

# Military Robot Mobile Platform Systems of Engagement Market Shares, Strategies, and Forecasts, Worldwide, 2013-2019

<https://marketpublishers.com/r/ME3A5A699E3EN.html>

Date: May 2013

Pages: 600

Price: US\$ 3,800.00 (Single User License)

ID: ME3A5A699E3EN

## Abstracts

LEXINGTON, Massachusetts (May 22, 2013) – WinterGreen Research announces that it has published a new study on Military Ground Robot Mobile Platform Systems of Engagement. The 2013 study has 600 pages, 262 tables and figures. Worldwide markets are poised to achieve significant growth as platforms of engagement leverage mobile device capability worldwide. Even as the US presence in Iraq and Afghanistan winds down, automated process implemented as mobile platform systems of engagement are being used to fight terrorists and protect human life. These robots are a new core technology in which all governments must invest.

Military ground robot market growth comes from the device marketing experts inventing a new role as technology poised to be effective at the forefront of fighting terrorism. Markets at \$4.5 billion in 2013 reach \$12.0 billion by 2019. Growth is based on the adoption of automated process by military organizations worldwide. This automated process implemented as a combination of software for innovation and robotic platforms is not the traditional military system.

They are systems of engagement that have arms and sensors, tracks and wheels, motors and solid state batteries. These systems of engagement support leveraging smart phones and mobile platforms. The aim is to achieve a broader, more intelligent military presence in every area of the globe.

In the last decade, the U.S. military poured money into unmanned ground systems to help protect troops against improvised explosive devices. There is the issue that the Defense Department needs to repurpose all those robots once the war in Afghanistan comes to a close. The wider market for military ground robots will develop as a

mechanism to fight terrorism in response to the bombings in Boston and elsewhere. Bombing of civilians is a very serious matter and needs to be addressed with mobile platforms that prevent terrorist acts.

While the Army's committed to unmanned ground systems, appears to be slowing, this commitment is anticipated to heat up again quickly. The investment priorities are anticipated to change as the Defense Department realizes that investments in ground robots are needed to fight terrorism everywhere.

Just as troops leave Afghanistan, so also the robots that worked alongside them leave. The difference is that the robots are finding new uses as mobile security platforms that protect against the loss of human life. The Army plans to upgrade 2,700 of its existing military robot systems for use in training or further deployments.

Another 2,469 will be divested and given to Defense Department partners or other government agencies. The U.S. military's spending on UGVs appears as though it might decrease according to the words coming out of the defense department, but as Congress assesses the damage from the Boston bombing, it will become apparent that there is only one choice for fighting terrorists efficiently and that is through the use of military ground robotic platforms that function as mobile systems of engagement.

Military ground robot market shares and market forecast analysis considers that military ground robots have a vast new market based on their ability to protect human life in the event of terrorist attack. This was proved virtually in the recent Boston terrorist attack when one of the Watertown police officers pulled the emergency brake on a police vehicle and rolled it up next to the terrorists in the stolen SUV Mercedes. Without actually being in the car, the local police officers were able to spook both terrorists by making them think they were being directly flanked.

The terrorists thought the vehicle really had police offices in it and shot toward it and detonated bombs in the rogue vehicle. The virtual robot vehicle did its job of protecting the lives of the Watertown police officers and of catching the bad guys.

Both terrorists were captured using robots, the robot car (actually a real car that was pushed into a bad situation as a robot would be, thus simulating a robot) and the robots that were used in the boat where the other terrorist was hiding to inspect the situation had a direct role in capturing the terrorists. Thus the Boston bombing illustrates a whole new use for military robots in terrorist situations.

In this manner, robot vehicles are sure to be used to fight terrorism going forward. It should be noted that though all the resources of the federal government and state government were directed toward solving the crime, that it was the very local group of police, the Watertown police department who did much of the work.

It was the local Watertown police department members who were engaged in a firefight with terrorists and who had to think on their feet to capture the bad guys and do it without getting killed themselves or endangering other civilians.

It is to the credit of the local police department that they were able to do this and it is noteworthy that they did use military robots in the endeavor and the police vehicle that doubled as a military robot presages more use of military style robots by local police departments.

The defense industry is entering a new era. Military robotics are poised to play a significant role in achieving change in security delivery. With battlefield engagements winding down, terrorism has emerged as a constant and current threat. The recent terrorist bombings in Boston and other cities worldwide illustrate that threat. Military robots are the best practice technology for dealing with terrorists in many cases.

According to Susan Eustis, the lead author of the study, “the military robot purchase is driven by the need for modernization of the military. The new military is dependent on flexibility and early response. The use of military robots is based on providing a robot that is less expensive to put in the field than a trained soldier and supporting the desire to keep the trained soldiers out of harm’s way. That automation of process and modernization has appeal to those who run the military.”

Robots are automating military ground systems, permitting vital protection of soldiers and people in the field, creating the possibility of reduced fatalities. Mobile robotics operate independently of the operator. Unmanned ground vehicles (UGVs) address needs from the US Defense Advanced Research Projects Agency's (DARPA) Urban Challenge to the United States Congress. This challenge mandated that one-third of all military land vehicles be autonomous by 2015 and two-thirds by 2025. UGVs are being implemented in military and security operations. They are used in industrial and agricultural operations. Continued growth of the UGV market is supported by the ability to deliver superior, cost-effective agnostic autonomy systems for existing vehicles and vessels.

We hear from military leaders all over the world that the plan going forward is to utilize

automated process to replace the warfighters and keep them out of the line of fire. The military robot market is evolving in this context.

Military ground robot market forecast analysis indicates that vendor strategy is to pursue developing new applications that leverage leading edge technology. Robot solutions are achieved by leveraging the ability to innovate, to bring products to market quickly. Military purchasing authorities seek to reduce costs through design and outsourcing. Vendor capabilities depend on the ability to commercialize the results of research in order to fund further research. Government funded research is evolving some more ground robot capability.

WinterGreen Research is an independent research organization funded by the sale of market research studies all over the world and by the implementation of ROI models that are used to calculate the total cost of ownership of equipment, services, and software. The company has 35 distributors worldwide, including Global Information Info Shop, Market Research.com, Research and Markets, electronics.ca, Bloomberg, and Thompson Financial.

## Contents

### **MILITARY GROUND ROBOT SYSTEMS OF ENGAGEMENT EXECUTIVE SUMMARY**

Military Ground Robots Market Shares and Market Forecasts

Defense Industry Is Entering A New Era

Military Ground Robot Market Driving Forces

Military Ground Robots Market Shares

QinetQ TALON

Allen Vanguard Armadillo Micro UGV

Military Ground Robot Market Forecasts

### **1. MILITARY ROBOTS MARKET DESCRIPTION AND MARKET DYNAMICS**

1.1 Robots Delivering Offensive and Defensive Capabilities to Combat Teams

1.1.1 Military Robots

1.1.2 Army Agile Process

1.1.3 Robots Used in War

1.2 US Army Modernization 2012

1.2.1 Military Robot Autonomy or Control

1.2.2 M3 is a DARPA Robotics Program Agile methods Rapidly Deliver Business

Process And Application Change

1.3 Military Robot Scope

1.3.1 Military Robot Applications

1.4 Army's G8 Futures office

1.4.1 Delivering Capabilities to the Army's Brigade Combat Teams

1.4.2 Transition Between The Current Market And Where The Market Is Going

1.4.3 Different Sizes of UGVs

1.5 Types of Military Robots

1.5.1 Explosive Observation Robot and Ordnance Disposal

1.5.2 QinetiQ North America Talon Robots Universal Disrupter Mount

1.5.3 General Dynamics Next-Generation

1.5.4 Soldier Unmanned Ground Vehicle from iRobot

1.6 UGV Enabling Technologies

1.6.1 Sensor Processing

1.6.2 Machine Autonomy

1.7 Military Robot Bandwidth

1.7.1 UGV Follow-Me Capability

1.7.2 Communications Bandwidth

- 1.7.3 Battery Power
- 1.7.4 Combination Of Batteries Linked To Onboard Conventional Diesel
- 1.8 SUGVs
  - 1.8.1 Mid-Size Category UGV
  - 1.8.2 Large UGV
  - 1.8.3 U.S. Army Ground Combat Vehicle
  - 1.8.4 TARDEC
  - 1.8.5 RS JPO Organization
- 1.9 Definition Of Military Robots

## **2. MILITARY GROUND ROBOT SYSTEMS OF ENGAGEMENT MARKET SHARES AND FORECASTS**

- 2.1 Military Ground Robots Market Shares and Market Forecasts
  - 2.1.1 Defense Industry Is Entering A New Era
  - 2.1.2 Military Ground Robot Market Driving Forces
- 2.2 Military Ground Robots Market Shares
  - 2.2.1 Selected Leading Military Robots
  - 2.2.2 Northrop Grumman
  - 2.2.3 Northrop Grumman Cutlass
  - 2.2.4 Northrop Grumman Mini-ANDROS II
  - 2.2.5 Northrop Grumman Mini Andros II Features
  - 2.2.6 Northrop Grumman ANDROS
  - 2.2.7 Northrop Grumman Remotec Andros Robots
  - 2.2.8 Northrop Grumman Caliber T5 is a small EOD and SWAT robot.
  - 2.2.9 Northrop Grumman Caliber Robot
  - 2.2.10 Northrop Grumman Remotec Andros
  - 2.2.11 Northrop Grumman / Remotec
  - 2.2.12 Northrop Grumman Remotec UK Wheelbarrow Robots
  - 2.2.13 General Dynamics Robotic Systems
  - 2.2.14 General Dynamics Mobile Detection
  - 2.2.15 iRobot Packbot
  - 2.2.16 iRobot
  - 2.2.17 Kongsberg
  - 2.2.18 QinetQ
  - 2.2.19 QinetQ TALON
  - 2.2.20 BAE Systems Electronic Bugs Developed for Military Use
  - 2.2.21 Allen Vanguard Armadillo Micro UGV
  - 2.2.22 ReconRobotics

## 2.3 Military Ground Robot Market Forecasts

### 2.3.1 Small Military Robot Forecasts

### 2.3.2 Mid Size Military Ground Robot Market Forecasts

### 2.3.3 Larger Military Robot Forecasts

### 2.3.4 Discussion of Various Size Military Robot Market Strengths and Challenges

### 2.3.5 Trends in the Auto Industry that Will Be Present in the Military Robot Industry

### 2.3.6 Unmanned Ground Systems Roadmap

### 2.3.7 Robots Represent Modernization of Military

### 2.3.8 Army Modernization

### 2.3.9 Army Brigade Combat Team Modernization

### 2.3.10 New World Order Built On The Globally Integrated Enterprise

### 2.3.11 Military Ground Robot Markets

### 2.3.12 Mission Specific Military Robot Unmanned Systems by Weight Class

### 2.3.13 Robotics Categories Established By The U.S. Department of Defense's Joint Robotics Program

## 2.4 Military Robot Government Budget Information

### 2.4.1 FCS Unmanned Ground Vehicles

### 2.4.2 Unmanned Ground Vehicles Government Test

### 2.4.3 Unmanned Ground Vehicles Production Delivery

## 2.5 Military Robot Prices

### 2.5.1 QinetQ Talon

### 2.5.2 iRobot Packbot

### 2.5.3 Recon Scout Throwbot

### 2.5.4 RoboteX Avatar Home & Office Robot

### 2.5.5 Military Robots Light

### 2.5.6 Tactical, Micro-Robot Systems

### 2.5.7 Small Unmanned Ground Vehicle (SUGV),

## 2.6 Military Robot Regional Analysis

## 2.7 Military Ground Robot Installed Base and Shipments Market Forecasts

# 3 MILITARY ROBOT SYSTEMS OF ENGAGEMENT PRODUCT DESCRIPTION

## 3.1 iRobot

### 3.1.1 iRobot 510 PackBot for EOD Technicians

### 3.1.2 iRobot PackBot 510 for Infantry Troops

### 3.1.3 iRobot PackBot 510 for Combat Engineers

### 3.1.4 iRobot 710 Warrior

### 3.1.5 iRobot 110 FirstLook

### 3.1.6 iRobot SUGV

- 3.1.7 iRobot 1KA Seaglider
- 3.2 Northrop Grumman
  - 3.2.1 Northrop Grumman CUTLASS
  - 3.2.2 Northrop Grumman Mini-ANDROS II
  - 3.2.3 Northrop Grumman Mini Andros II Features
  - 3.2.4 Northrop Grumman ANDROS Hazmat
- 3.3 General Dynamics Robotic Systems
  - 3.3.1 General Dynamics Mobile Detection Assessment and Response System (MDARS)
  - 3.3.2 General Dynamics Tactical Autonomous Combat – Chassis (TAC - C)
- 3.4 Kongsberg
  - 3.4.1 Kongsberg Protector Remote Weapon Station
  - 3.4.2 Kongsberg CORTEX
- 3.5 BAE Systems
  - 3.5.1 BAE Systems Electronic Bugs Developed for Military Use
  - 3.5.2 BAE Systems Land Vehicles Given a Brain of their Own
- 3.6 QinetQ
  - 3.6.1 QinetiQ TALON Product Line Expansion
  - 3.6.2 QinetQ TALON
  - 3.6.3 QinetQ MAARS
  - 3.6.4 QinetQ Raider I Engineer
  - 3.6.5 QinetQ Raider I Engineer Mission
  - 3.6.6 QinetQ Raider II
  - 3.6.7 QinetQ Spartacus
  - 3.6.8 QinetQ U.S. Army REF Minotaur
  - 3.6.9 QinetQ Tactical Robot Controller
  - 3.6.10 QinetQ Dragon Runner
  - 3.6.11 QinetQ Dragon Runner
- 3.7 Telerob
  - 3.7.1 Telerob - EOD / IEDD Equipment, EOD Robots and Vehicles
  - 3.7.2 Telerob Heavy Duty Explosive Ordnance Disposal (EOD) Robot
  - 3.7.3 Telerob Telemax High-Mobility EOD Robot
  - 3.7.4 Telerob EOD / IEDD Service Vehicles
- 3.8 Allen Vanguard
  - 3.8.1 Allen Vanguard Beetle Nano UGV
  - 3.8.2 Allen Vanguard Armadillo Micro UGV
  - 3.8.3 Allen Vanguard Scorpion Small UGV
  - 3.8.4 Allen Vanguard Digital Vanguard ROV
  - 3.8.5 Allen Vanguard Defender ROV



### 3.9 Boston Dynamics

3.9.1 Boston Dynamics LS3 - Legged Squad Support Systems

3.9.2 Boston Dynamics CHEETAH - Fastest Legged Robot

3.9.3 Boston Dynamics Atlas - The Agile Anthropomorphic Robot

3.9.4 Boston Dynamics BigDog

3.9.5 Boston Dynamics LittleDog - The Legged Locomotion Learning Robot

3.9.6 Boston Dynamics PETMAN - BigDog Gets a Big Brother

3.9.7 Boston Dynamics RHex Devours Rough Terrain

3.9.8 Boston Dynamics RiSE: Vertically Climbing Robot

### 3.10 Kairos Autonami

3.10.1 Kairos Autonami Pronto4 Agnostic Autonomy System for Existing Vehicles or Vessels

3.10.2 Kairos Autonami Pronto4 Benefits

3.10.3 Kairos Autonami Pronto4 Sub-Systems

3.10.4 Kairos Autonami ProntoMimic Software Suite Functions

### 3.11 Mesa Robotics

3.11.1 Mesa MATILDA II

3.11.2 Mesa ACER

### 3.12 Lockheed Martin SMSS

3.12.1 Lockheed Martin Squad Mission Support System SMSS User-Proven Autonomy

3.12.2 Lockheed Martin Squad Mission Support System Unmanned Capabilities

3.12.3 Lockheed Martin Squad Mission Support System Unmanned Capabilities

### 3.13 Thales Group Mini UAV and UGVs

3.13.1 Thales Group Customers

### 3.14 G-NIUS UGS

3.14.1 G-NIUS Avantguard MK I

3.14.2 G-NIUS Avantguard MK II

3.14.3 G-NIUS Guardium MK I

3.14.4 G-NIUS Guardium MK II

3.14.5 G-NIUS Guardium MK III

### 3.15 ICOR Technology MK3 Caliber

3.15.1 Icor CALIBER T5

3.15.2 Icor Mini-CALIBER

3.15.3 Icor MICRO-CALIBER Rapid Response

### 3.16 Pedsco Remote Mobile Investigator (RMI)

3.16.1 Pedsco RMI-9WT

3.16.2 Pedsco RMI-9XD

3.16.3 Pedsco RMI-10F

- 3.17 Robosoft robuROC
- 3.18 ECA Robotics CAMELEON EOD
  - 3.18.1 ECA Robotics CAMELEON CRBN
  - 3.18.2 ECA Robotics COBRA MK2
  - 3.18.3 ECA Robotics MAMBA
  - 3.18.4 ECA Robotics TSR
- 3.19 Elbit Systems Land Systems
  - 3.19.1 Elbit Systems Autonomous Systems
- 3.20 Recon Robotics Recon Scout IR
  - 3.20.1 Recon Robotics Recon Scout XL
  - 3.20.2 Recon Robotics Throwbot XT
  - 3.20.3 Recon Robotics Searchstick
- 3.21 Carnegie Mellon University Crusher
  - 3.21.1 Carnegie Mellon University TUGV

#### **4. MILITARY ROBOT TECHNOLOGY**

- 4.1 Military Robot Technology Enablers
  - 4.1.1 Military Robot Logistics
- 4.2 MRAP ATV: Requirements and Contenders
- 4.3 Military Robot Enabling Technology
- 4.4 Intel Integrated Circuit Evidence-Based Innovation
  - 4.4.1 Open Robotic Control Software
  - 4.4.2 Military Robot Key Technology
  - 4.4.3 PC-Bots Visual Simultaneous Localization & Mapping
- 4.5 Advanced Robot Technology: Navigation, Mobility, And Manipulation
  - 4.5.1 Robot Intelligence Systems
  - 4.5.2 Real-World, Dynamic Sensing
- 4.6 User-Friendly Interfaces
  - 4.6.1 Tightly-Integrated, Electromechanical Robot Design
- 4.7 Field Based Robotics Iterative Development
  - 4.7.1 Next-Generation Products Leverage Model
  - 4.7.2 Modular Robot Structure And Control
  - 4.7.3 Lattice Architectures
  - 4.7.4 Chain / Tree Architectures
  - 4.7.5 Deterministic Reconfiguration
  - 4.7.6 Stochastic Reconfiguration
  - 4.7.7 Modular Robotic Systems
- 4.8 Intel Military Robot Cultivating Collaborations

- 4.9 Hitachi Configuration Of Robots Using The SuperH Family
  - 4.9.1 Hitachi Concept of MMU And Logic Space
  - 4.9.2 Robotic Use of Solid State Thin Film Lithium-Ion Batteries
- 4.10 Network Of Robots And Sensors
  - 4.10.1 Sensor Networks Part Of Research Agenda
  - 4.10.2 Light Sensing
  - 4.10.3 Acceleration Sensing
  - 4.10.4 Chemical Sensing
- 4.11 Military Robot Technology Functions
- 4.12 Carbon Nanotube Radio
- 4.13 Military Robot Funded Programs
  - 4.13.1 Army Brigade Combat Team Modernization
  - 4.13.2 XM1216 Small Unmanned Ground Vehicle (SUGV)
  - 4.13.3 UUV Sub-Pillars
  - 4.13.4 Hovering Autonomous Underwater Vehicle (HAUV)
  - 4.13.5 Alliant
  - 4.13.6 ATSP is a Government-wide contracting vehicle
  - 4.13.7 Quick, efficient contracting vehicle
  - 4.13.8 Facilitates technology and insertion into fielded systems
  - 4.13.9 Access to all Northrop Grumman sectors
- 4.14 iRobot Technology
  - 4.14.1 iRobot AWARE Robot Intelligence Systems
  - 4.14.2 iRobot Real-World, Dynamic Sensing.
  - 4.14.3 iRobot User-Friendly Interface
  - 4.14.4 iRobot Tightly-Integrated Electromechanical Design.
- 4.15 Evolution Robotics Technology Solutions Evolution Robotics Example Applications
- 4.16 Classes of Unmanned Ground Vehicles (UGVs)
  - 4.16.1 Armed Robotic Vehicle (ARV)
  - 4.16.2 US BCT Unmanned Ground Vehicle Funding
  - 4.16.3 Funding Military Robots in US for 2011
  - 4.16.4 US Army's BCT Modernization Program Funding
  - 4.16.5 Efforts to Mitigate The Improvised Explosive Device Threat To Dismounted Operations
  - 4.16.6 US Joint Improvised Explosive Device Defeat Organization
  - 4.16.7 Route Mapping
  - 4.16.8 Man-Packable SUGV
  - 4.16.9 Demilitarized Zone Between South and North Korea
  - 4.16.10 Chinese Military Robots
  - 4.16.11 Western Europe

- 4.16.12 China & the Russian Federation
- 4.16.13 Middle East
- 4.16.14 India & Japan
- 4.16.15 Australia & Canada

## **5. MILITARY ROBOTS COMPANY DESCRIPTION**

### 5.1 Allen Vanguard

- 5.1.1 Allen Vanguard Rapid Development

### 5.2 BAE Systems

### 5.3 Boston Dynamics

### 5.4 ECA Robotics

### 5.5 Elbit Systems

- 5.5.1 Elbit Systems Principal Market Environment

### 5.6 G-NIUS

### 5.7 General Dynamics

- 5.7.1 Sequester Mechanism
- 5.7.2 General Dynamics Revenue
- 5.7.3 General Dynamics Robotic Systems
- 5.7.4 General Dynamics Robotic Systems (GDRS) Vision
- 5.7.5 General Dynamics Robotic Systems (GDRS) Manufacturing
- 5.7.6 General Dynamics Autonomous Land And Air Vehicle Development

### 5.8 ICOR Technology

### 5.9 iRobot

- 5.9.1 iRobot Home Robots:
- 5.9.2 iRobot Defense and Security: Protecting Those in Harm's Way
- 5.9.3 iRobot Role In The Robot Industry
- 5.9.4 iRobot SPARK (Starter Programs for the Advancement of Robotics Knowledge)
- 5.9.5 iRobot Revenue
- 5.9.6 iRobot Acquires Evolution Robotics, Inc.
- 5.9.7 iRobot / Evolution Robotics

### 5.10 Kairos Autonomi

- 5.10.1 Kairos Autonomi Autonomy ROI
- 5.10.2 Kairos Autonomi Upgrades Robot Conversion Kit

### 5.11 Kongsberg

- 5.11.1 Kongsberg Defence Systems Revenue

### 5.12 Lockheed Martin

- 5.12.1 Lockheed Martin Symphony Improvised Explosive Device Jammer Systems
- 5.12.2 Lockheed Martin Aeronautics Revenue

- 5.12.3 Lockheed Martin Electronic Systems
- 5.12.4 Lockheed Martin
- 5.13 Mesa Robotics
  - 5.13.1 Systems Development Division of Mesa Associates
  - 5.13.2 Mesa Robotics Affordable Robotic Solutions
  - 5.13.3 Mesa Robotics Revenue
- 5.14 Northrop Grumman
  - 5.14.1 Northrop Grumman Revenue
  - 5.14.2 Northrop Grumman Remotec
  - 5.14.3 Northrop Grumman Leading Global Security Company
  - 5.14.4 Northrop Grumman Supplies Marine Navigation Equipment
  - 5.14.5 Northrop Grumman Recognized by UK Ministry of Defense for Role in Supporting Sentry AWACS Aircraft During Military Operations in Libya
  - 5.14.6 Northrop Grumman Corporation subsidiary Remotec Inc. upgrade the U.S. Air Force fleet of Andros HD-1
  - 5.14.7 Northrop Grumman NAV CANADA Supplier
- 5.15 Pearson Engineering
- 5.16 Pedsco
- 5.17 QinetiQ
  - 5.17.1 QinetiQ Comprised Of Experts
  - 5.17.2 QinetiQ North America TALON Detects Deadly IEDs And Saves Lives
  - 5.17.3 QinetiQ World-Leading Products:
  - 5.17.4 QinetiQ Innovation
  - 5.17.5 QinetiQ North America
  - 5.17.6 QinetiQ Revenue
  - 5.17.7 QinetiQ Vision
  - 5.17.8 QinetiQ Mission
  - 5.17.9 QinetiQ / Foster Miller
  - 5.17.10 QinetiQ / Foster Miller Financial Position
  - 5.17.11 QinetiQ North America Order for 100 Dragon Runner 10Micro Robots
  - 5.17.12 QinetiQ / Automatika
  - 5.17.13 QinetiQ Customer Base
- 5.18 Re2, Inc
  - 5.18.1 Re Leading Developer
  - 5.18.2 Re2 Forerunner High Speed Inspection Robot
  - 5.18.3 Re2 ForeRunner RDV
  - 5.18.4 Re2 HST - High-Speed Teleoperation
- 5.19 ReconRobotics
  - 5.19.1 ReconRobotics Tactical, Micro-Robot Systems

5.20 Robosoft

5.21 RoboteX

5.21.1 RoboteX Avatar Home & Office, A Personal Security Robot

5.21.2 RoboteX Portable Reconnaissance

5.21.3 RoboteX Avatar I Spec List:

5.21.4 RoboteX Avatar I Use Cases:

5.22 TechnoRobot

5.23 Telerob

5.23.1 Telerob

5.24 Thales Group

5.1.1 Thales Core Businesses

5.1.2 Thales: - A Global Player

5.1.3 Thales Revenue

5.1.4 Thales Key Technology Domains

5.1.5 Thales Open Research

5.1.6 Thales Stance on Environment

5.1.7 Thales Processes

5.1.8 Thales Product Design

5.1.9 Thales Site Management

5.1.10 Thales Alenia Space Integration Of Service Module For The Fourth ATV

5.1.11 Thales Sonar 'Excels' In Anti-Submarine Warfare Exercise

5.24.1 Thales Group Ground Alerter

5.24.2 Thales Group Ground Master 400 (GM 400)

5.24.3 Thales Group Ground Smarter 1000

5.24.4 Thales Group

5.25 Vecna Technologies

5.25.1 Vecna Telemedicine

5.26 Selected Military Robot Companies

5.26.1 Selected Robot Companies

## **6. MILITARY ROBOT CONTRACTS**

6.1.1 SPAWAR

6.1.2 Navy Explosive Ordnance Disposal

6.1.3 Future Combat Systems Program Cuts

6.1.4 U.S. Army Small Unmanned Ground Vehicle (SUGV)

6.2 GCV Created Due To Termination Of The Future Combat Systems And Its Former Manned Ground Vehicles

6.2.1 Army To End Robotic Vehicle, Aircraft Efforts

- 6.2.2 MULE Termination
- 6.2.3 Armed Robotic Vehicle Assault (Light) Continuation
- 6.2.4 Robotic Systems Chartered by JPO
- 6.2.5 U.S. Army Small Unmanned Ground Vehicle
- 6.3 Selected US 2012 Military Budget for Robotics
  - 6.3.1 Defense Advanced Research Projects Agency, DARPA Tactical Teams
- 6.4 US Military Budget 2012
  - 6.4.1 Report on Deployment of Assets and Personnel to Libya
- 6.5 Customers For Government Robotic Products, And Research And Development Contracts
  - 6.5.1 General Dynamics Land Systems \$24 Million Contract To Supply Commanders Remote Operated Weapons
  - 6.5.2 Kongsberg and General Dynamics co-producing CROWS and CROWS II
  - 6.5.3 General Dynamics Awarded \$24 Million to Provide Remote Weapon Systems That Protect Tank Commanders
  - 6.5.4 Kongsberg
  - 6.5.5 Vulcan Unmanned Maritime Vehicle (UMV) And Unmanned Ground Vehicle (UGV) Programs
  - 6.5.6 DARPA End-To-End Unmanned Vehicle System Solution
  - 6.5.7 Unmanned Vehicles UMV and UGV Submarkets
  - 6.5.8 Allen-Vanguard Spares For Symphony Electronic Counter Measures (ECM) Program
- 6.6 Military / Government and University Agencies
- 6.7 Military Robots Contracts
  - 6.7.1 Talon
  - 6.7.2 American Reliance Solution Found for Battlefield Robot Control Problem
  - 6.7.3 QinetiQ NA Ships First-Responder Robots to Navy
  - 6.7.4 iRobot Wins \$60M Army Contract to Develop Warrior Robot
  - 6.7.5 iRobot Wins \$286 Million U.S. Army Contract
  - 6.7.6 Counter Radio-Controlled Improvised Explosive Device Electronic Warfare Spiral 3 systems ('CREW3')
  - 6.7.7 U.S. Army Has Agreed To Buy Up To 7,500 Electronic Bomb Jammer Systems From Its Partner Lockheed Martin Allen-Vanguard
  - 6.7.8 Jan. 31, 2008 Allen-Vanguard Confirms U.S. Department of Defense Intent To Establish an IDIQ Contract For Up to 7,500 Symphony IED Countermeasure Systems
  - 6.7.9 iRobot
  - 6.7.10 iRobot Order for Six Seaglidors from the University of Western Australia
  - 6.7.11 iRobot Corp. (Nasdaq: IRBT) Order Totaling \$16.8 million from the U.S. Army Program Executive Office for Simulation, Training, and Instrumentation (PEO STRI)

6.7.12 General Dynamics Combat Autonomous Mobility System (CAMS)

6.7.13 Robotic Technology Robot



## List Of Tables

### LIST OF TABLES AND FIGURES

Table ES-1 Military Robotics Market Factors

Table ES-2 Military Robot Functions

Table ES-3 Military Robots Market Driving Forces

Figure ES-4 Military Ground Robot Market Shares, Dollars, Worldwide, 2012

Figure ES-5 QinetQ TALON

Figure ES-6 Military Ground Robot Market Forecasts, Shipments, Dollars, Worldwide, 2013-2019

Figure 1-1 US Unmanned Vehicle Ground Domain Performance

Table 1-2 US Military Modernization Equipment Priorities, 2012

Figure 1-3 Cultural and Military Structural Issues

Figure 1-4 Shift From Manned Combatant Role to Unmanned Autonomous Systems

Figure 1-5 Army Agile Process

Figure 1-6 US Army Modernization 2012

Figure 1-6 US Army and Navy Budget Requests

Table 1-7 US Army Reforming Defense Acquisition, US Army Reducing Ground Forces by 2016

Table 1-8 US Army Reducing Ground Forces by 2016

Table 1-9 Military Robot Applications

Table 1-9 (Continued) Military Robot Applications

Table 1-10 Military Armed Robotic Applications

Table 1-11 What the Soldier Wants In Robotic Systems

Figure 1-12 Telerob Explosive Observation Robot and Ordnance Disposal Unit

Figure 1-13 Telerob Explosive Ordnance Disposal EOD System For Operation In Confined Areas

Figure 1-14 QinetiQ North America TALON Robots Universal Disruptor Mount (UDM)

Figure 1-15 Next-Generation General Dynamics

Figure 1-16 US Army UGV Roadmap RS-JPO Structure

Table 1-17 Definition of Military Robots:

Table 2-1 Military Robotics Market Factors

Table 2-2 Military Robot Functions

Table 2-3 Military Robots Market Driving Forces

Figure 2-4 Military Ground Robot Market Shares, Dollars, Worldwide, 2012

Table 2-5 Military Ground Robot Market Shares, Dollars, Worldwide, 2012

Figure 2-6 Northrop Grumman Mini-ANDROS II

Table 2-7 Northrop Grumman Mini Andros II Features

Figure 2-8 Northrop Grumman Remotec HD-1 Figure 2-9 General Dynamics TAC-C Robot

Figure 2-10 Next-Generation General Dynamics Robots

Table 2-11 General Dynamics Near Autonomous Unmanned Systems (NAUS) – Advanced Technology Objective (NAUS-ATO)

Table 2-12 iRobot 510 PackBot for EOD Conventional Ordnance and SWAT Missions

Figure 2-13 QinetQ TALON

Figure 2-14 BAE Systems Electronic Bugs

Figure 2-15 Military Ground Robot Market Forecasts, Shipments, Dollars, Worldwide, 2013-2019

Table 2-16 Military Ground Robot Market Forecasts, Shipments, Dollars, Worldwide, 2013-2019

Table 2-17 Mini and Small Military Ground Robot Market Forecasts Units and Dollars, Worldwide, 2013-2019

Figure 2-18 Mid Size Military Ground Robot Market Forecasts Units and Dollars, Worldwide, 2013-2019

Table 2-19 Larger Military Ground Robot Market Forecasts Units and Dollars, Worldwide, 2013-2019

Table 2-20 Unmanned Ground Systems Roadmap

Figure 2-21 US Army Modernization Positioning

Figure 2-22 Super Soaker vs. R.C. Glider

Figure 2-23 Mission Specific Military Robot Unmanned Systems by Weight Class

Figure 2-24 Unmanned Ground Systems US Army Priority Roadmap

Figure 2-24a Unmanned Ground Systems US Army Appropriations Budget Activity Through 2016

Figure 2-25 Unmanned Ground Systems US Army Appropriations SUGV Budget Activity Timeline 2013

Table 2-26 Military Robots Light

Table 2-27 Military Robots Medium Large

Table 2-28 Military Unmanned Ground Vehicles Heavy

Table 2-29 Military Unmanned Ground Vehicles Large

Figure 2-30 Mission Specific Military Unmanned Ground Vehicles by Weight Class

Table 2-31 Military Robots Definitions of Systems By US Army UGV Roadmap

Figure 2-32 Military Ground Robots In Inventory: US

Figure 2-33 Military Ground Robots to Purchase: US

Figure 2-34 US Military Services Savings Categories

Figure 2-35 Military Robot US Liaison Officers

Table 2-36 Tiers of US Army UGVs

Figure 2-37 US Robot Systems Associated with Force Application

Table 2-38 Use of Robots for Protection

Table 2-39 US Army Robot Systems Associated with Protection

Table 2-40 Named Unmanned Systems Associated with Force Support and Command and Control

Table 2-41 Named Unmanned Systems Associated with Force Support

Figure 2-42 Robots Associated with Net Centric Systems

Figure 2-43 Robot Systems Associated with Battle Space Awareness

Figure 2-44 Robot Systems Associated with Battle Space Awareness

Figure 2-45 Military Ground Robot Regional Market Segments, Dollars, 2012

Table 2-46 Military Ground Robot Regional Market Segments, 2012

Table 2-47 Military Ground Robot Installed Base and Shipments Market Forecasts, Units, Worldwide, 2013-2019

Figure 3-1 iRobot 510PackBot for EOD Technicians

Table 3-2 iRobot 510 PackBot for EOD Conventional Ordnance and SWAT Missions

Figure 3-3 iRobot PackBot 510 for Infantry Troops

Figure 3-4 iRobot PackBot 510 for Combat Engineers

Table 3-5 iRobot 510 PackBot for Combat Engineers Tasks

Figure 3-6 iRobot 710 Warrior

Table 3-7 iRobot 710 Warrior Uses

Figure 3-8 iRobot 110 FirstLook

Figure 3-9 iRobot 110 Small, Light And Throwable FirstLook Uses

Figure 3-10 iRobot SUGV

Figure 3-11 iRobot SUGV Uses

Figure 3-12 iRobot 1KA Seaglider

Figure 3-13 iRobot 1KA Seaglider Uses

Figure 3-14 Northrop Grumman Mini-ANDROS II

Table 3-15 Northrop Grumman Mini Andros II Features

Figure 3-16 Northrop Grumman Mini Andros II

Figure 3-17 Northrop Grumman ANDROS Hazmat

Figure 3-18 Northrop Grumman Andros In the Military Street

Figure 3-19 Northrop Grumman Andros In the Military Field

Table 3-20 General Dynamics GDRS Functions Needed To Perform A Variety Of Military, Government And Civilian Missions

Table 3-21 General Dynamics Autonomous Systems Implementation Functions

Table 3-22 General Dynamics Military Robots Functions

Table 3-23 General Dynamics Military Robot Positioning

Table 3-24 General Dynamics Military Warfighter Support

Table 3-25 General Dynamics MDARS Features:

Figure 3-26 Kongsberg Protector Remote Weapon Station

Figure 3-27 Kongsberg CORTEX  
Figure 3-28 BAE Systems Electronic Bugs  
Figure 3-29 BAE Systems Remote Military Land Vehicles  
Table 3-30 QinetiQ TALON Product Line Specific Task Expansion  
Figure 3-31 QinetiQ TALON  
Table 3-32 QinetiQ North America's TALON Family Of Robots Features  
Table 3-33 QinetiQ North America's TALON Family Of Robots Target Markets  
Table 3-34 QinetiQ North America's TALON Family Of Robots Mission Positioning  
Table 3-35 QinetiQ TALON Product Line  
Table 3-36 QinetiQ TALON Expertise in Action  
Figure 3-37 QinetiQ Modular Advanced Armed Robotic System  
Figure 3-38 QinetiQ Raider I Engineer  
Table 3-39 QinetiQ Raider I Engineer Mission  
Figure 3-40 QinetiQ Raider II  
Figure 3-41 QinetiQ IED Defeat/Combat Engineer Vehicle  
Table 3-42 QinetiQ Spartacus Diesel-Powered Loader Mission  
Figure 3-43 QinetiQ U.S. Army REF Minotaur  
Table 3-44 QinetiQ North America's Tactical Robot Controller (TRC) Features  
Table 3-45 Telerob's Key Product Areas  
Figure 3-46 Telerob Heavy-Duty EOD Robot Product  
Figure 3-47 Telerob TeleMAX Small Bomb Disposal EOD Heavy-Duty Robots  
Figure 3-48 Telerob teleMAX  
Figure 3-49 Telerob Bomb Disposal Vehicles  
Figure 3-50 Telerob Bomb Disposal Vehicle Interior  
Figure 3-51 Allen Vanguard Beetle Nano UGV  
Table 3-52 Allen Vanguard Beetle Nano UGV Features  
Figure 3-53 Allen Vanguard Armadillo Micro UGV  
Table 3-54 Allen Vanguard Armadillo Micro UGV Features  
Figure 3-55 Allen Vanguard Scorpion Small UGV  
Table 3-56 Allen Vanguard Scorpion Small UGV Functions  
Figure 3-57 Allen Vanguard Digital Vanguard ROV  
Table 3-58 Allen Vanguard Digital Vanguard Controller Functions  
Table 3-59 Allen Vanguard Digital Vanguard Controller Features  
Figure 3-60 Allen Vanguard Defender ROV  
Table 3-61 Allen Vanguard Defender ROV Functions  
Figure 3-62 Boston Dynamic LS3  
Figure 3-63 Boston Dynamic CHEETAH  
Figure 3-64 Boston Dynamic Atlas  
Figure 3-65 Boston Dynamic BigDog

Figure 3-66 Boston Dynamics LittleDog  
Figure 3-67 Boston Dynamics PETMAN  
Figure 3-68 Boston Dynamics RHex  
Figure 3-69 Boston Dynamics RiSE: Vertically Climbing Robot  
Figure 3-70 Boston Dynamics SquishBot  
Figure 3-71 Kairos Pronto4 Agnostic Autonomy System for Existing Vehicles or Vessels  
Figure 3-72 Kairos Autonami Pronto4 zSolution For Truck  
Table 3-73 Kairos Autonami Software Features:  
Figure 3-74 Mesa Robotics MATILDA II  
Table 3-75 Mesa Robotics MATILDA II Functions  
Figure 3-76 Mesa ACER  
Table 3-77 Mesa Robotics ACER Functions  
Figure 3-78 Lockheed Martin SMSS  
Table 3-79 Lockheed Martin Squad Mission Support System SMSS Uses  
Table 3-80 Thales Group Mini UAV and UGVs Main characteristics  
Table 3-81 G-NIUS Unmanned Ground Systems (UGS) LTD Technology  
Table 3-82 G-NIUS Unmanned Ground Systems (UGS) LTD Appositions  
Figure 3-83 G-NIUS Avantguard MK II  
Table 3-84 G-NIUS Guardium MK I  
Figure 3-85 G-NIUS Guardium MK II  
Figure 3-86 G-NIUS Guardium MK III  
Table 3-87 G-NIUS Guardium MK III Capabilities  
Table 3-88 G-NIUS Guardium MK III Advanced Technology  
Figure 3-89 ICOR Technology MK3 Caliber  
Figure 3-90 Icor CALIBER T5  
Figure 3-91 Icor Mini-CALIBER  
Figure 3-92 Icor MICRO-CALIBER Rapid Response  
Figure 3-93 Pedsco RMI-9WT  
Table 3-94 Pedsco RMI-9WT FEATURES:  
Figure 3-95 Pedsco RMI-9XD  
Table 3-96 Pedsco RMI-9XD Features  
Figure 3-97 Pedsco RMI-10F  
Table 3-98 Pedsco RMI-10F FEATURES:  
Figure 3-99 Robosoft robuROC  
Figure 3-100 ECA Robotics CAMELEON EOD  
Table 3-101 ECA Robotics CAMELEON EOD Mission Types  
Figure 3-102 ECA Robotics CAMELEON CRBN  
Figure 3-103 ECA Robotics COBRA MK2  
Figure 3-104 ECA Robotics COBRA Missions

Figure 3-105 ECA Robotics EOD MAMBA Vehicle  
Table 3-106 ECA Robotics EOD MAMBA Functions  
Figure 3-107 ECA Robotics TSR  
Figure 3-108 Recon Robotics Recon Scout IR  
Figure 3-109 Recon Robotics Recon Scout XL  
Figure 3-110 Recon Robotics Throwbot XT  
Figure 3-111 Carnegie Mellon University Crusher  
Table 3-112 Carnegie Mellon University TUGV  
Figure 4-1 Military Robot Technology Enablers  
Table 4-2 Military Robot Technology Characteristics  
Figure 4-3 Military Ground Robot Technology Enablers  
Table 4-4 US Army Military Robot Logistics Positioning  
Figure 4-5 Robot Systems Associated with Force Application Description  
Figure 4-6 Robotic Performance Characteristics  
Table 4-7 Military Robotics Enabling Technology  
Table 4-8 Military Robots Development Challenges  
Table 4-9 Military Robot Integrated Circuit-Based Innovation Functions  
Table 4-10 Military Robot Key Technology  
Table 4-11 Robot Communications Key Technology  
Table 4-12 Military Robot Key Navigation Technologies  
Table 4-13 Human-Robot Interaction  
Table 4-14 Visual Simultaneous Localization & Mapping Functions Relevant to Robotics  
Figure 4-15 Hitachi Modular Robot Configuration  
Table 4-16 Military Robot Key Product Technology Factors  
Table 4-16 (Continued) Military Robot Key Product Technology Factors  
Table 4-17 Military Robot Technology Functions  
Table 4-17 (Continued) Military Robot Technology Functions  
Table 4-18 Missions (UUV “Sub-Pillars”) In Priority Order  
Figure 4-19 UUVMP Vision  
Table 4-20 Alliant Features  
Table 4-20 (Continued) Alliant Features  
Figure 4-21 Evolution Robotics Technology Solutions  
Figure 4-22 Evolution Robotics Object Recognition  
Table 4-23 Evolution Robotics Applications  
Figure 5-1 Allen Vanguard Threat Intelligence  
Table 5-2 Allen-Vanguard R&D Team Mandate:  
Table 5-3 Allen-Vanguard Scientific And Engineering Topics Researched and Developed  
Table 5-4 Allen-Vanguard R&D Fundamental Research

Table 5-5 Allen-Vanguard R&D Engineers And Scientists Comprehensive Research

Table 5-6 BAE Systems Standards

Figure 5-7 BAE Systems Revenue in Defense Market

Table 5-8 ECA Robotics Range Of Products

Table 5-9 Elbit Systems Activities:

Table 5-11 G-NIUS Unmanned Ground Systems (UGS) Solutions

Figure 5-12 Lockheed Martin Segment Positioning

Table 5-13 Lockheed Martin's operating units

Figure 5-14 Lockheed Martin Aeronautics Segment Positioning

Figure 5-15 Lockheed Martin Aeronautics Segment Portfolio

Figure 5-16 Lockheed Martin Aeronautics C130 Worldwide Airlift

Figure 5-17 Lockheed Martin Aeronautics Falcon Fighter

Figure 5-18 Lockheed Martin Electronic Systems Portfolio

Table 5-20 Mesa Robotics Technical Experience

Table 5-21 Northrop Grumman Partner Of Choice

Figure 5-22 Northrop Grumman Systems Segments

Figure 5-23 Northrop Grumman Portfolio

Table 5-24 QinetiQ Vision

Figure 5-25 QinetiQ Dragon Runner Urban Operations Rugged Ultra-Compact, Lightweight And Portable Reconnaissance Robot

Table 5-26 QinetiQ Customer Base

Figure 5-27 Re Core Technologies

Figure 5-28 Re Unmanned Ground Vehicles

Figure 5-29 Re Forerunner Key Features

Figure 5-30 Re2 Open Architecture for Robots

Figure 5-31 Robosoft Unmanned Ground robots, For Security, Transport, Cleaning, Healthcare And Research

Figure 5-32 Robotex Avatar I Tactical Robot Unmanned Ground Robots

Figure 5-33 Robotex Unmanned Ground Robots

Figure 5-34 Robotex Avatar II Tactical Robot

Table 5-35 RoboteX Portable Reconnaissance Controls

Table 5-36 RoboteX Avatar I Use Cases:

Figure 5-37 Technorobot

Figure 5-38 Technorobot Collaborations

Table 5-39 Thales Key Technology Domains

Figure 5-40 Thales Measurable Environmental Targets

Figure 5-41 Thales Group GROUND Master

Table 5-42 Thales Group GROUND Master 400 Key Features:

Table 5-43 Thales Group Ground Smarter 1000 Key Features:

Figure 5-44 Thales Critical Decision Chain  
Figure 5-45 Vecna Hospital Delivery Bot  
Figure 5-46 Vecna Robotics: HG2  
Table 5-47 Vecna Technologies hydraulic end effector Specifications  
Figure 5-48 Vecna Telemedicine  
Table 6-1 Military Robot Research and Development Projects  
Figure 6-2 iRobot Government Agencies Served  
Figure 6-3 Lockheed Martin Multifunction Utility Logistics Equipment UGV -- MULE  
Figure 6-4 JPO Robotic Systems  
Figure 6-5 Army Modernization Aims  
Table 6-6 Unmanned Vehicles UMV and UGV Submarkets  
Table 6-7 Unmanned Ground Vehicles (UGVs) Leading Technologies And Subsystems  
Table 6-8 UUV Programmes  
Table 6-9 Military / Government and University Agencies



## I would like to order

Product name: Military Robot Mobile Platform Systems of Engagement Market Shares, Strategies, and Forecasts, Worldwide, 2013-2019

Product link: <https://marketpublishers.com/r/ME3A5A699E3EN.html>

Price: US\$ 3,800.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

[info@marketpublishers.com](mailto:info@marketpublishers.com)

## Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/ME3A5A699E3EN.html>