JIEDDO Partners with Department of Commerce on C-IED Robots

By Kara Ewell
JIEDDO News Service

Washington, D.C. – The Joint IED Defeat Organization partnered with the National Institute of Standards and Technology to conduct three weeks of robotics testing in Gaithersburg, Md., as a part of the organization's efforts to improve robot capabilities for dismounted troops in Afghanistan.

This is the first partnership between the Defense Department's lead counter-IED solution provider and the Commerce Department agency to promote science and technology innovation.

Participant demonstrates a robot's ability to be launched over a wall. (Photo by Tanekwa Bournes.)

Robots enable dismounted warfighters to safely investigate areas of interest from a distance. They also provide entry to remote or confined spaces. These types of standoff inspections are critical capabilities for soldiers and explosive ordnance disposal technicians in the fight against IEDs.

The Department of Homeland Security previously funded NIST to produce a set of standard test methods and performance metrics to evaluate robots used by first responders.

Like DHS, JIEDDO required a method to test commercial-off-the-shelf robots and measure their performance.

"Since both DHS and JIEDDO wanted to assess similar characteristics of robot performance, it made sense to partner and share information," said Dr. Richard Weatherly, a MITRE robotics expert and liaison to JIEDDO. "We are fortunate that NIST operates a facility near the D.C. metro area to test small robots."

The trials demonstrate efficiencies gained through interagency partnerships. Since the NIST trial facility was already set up for the DHS testing, JIEDDO organized and began the DOD trials in under four weeks with less than $250,000 in funding.

NIST trial participant demonstrates the ability to propel itself above a fence line. (Photo by Tanekwa Bournes.)

As part of the exercise, ultra-lightweight robot prototypes attempted standardized exercises in key areas of functionality. The participating robots attempted to navigate various types of terrain and to visually observe objects.

While NIST measured performance levels on the standardized tests, JIEDDO partners from MITRE and the Robotics System Joint Program Office observed from the warfighter's perspective monitoring variables such as user-friendliness, communication ranges and battery life.

NIST provided JIEDDO with a report on performance data. These metrics will serve as a baseline for future technology requirements. The baseline enables JIEDDO to better communicate warfighter robotics needs and will provide a quantitative means to evaluate potential robot solutions.

JIEDDO will also have access to the reports of more than 80 robots of various sizes that have been previously tested for DHS.

"The intended outcome is to establish a baseline for performance in standard robotics functions," said Matt Way, program integrator and JIEDDO oversight for the event.

The baseline will illustrate to theater how commercial-off-the-shelf robots measure up to what the warfighter is asking for.

A recent robotics requirement assigned to JIEDDO requested a lightweight, easy-to-use robot that could remotely inspect confined spaces from a safe standoff distance.

"In all likelihood, there will not be a robot that meets all of the warfighter requests," said Way. "JIEDDO needs to provide tradeoffs such as 'If you sacrifice five more pounds, you are going to get a robot that does everything you want' or 'Stay at the weight you want, but sacrifice in this performance category.'"

The data collected in the NIST trials will educate the warfighter on the current state of the robots industry. They will enable end users to make a more informed decision on which capabilities they require in a robotics solution.

"Ultimately, these exercises will reduce performance risk in theater," said Way.

Establishing a baseline increases the likelihood that the robots JIEDDO sends to theater will meet warfighter expectations and that they will perform consistently under similar conditions.

"JIEDDO is aware of the recent reports of soldiers employing remote control trucks in attempts to inspect and mitigate the threat of IEDs," said Way. "However, this approach has the potential for developing a false sense of security and increasing risk to the warfighter."

The false sense of security is potentially created because commercial remote control toys will not perform consistently, are not very durable in a rough terrain and have little if any effect on pressure plates, which account for the vast majority of IED strikes in Afghanistan.

JIEDDO is rapidly working the requirement to provide such an ultra-lightweight, recon robot capability that will provide a safer, standardized system to support the warfighter with specific procedures on how to employ them for C-IED purposes.

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