

Colorado team gears up to win \$2 million in driverless vehicle competition

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Orville and Wilbur, take a seat.

It's time for a new generation of dreamers to boldly go where no man has gone before.

A handful of visionaries from Colorado hope to see their customized Nissan Xterra fly across the Mojave Desert in October with no one in the driver's seat.

Congress requires that a third of military ground vehicles drive themselves by 2015. The technology that would meet that federal mandate does not yet exist. That's why Team Mojavaton, an 11-man group of mostly Grand Junction residents, has invested countless hours into making that technology reality.

The team welcomes the challenge, but there's something more driving its innovation.

The 2005 DARPA Grand Challenge on Oct. 8 promises \$2 million to the team whose entry finishes first in a 150-mile course "somewhere in the California/Nevada Mojave Desert."

"The money makes it interesting," team member John Trotter said.

DARPA, the Defense Advanced Research Projects Agency, acts as the Department of Defense's central research and development organization. The DARPA Grand Challenge serves as a proving ground of sorts for entrepreneurs who seek to create an autonomous vehicle to meet the congressional mandate.

Unlike remote-control vehicles that involve someone at the controls from a distance, autonomous vehicles function free of human control.

More than 100 teams, composed of students and backyard inventors, automotive enthusiasts and industry experts, aim to finish the race first within the 10 allotted hours. But not all those teams will start.

DARPA officials will whittle down the field to 40 entries that compete in a semi-final race in September in Fontana, Calif. The 20 teams that move on compete in the Grand Challenge.

"That's why we really need some novel, outside-the-box thinking on this," said Jim Crittenden, one of several engineers from CoorsTek, a technical ceramics manufacturer in Grand Junction, on Team Mojavaton.

The team's entry looks like a souped-up sports utility vehicle. But what's on the inside counts. The white Xterra has been gutted and replaced with computer, navigation and sensory systems to drive itself.

DARPA held its first Grand Challenge in March 2004. The \$1 million prize went unclaimed. All 15

entries failed to finish the rugged desert course from Barstow, Calif., to Primm, Nev.

That was all the incentive Crittenden needed.

“The fact that nobody finished,” Crittenden said. “That made it exciting.”

Race officials will keep teams in the dark about the course until two hours before the race. Each team then receives a CD containing a file with approximately 250 GPS waypoints. Teams load those waypoints, which define the course, into their vehicle’s computer.

Vehicles start five minutes apart and will attempt to follow the obstacle-strewn course by driving from one waypoint to another.

But waypoints aren’t everything, Crittenden said.

Each vehicle must “see” the terrain ahead and identify the natural perils of off-road driving.

Race officials plan to spice up the already rugged course with “tank traps,” steel X-shaped structures designed to stop tanks. Failure to avoid such an obstacle means the end of the race for any team, Crittenden said.

Team members are not allowed on the course, in their vehicle or further contact with their vehicle once the race begins.

Team Mojavaton, the only entry from Colorado, is Crittenden, Trotter, Dave Crawford, Crag Frazier, Paul Hallmann, Phil Miller and Alan Peck of Grand Junction; Dan Councilman and Mike Claeys of Denver; Mark Moore of Arkansas and David Lafitte of Massachusetts.

Team members test drive the Xterra on evenings and weekends in empty parking lots, on deserted paved roads and unpaved roads in nearby desert. The vehicle can drive itself through a course the team defines with GPS waypoints but cannot yet sense obstacles.

The team welcomes the chance to represent Colorado on a national stage, Trotter said. Should their vehicle take home the \$2 million, team members intend to donate a portion to Colorado charities that benefit children and animals and divide the rest among themselves.

Team members recognized from the get-go their entry would demand not only their evenings and weekends, but a little something from their pocketbooks as well.

Corporate sponsors stepped forward to ease some of the sticker shock. Seven of those sponsors, including Fuoco Motor Co., Big “O” Tires, Barney Brothers Off-Road, Platinum Signs, Hensley Battery, Visual Expressions and CoorsTek, operate locally.

“We’ve been overwhelmed by the support,” Crittenden said.

Follow Team Mojavaton’s progress at www.mojavaton.com or e-mail mojavaton@aol.com.

Visit www.darpa.mil/grandchallenge for updates on the race in October.