An easier 3D printing experience: Radiant Fabrication focuses on accessibility

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If you're an inventor or crafter, perhaps you've used a 3D printer to bring your ideas or artwork to life. For the rest of us, the concept might sound kind of far out. But a world where 3D printing is as commonplace as laser printing is close enough to touch.

3D printers extrude, sinter, glue or deposit a filament, layer by layer, until it produces a finished object - a bracelet, an iPhone case, a wrench or an ant farm - following the instructions of a digital model.

Already 3D printing has advanced science and medicine, among other industries. NASA is printing Mars-bound rocket parts. 3D-printed prostheses offer mobility, and 3D-printed transplant tissues may soon save lives.

For experimenting at home, there are printers the size of a coffeemaker, starting at around $500. If your computer-aided design skills are rusty, download free designs from Thingiverse. Then wait for your creation to take form before your eyes.

Or more likely, prepare for some head-on-desk pounding as you fiddle with clogged nozzles, grease-thirsty parts and filaments warping or failing to stick to the platform.

One Madison startup is on a mission to help 3D printing enthusiasts keep their cool. Radiant Fabrication is commercializing a 3D modeling and 3D printing solution that aims for speed, reliability and accessibility.

As Radiant president Nathan Patterson puts it, "We're trying to address common issues by creating a printer that people will be able to use instead of tinker with."

Patterson met Radiant lead programmer Kevin Harris and hardware engineer Nathan Schumacher in 2009 while working at the Morgridge Institute for Research, the private side of the Wisconsin Institutes for Discovery. Along with other researchers at Morgridge, they invented a new 3D printing platform. Shortly after, in 2011, the three left to start Radiant Fabrication.

In 2012, Radiant placed among the top 25 finalists in the Governor's Business Plan Contest. Since that time, they have developed another platform technology, the basis for their inaugural 3D printer.

A hat tip to Madison's Sector67 makerspace, whose nurturing environs provided a backdrop for much of Radiant's nascent progress. "Getting their feedback on this is really important. Chris knows a lot about 3D printing and the larger 3D printing community," Patterson says, referring to Sector67 founder and director Chris Meyer. Sector67 offers two-hour 3D printing classes for $20. There are murmurings of a 3D printing camp there this summer.

Radiant's Lionhead 3D printer and proprietary Radiant Editor (these are working titles) are designed to be simple enough for anyone, regardless of technical ability, to use. "A few clicks and you're done" is the idea.

"We're aiming for a complete set of tools, a complete pipeline from idea to final printed object," Patterson explains. "We want to make sure we create a user experience that we've designed."

Patterson wants Radiant to provide the user with a complete set of tools, from idea to final printed object. If customers rely on outside design programs, for instance, that's an area where things can get complicated.

Radiant's obsession with usability has roots in videogame programming, which Patterson and Harris enjoy

in their spare time. When programming games, ″you′re constantly thinking about how the user will interact with the game,″ says Patterson.

Patterson believes this user-focused approach sets Radiant apart from competitors: ″They′re trying to create printers for other engineers, rather than creating for someone with no technical background.″

Some imagine that 3D printers will one day be as ubiquitous in our homes as microwave ovens. And while Patterson would welcome that possibility, he is focused on ″providing a good user experience, not being the cheapest.″ He adds: ″If it isn′t usable, it′s worthless.″

Initially, enthusiasts and small businesses interested in designing products will be the target market. ″The ability to create your own 3D models, prototype them and iterate on the designs is extremely difficult to do on a small budget,″ Patterson says. ″A unified and simplified software and hardware tool chain will enable them to do more with less. If they have a great idea for a product, they don′t need two semesters of training in 3D modeling software to figure out how to make it.″

Now in the debugging phase, Radiant plans to release its suite this summer on Kickstarter. The price will probably fall somewhere in the $2,000-$2,500 range. The printer will ship with two materials, both plastics. The hope is to incorporate two more materials - a structural material such as a metal or composite and an electrically conductive material - within four years.

About to close on first-round funding, Radiant has raised over $300,000 from a handful of angel investors with ties to Wisconsin, with a goal of $450,000. The hunt is also on for new office space and new hires, specifically hardware engineers and software developers.

"We're trying to find more people faster than we thought we would need to," Patterson says with a mix of excitement and trepidation.

With a product that turns ephemeral dreams into tangible things, it's no wonder the company is growing.