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SELF PORTRAIT: NASA's Curiosity rover used the Mars Hand Lens Imager to capture a set of 55 high-resolution images, which were stitched together to create this full-color self-portrait. Cardinal Systems — a Flagler Beach-based mapping software firm — created the photogrammetry software that led to the robot's photo.

*NASA, JPL-Caltech, Malin Space Science Systems*

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FLAGLER BEACH — One local company is taking Flagler County to the Red Planet — and they are making jobs out of its intergalactic dust.

Flagler Beach-based Cardinal Systems made the photogrammetry software for Curiosity, NASA's most expensive and sophisticated Mars rover to date. Aug. 6 marked the one-year anniversary of Curiosity's landing on Mars.

“It's an absolute dream come true to work with NASA,” said Mike Kitaif, co-owner of Cardinal Systems, a mapping software firm. The company takes photos shot by the Curiosity rover's navigation cameras as it explores the Martian terrain and converts them into three-dimensional images from their Flagler Beach office.

Photogrammetry is the art and science of making measurements from primarily photographs, said Kitaif, who explained that work the company is doing related to the Curiosity rover is just one of several contracts it has with NASA.

“Whenever vehicles land on other planets, they come with rockets to help them land,” Kitaif said in explaining his company's role in the Curiosity mission. “Those rocket plumes make craters and kick up materials, which end up back on the rover vehicle.”

Kitaif said that's where Cardinal Systems' work comes in. The company uses its photogrammetry software to measure small craters created by the rocket plumes by layering photographs taken by the rover to form 3-D images.

The terrain Cardinal Systems is measuring is in an area of the planet known as Gale Crater, said Kitaif.

“It's quite wild,” he said, explaining that their work will provide information for NASA engineers who design the next Mars rover.

Cardinal Systems began working with NASA in 2004, a year after the space shuttle Columbia disaster, where a piece of foam insulation broke off of an external fuel tank causing the shuttle to break up upon re-entry to Earth.

Seeking to prevent future space shuttle disasters, NASA approached Kitaif and Jane Smith, Cardinal System's managing partner and co-founder, about the firm's three-dimensional mapping software, which Kitaif and a then-colleague, Tom Blankenship, created.

“That contract gave our company a lot of reputability,” said Kitaif, who said that since then, Cardinal Systems has had a steady growth in its business.

“The Mars work is a very small part of what we do,” said Smith, who prior to teaming up with Kitaif in 2000 to launch Cardinal Systems did aerial mapping work for other companies.

Cardinal Systems also provides software modules for use by mapping companies, engineers and surveyors and even cosmetic companies, she said.

The company, which has nine employees, has clients worldwide, including private mapping companies, Federal Aviation Administration, U.S. Geological Survey and Arizona Department of Transportation.

Helga van Eckert, executive director of the Flagler County Department of Economic Opportunity, said Cardinal Systems' growth shows the county's local economy is starting to diversify beyond real estate and housing.

“This is the perfect example of the hidden talent and opportunity that lies within the county,” she said.