

Moon Race Car Competitions For Students Get Green Light

Mark Carreau April 30, 2020



Artist's concept of Moon race car.

Credit: Moon Mark

HOUSTON—Two companies have joined forces to spark a pair of competitions for teams of 9th- through 12th-grade students to design and assemble race cars for the Moon.

The companies are Moon Mark, a two-year-old multimedia entertainment and education content company, and Intuitive Machines (IM), the lunar launch services company.

The first competition calls for the virtual design of a small race car in the coming weeks that could notionally race on the Moon in the future.

A second Moon Mark-sponsored student competition is expected to emerge in 2021, after social distancing due to the COVID-19 pandemic lifts. It calls for the assembly of actual racers. Two vehicles emerging from a down select and weighing no more than 4 kg will be eligible for an Oct. 21, 2021, launch on an IM Nova-C lander to the Moon's Ocean of Storms for an actual race.

The student competitors will be virtually proficient and engaged in science, technology, engineering, the arts and mathematics.

“There are so many commonalities between aerospace and automotive racing. When you think about it, what’s really needed to be successful in those two things is teamwork. You have to understand the science, the physics and the engineering,” said Mary L. Hagy, Moon Marks founder and CEO, as well as a motorsports enthusiast.

The competitions are intended to serve multiple purposes. They can attract bright young students to possible careers in the emerging public/private drive to reignite the human exploration of deep space and commercialize low Earth activities. The activities include those underway on the

International Space Station and largely restricted to government agencies. They can also foster wider public interest and support for space exploration, she explained.

“I thought, ‘Wow.’ People love a competition. So they will want to know who wins,” Hagy said. “It’s not a matter of getting to the Moon. It’s how do you engage people in the process? That is how Moon Mark came to say, ‘We will do a race on the Moon.’”

As the strategy for a student competition to develop actual racers was evolving earlier this year, so was a global concern over the coronavirus pandemic and the need for social distancing. So Moon Marks, whose principals are from northern Nevada and the East Coast, amended the engagement strategy.

First up is the Lunar Race Car Design Challenge. Announced April 1, the design challenge is a no-registration-fee, virtual-only competition for student teams of three to six members, which closes May. 22. Teams may register online at <https://moonmark.space/lunar-race-car-design-challenge/>.

Four winners of the design challenge, which is open to students in grades 9 through 12 from any country, will be announced July 6. They will be judged on how they meet criteria provided by Moon Mark and document efforts virtually in phases that can provide educational content and subjected to a virtual audience vote. Each of the winning teams will receive \$1,000 for donation to a qualified charity of its choice.

“We are getting a lot of interest from various countries,” Hagy said.

Details of the Moon One challenge, which is to lead to the assembly of actual small lunar race car hardware, are still being worked out. But IM has been contracted through [NASA](#)’s \$2.6 billion, 10-year Commercial Lunar Payload Services Initiatives to launch agency-selected science and technology payloads to the lunar surface. IM-1 is to launch on Oct. 21, 2021, and land at the Ocean of Storms.

IM announced the launch date for its first mission under the initiative and lunar landing site on April 13. The company’s Nova-C lander is to deliver five [NASA](#) payloads, announced by the agency on Jan. 22, including the automated Precision Landing and Hazard Avoidance landing system. The [NASA](#) payloads can be accompanied by commercial payloads.

The two lunar race car finalists will launch on IM-1’s Nova-C lander as well.

As it descends to an altitude of 30 m above the lunar surface, mechanical articulating arms on the lander will eject a sphere containing high-definition cameras with a 360-deg. field of view.

“The sphere will land where it lands. There’s no way to predict,” Hagy said.

Once on the lunar terrain, the Nova-C lander arms will also deploy the two racer finalists to the lunar surface. While there are still details to be worked out, the race is to send the two cars around the camera sphere and back to the lander to determine the winner.

The landing date is to correspond to 14 days of daylight in the region.

The race cars are not to be like [NASA](#) lunar rovers. The rovers' functions are more complex and involve such tasks as seeking out and testing the lunar surface for potential resources for human explorers, such as water ice. The need for those resources will rise quickly once [NASA's](#) Artemis 3 mission touches down in 2024 with astronauts for the first time in more than a half century.

"This is a completely different set of requirements," Hagy said. "The students can build these vehicles with off-the-shelf parts."

IM's experts will help with the selection of components for battery and solar power, computer chips and communications hardware at technical readiness levels able to deal with environment challenges such as radiation.

"What the students will do is really focus on the design, the body of the car, motorization and the tires. There will be plenty of challenges along the way for them to solve," Hagy said. "Our partnership with IM gives us the reliability to make sure our students are technically supported with the best minds in the business, people that know what it means to go into space and the implications for the equipment that goes up."



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Mark is based in Houston, where he has written on aerospace for more than 25 years. While at the Houston Chronicle, he was recognized by the Rotary National Award for Space Achievement Foundation in 2006 for his professional contributions to the public understanding of America's space program through news reporting.
