Autonomous Robots: The Future of Robotics

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What is the DoD's vision for robotics? What improvements can autonomous robots bring to military operations? Michael Edwards, II Marine Expeditionary Force covers these issues and more in this IDGA exclusive interview. Mr Edwards also discusses the revitalization of amphibious proficiency, Seabasing and the ongoing efforts of developing an improved Cargo UAS that can operate from the sea.

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Michael Edwards, Deputy Assistant, Chief of Staff G-9, II Marine Expeditionary Force discusses the importance of autonomous robots moving forward and the revitalization of amphibious proficiency. He also explains the DoD's vision for robotics and the ongoing efforts of developing improved Cargo UAS. Mr Edwards will be speaking at the Military Robotics Summit taking place August 28-29, 2012 in Washington, DC. To find out more information, or to register visit: http://bit.ly/JBUdIX

The comments below express Michael Edwards' personal opinions and are not to be taken as the official position of II Marine Expeditionary Force or United State Marine Corps.

IDGA: Why is the question of autonomy for robotics so important?

Michael Edwards: The Marine Corps has begun to reduce manning. With this reduction in manning it is vital that the number of people dedicated to controlling unmanned vehicles be reduced. There is little desire to take the human completely out of the loop. However if you could have a team controlling multiple UAVs instead of a team for each UAV, this would be a great improvement. Having autonomy in the robots could enable this. Commands could be given to the device and the onboard autonomy could determine how the robot executes based on its characteristics and current condition. This controlled autonomy could also enable common controllers for multiple robotic devices, thereby reducing the footprint Marines have to carry with them.

During Bold Alligator 12 the Marine Corps Warfighting Lab experimented with the concept of smaller teams operating independently far from a support base. Sustaining these smaller teams in the field is a challenge. We have supported evaluations of several robotic solutions to assist in the sustainment. One such device is a UAV for near autonomous resupply referred to as the Cargo UAS. Once the team is resupplied they also have to be able to move

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around the operating area. II MEF supported the evaluation of unmanned ground vehicle concepts. These include autonomy that would allow a small vehicle to follow dismounted Marines with additional gear and supplies. In order to achieve this robotics need to be a partner with the person, sensing what the person is doing and then reacting to the human's actions.

IDGA: What advancements have been made under the USMC direction to revitalize amphibious proficiency? And how far does this relate to robotics?

Michael Edwards: One of the tenets of modern amphibious operations is Seabasing. In order to conduct operations from a sea base several robotic technologies are being explored. Stabilized cranes and ramps for transfer of equipment at sea can significantly improve the throughput and variety of sustainment support than can be moved from shipping to ship to shore connectors. The ability to conduct transfer from ship to ship or to an intermediate staging craft like the Mobile Landing Platform during high sea states can be enhanced by autonomous station keeping software.

Controlled autonomous devices that provide movement of cargo within the ship to allow selective offload can greatly improve the ability of sea base to provide sustainment for a variety of amphibious operations other than an assault. Autonomy in robotic ship to shore connectors can reduce the manning requirements, improve throughput from the sea base to the objective and reduce risk to human life from anti access devices. There are ongoing efforts to develop an improved Cargo UAS that can operate from the sea and unmanned surface connectors.

IDGA: What does the next 2-3 years look like for robotic logistics, operations and interoperability?

Michael Edwards: Robotics is heading in the direction that "military computers" took several years ago; low cost, disposable, and easily upgraded. The return to amphibious operations will require the ability to maintain command and control, and logistics sustainment at sea while conducting operations ashore. Autonomous robotics can provide significant improvements in situational awareness, ISR collection and sustainment throughput. Improved interoperability with the Navy, SOF, and coalition partners will be important to supporting the emerging mission. The Secretary of Defense has ordered a shift in focus to the Pacific theatre. This will necessitate that the robotics be able to operate in multiple environments and conditions, not just the desert. Autonomy can allow the robotics to optimize their capabilities to the current conditions with less intervention from operations.

The vision of Robotics for DoD is: An integrated manned/unmanned force that strengthens the United States as the world's preeminent land power. The plan to achieve is based on four pillars: Focused Technology, Balanced Requirements, Compelling Return on Investment, Build the business cases necessary to justify the required investment, and Streamlined Acquisition. ***The glue that will hold this together will be the cultural acceptance of robotics into the everyday tasks in our lives***

Michael Edwards will be speaking at IDGA's Military Robotics Summit. To find out more or to register, visit www.militaryroboticssummit.com or by calling 1 (800) 882-8684.

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