SBIR 06.2 PHASE I - AWARD DETAILS	
ORGANIZATION	TARDEC
TOPIC NUMBER	A06-216
CONTRACT NUMBER	
YEAR OF AWARD	
AWARD START DATE	
AWARD COMPLETION DATE	
PROPOSAL NUMBER	A062-216-3509
TITLE	High Speed Light Weight Omnidirectional Vehicle with Enhanced Manipulator Control
PROJECT MANAGER	Matthew Berkemeier (435) 755-2980 matt.berkemeier@autonomoussolutions.com
COMPANY	Autonomous Solutions, Inc. 1946 South 1600 West Young Ward UT Minority Owned: No Veteran Owned: No Number of Employees: 50
KEYWORDS	omnidirectional drive, robotic manipulator, coordinated control
ABSTRACT	There is an urgent need for a man-transportable EOD robot which can quickly traverse the distance between its operator and the suspected UXO, perform manipulation tasks requiring high dexterity, and then quickly return. This proposal describes an innovative solution to this need called 'Taz'. Taz will weigh 40 kg, be capable of 40 kph for up to 8 hours, and will offer high dexterity manipulation by including a fully omni-directional base with a 3 DOF manipulator. Sophisticated control software will make coordination of the base and arm movement transparent to the user; the user will be able to specify the 6 DOF motion of the gripper, and the base and arm will automatically comply to realize the command. Innovative design features beside the control will include the use of different drive motors on separate drive wheels to provide both low and high speeds while saving weight and the use of recent developments in power technology to provide high speeds, weight savings, and long durations of use. Autonomous Solutions has a history of building innovative robotic vehicles, many of which have had omni-directional capability. ASI has also been recently pursuing low-cost, high-capacity, accurate robot arms with sophisticated control for EOD applications.
BENEFITS	The Taz robot will provide considerable benefit to soldiers dealing with suspected UXO. Since it will be capable of high speed travel, the total duration of the EOD operation will be cut down considerably, compared to the duration necessary with current robots, such as PackBot or Talon. Moreover, the high dexterity available with the automatically coordinated motion of base and arm will also shorten the time necessary to complete the required EOD operation.