. Designers don't have to wait days or weeks for modelers to create their prototypes. Research and development becomes quicker and feedback more responsive.

The technology has been around for decades, but only recently has it really boosted product development, Reyes says. It's been used for BMW's F-1 racecar, prosthetic limbs, NASA spacecraft, new Harley-Davidsons and cell phones. Hawaii, though, has generally missed out on 3-D printing.

Until RAPID Technology.

PROVING GROUND

Reyes moved from Cleveland in 2000 and started his first business, RAPID Technology, four years later. It is the first to offer dedicated 3-D printing services in Hawaii.

Reyes learned of the technology in the Army in the late '90s. After sustaining injuries in Bosnia, he was reassigned as a future technology specialist to Ft. Knox's Mounted Maneuver Battlespace Laboratory. After his service, Reyes wanted to start a business and help his parents retire. For the next few years, he followed the technology and, like a surfer waiting for the killer swell, he waited for his business to gain momentum in Hawaii.

In early 2004, Reyes began talking with Z Corp., a maker of 3-D printers, about representing its business in Hawaii. The response: There was no market for the technology, let alone any manufacturing that could benefit from it.

Reyes knew he had to convince the company that Hawaii was changing if he wanted a printer or its support, so his proposal emphasized growing industries – like medical, architecture and geographic information systems – that could benefit from it. At the very least, he proposed, his business would provide free marketing for the company.

His negotiations and determination paid off two months later when Z Corp. was finally willing to sell him a printer. First, though, he needed more money than he had saved up to buy a basic, \$25,000 model. He turned to a small business's next-best resource, family and friends. "But they were not yet convinced that there was a business, at this point I was not convinced yet either," says Reyes.

For the next three months, he kicked the idea around until Reyes found his proving ground

in a city planning conference. There, among surveyors, satellite imagers and GIS firms, he touted an unknown technology with topographical models, brochures and Kinko's poster board. "I felt like I was making a fool out of myself," he says. Still, he emphasized that 3-D printing can make models better, faster and cheaper than traditional methods. "By the time the first break happened everybody was surrounding my booth," he says.

The positive response convinced him he had a viable business and opened his investors' wallets. In late 2004, he converted a dual zone studio into an office, moved in a new Z Corp. printer and opened his doors. He quickly found that his Mainland and military business sense, which involved targeting an industry and then attacking it, didn't mix well with the local word-of-mouth style here. A consultant by nature, Reyes was knee deep in technical computer design projects. "I didn't know what I just bit into," he says.

Then he met Russ Ogi in 2005, a Big Island boy who had 3-D modeling and design in his blood and no outlet for it. Ogi found out early on that Hawaii's 3-D technology market was dismal. Learning 3-D modeling and animation in 1998, Ogi was probably one of the only college grads with such skills here. "I was thinking I'm instantly employable," he says. "So I got into the business sector and I got a slap in the face. The production jobs in Hawaii just aren't there."

It wasn't long before Ogi was riding shotgun. "I felt like I had built a bicycle, but Russ figured out how to ride it," says Reyes. Together, this dynamic duo organized the business based on their talents – Reyes focused on partner relations and administration while Ogi handled projects and company representation. They get so many jobs now that they often have to outsource aspects of a project or even turn down clients, Reyes says. Projects vary from military forensics work to making super-hero costumes for a new local television show to prototyping the design for Oceanit's biometric scanner, which can detect people through walls. Ogi says they want to work with hospitals too, printing models of a patient's broken bone so doctors can do pre-surgery practice, for example.

Reyes says much of the work at the beginning involved small individual projects. Now he's proud to say that RAPID is involved with long-term contracts with bigger clients. "I feel very happy to have survived. We've figured out our territory," says Reyes. They managed to break even last year and expect to be in the black this year – a year ahead of Reyes' predictions.



From computer desktop to actual desktop. Simple and complex models can be created in hours.

But beyond their success, the two also want to give back to Hawaii. A fundamental challenge to growth is the lack of a skilled workforce to use the technology and a mainstream acceptance of its applications.

RAPID is currently working with the State Department of Education to find students interested in 3-D technologies and give them opportunities. “These schools are turning out people that have this talent but have nowhere to use it in Hawaii,” Ogi says, pointing to his own frustration as a lost college grad. RAPID established the “Think RAPID Educational 3-D Design Competition” last year to assess current students’ 3-D modeling skills and to introduce them to 3-D printing.

PRINTING POTENTIAL

In the long run, they envision this technology will significantly impact Hawaii’s future product development. Ogi says the main limiting factors preventing Hawaii from producing goods are its geographical isolation and scarce resources.

Traditional product design, typically involving highly skilled artisans working clay or foam, is a lengthy process. If a design is changed, it must be reworked. Ogi says this process is longer and more expensive here, where product design often involves shipping prototype models back and forth between the Mainland or Asia.

The potential for 3-D printing to streamline research and development and make it more efficient is particularly important for Hawaii. “No longer is Hawaii limited to its own borders,” says Ogi. With 3-D printing, Ogi says, the first stage of product development, research and development, can be easily done here in Hawaii. “It wasn’t feasible to design products in Hawaii, but now you can.”