



News Release

Defense Advanced Research Projects Agency

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IMMEDIATE RELEASE

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CRUSHER UNMANNED GROUND COMBAT VEHICLE UNVEILED

The Defense Advanced Research Projects Agency (DARPA) and U.S. Army today unveiled the Crusher unmanned ground combat vehicle in a ceremony hosted by the Carnegie Mellon University's National Robotics Engineering Center in Pittsburgh, Penn.

The Crusher vehicle is a follow-on and upgrade to the Spinner vehicle that was developed in a prior DARPA/Army program. Crusher is a six-wheeled, all-wheel drive, hybrid electric, skid-steered, unmanned ground vehicle. The vehicle weighs 14,000 pounds fully fueled, and is designed to carry a 3,000-pound payload – at this 17,000 pound total weight, two Crusher vehicles can be carried by a single C-130H aircraft at substantial range. If desired, Crusher can carry up to 8,000 pounds of payload and armor without compromising its mobility.

Crusher represents a new class of unmanned ground combat vehicles (UGCVs) developed under the DARPA/Army UGCV-Perception for Off-Road Robots Integration (UPI) program. Crusher is a highly mobile vehicle designed from the outset to be unmanned. It is being equipped with state-of-the-art perception capabilities, and will be used to validate the key technologies necessary for an unmanned ground vehicle to perform military missions autonomously. Crusher will be equipped with representative sensing and weapons payloads for planned field experiments.

DARPA Director Tony Tether noted, "With the combination of a robust, highly mobile vehicle design and an innovative autonomous control system, Crusher defines the state-of-the-art in autonomous unmanned ground vehicles systems. DARPA is pleased to be working with the Army to bring this new capability to fruition."

"The technologies embodied in the Crusher vehicles provide a glimpse into the future of autonomous ground platforms. The Crusher and its predecessor, the Spinner, demonstrate the realm of the possible with regard to a combination of autonomous behaviors, hybrid electric propulsion and robust vehicle design," added Deputy Assistant Secretary of the Army (Research and Technology) Dr. Thomas Killion. "All of this combines to give the Soldier greatly enhanced standoff capabilities with minimum impact on workload."

"The Future Combat Systems (Brigade Combat Team) program has been working with DARPA's UPI program for some time now, leveraging their advancements in robotics field testing, perception algorithm development, autonomy, and, more recently, in understanding wheeled system design characteristics for mobility and remote control latency and bandwidth

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effects on mobility performance,” explained Maj. Gen. Charles Cartwright, Program Manager Future Combat Systems (Brigade Combat Team). “The FCS (BCT), Lead Systems Integrator, and platform providers have all witnessed and participated in dialog with DARPA and Carnegie Mellon University’s National Robotics Engineering Center related to Spinner and now Crusher experimentation. This interaction has been of great benefit to the FCS program, and we look forward to continued interaction and transition of technologies from this new vehicle system to our FCS UGV systems.”

“The two new Crusher vehicles are a major improvement in unmanned ground vehicle capability,” added Larry Jackel, DARPA UPI program manager. “The original Spinner UGCV is an excellent platform, but in shakeout experiments, the new Crushers have already outperformed Spinner in all aspects. Combined with its autonomous control system, the Crusher defines the state-of-the-art in autonomous unmanned ground vehicles systems.”

The UPI program will conduct rigorous field experiments of the two Crusher vehicles and their perception and payload systems, with experiments planned at Fort Carson, Colo., this summer. The program will culminate in 2007 with Army users operating Crusher vehicles during representative missions in natural terrain. The UPI effort will merge all Crusher functions (mission planning, perception monitoring, vehicle monitoring, and payload operation) into an operator workstation interface and determine interaction requirements via experimentation.

UPI is a joint program between DARPA and the Office of the Assistant Secretary of the Army for Acquisition, Logistics, and Technology, managed by DARPA’s Tactical Technology Office. The Army’s Program Manager Future Combat System (Brigade Combat Team) closely follows the program.

Carnegie Mellon University’s National Robotics Engineering Center is the prime contractor for Crusher. Key subsystems and components are provided by CTC Technologies (vehicle hull chassis structure), Timoney Technology (suspension systems), Saft America (lithium-ion battery pack), and UQM Technologies (electric drive motors).

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