

# DoD Ground Robotics Vision



**An integrated manned/unmanned force that strengthens the United States as the world's preeminent landpower**

## *Cultural Acceptance*

### **Focused Technology**

Provide affordable robotic solutions that enable natural modes of interaction between man and machine

### **Balanced Requirements**

Reconcile fieldable technology with prioritized and articulated requirements

### **Compelling Return on Investment**

Build the business cases necessary to justify the required investment

### **Streamlined Acquisition**

Match the acquisition strategy to the accelerated pace of robotics technology development and transition

- Focus on intelligence, perception, human-machine interface, mobility, manipulation, and navigation technologies.
- Improve robotic performance in complex and dynamic environments.
- Support the creation of dynamic man/machine teams through increased collaboration and autonomy.
- Establish stakeholder dialogue on the current capabilities of robotic systems and identify potential applications through periodic base-lining activities and technical demonstrations
- Select key missions with the greatest chance of initial success and advocate those programs that promote social acceptance of robotics technologies.
- Define standardized metrics and tests and implement a framework for verification of technology readiness and validation of realistic requirements for robotic systems.
- Adopt a design approach that prioritizes unmanned materiel solutions and leverages opportunities for inclusion of robotics technologies into manned systems.
- Develop realistic total ownership cost benefit analysis for robotic systems:
  - In year 1, develop business cases for 1 or more dual use applications for specific domain and customers that are fieldable in 3-5 yrs.
  - In year 2, based on lesson learned define and document a repeatable process that can be adopted across the community.
  - In the out years, distill the lessons learned to continuously improve the process and promote the successes.
- Develop and enforce joint standards for open architectures and modularity to foster reduced total ownership cost, accelerated transition and increased innovation.
- Adapt alternative acquisition approaches in order to accelerate fielding of new robotic concepts/technology
- Develop ethical engine technology to support autonomous systems. (e.g. upload rules of engagement, machine to explain its decisions, upload constraints)



# The Ground Robotics Vision

An integrated manned/unmanned force  
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# Vision Goals

- Focused Technology
  - Provide affordable robotic solutions that enable natural modes of interaction between man and machine
- Managing Expectations
  - Balance prioritized and articulated requirements with realistically fieldable technologies
- Compelling ROI
  - Build the business cases necessary to justify the required investment
- Streamlined Acquisition
  - Match the acquisition strategy to the accelerated pace of robotics technology development and transition, reducing the total cost of ownership



# Vision Objectives

- Focus on intelligence, perception, human-machine interface, mobility, and navigation technologies
- Improve robotic performance in complex and dynamic environments
- Support the creation of dynamic man/machine teams through increased collaboration and autonomy
- Inform stakeholders on the current capabilities of robotic systems through periodic base lining activities
- Select key missions with the greatest chance of initial success and advocate those programs that promote social acceptance of robotics technologies
- Define standardized metrics and tests and implement a framework for verification of technology readiness and validation of realistic requirements for robotic systems
- Develop ethical engine technology to support autonomous systems (e.g. upload rules of engagement, machine to explain its decisions, upload constraints)



# Vision Objectives Cont'

- Adopt a design approach that prioritizes unmanned materiel solutions and leverages opportunities for inclusion of robotics technologies into manned systems
- Develop realistic total ownership cost benefit analysis for robotic systems:
  - In year 1, develop business cases for 1 or more dual use applications for specific domain and customers that are fieldable in 3-5 yrs
  - In year 2, based on lesson learned define and document a repeatable process that can be adopted across the community
  - In the out years, distill the lessons learned to continuously improve the process and promote the successes
- Develop and enforce joint standards for open architectures and modularity to foster reduced total ownership cost, accelerated transition and increased innovation
- Adapt alternative acquisition approaches in order to accelerate fielding of new robotic concepts/technology