Dual Use
Material Developers Panel

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18 March 2010

UNCLASSIFIED: Dist. A - Approved for public release
Evolution of Ground Robotics in War

2004
162 systems
- No single vendor could produce 162
- 5 vendors, multiple configurations
- Joint effort, EOD focused

2005
1800 systems
- Robot’s proven ability to save lives
- Expansion beyond EOD mission (Countermine, Security)
- MOAs w/ AMC and REF

2006
4000 systems
- Engineers and Infantry
- Route clearance, Explosive detection & Weaponization development

2007
5000 systems
- Special Forces robot applications assessed
- Route clearance, Explosive detection & Weaponization on battlefield

2008
6000 systems
- Maneuver elements
- Range extension
- CBRNE detection
- Persistent surveillance
- RC HMMWV
- More capable payloads

2009
7000 systems
- Smaller platforms
- Enhanced battery life
- Enhanced commonality
- Remote deploy
- More capable payloads

Future
- Interop
- ‘Plug and play’ capabilities
- Limited autonomy
- Weaponization
- Increased agility & dexterity

Sustainment, Modernization, Interoperability and Modularity

18 March 2010
Robotic Modernization

Equipment

35 LBS

Dexterity

55 lbs

Arm Strength

90 lbs

Tele-op

2004 CAPABILITY

Dedicated OCU

Improved Communications for:
standoff range, crew compatibility

2010 CAPABILITY

SUPERVISED AUTONOMY
INTEROPERABILITY
Operational Environment

2004 Capabilities

Common Controller

EOD

LOGISTICS

Capability

RSTA

Endurance

Power/Energy

CBRNE Detection

Armed

Maneuver

Route Clearance/Engineering

IED

Enhancing Warfighter Capabilities
Joint Robotic Repair and Fielding JRRF

BACKGROUND
• The Joint Robotics Repair and Fielding (JRRF) Activity established in mid 2004.
• Provides maintenance, supply and training for all Joint Service Non Standard Equipment Robotics.

MISSION
• Provide in-Theater Support for Joint Service Theater Provided Equipment (TPE) Ground Robots.
• Single “one-stop-shop” for fielding, sustainment, training, assessment and total asset accountability for all robotic systems in theater.

SUPPORT
• Current JRRF operations
• Embedded repair teams to remote units
• Pre-deployment support capability at Combined Training Centers
• 13 JRRF detachments world wide
RS JPO Systems

• Based primarily on ONS / JUONS requirements
• Commercial-off-the-shelf / modified-off-the-shelf
  – Commercial radios
  – Commercial components
  – Non MIL-STD
  – Obsolescence
  – Configuration control
• Procured under ‘Rapid Acquisition’
  – REF and JIEDDO lead
• Provide immediate capabilities
  – 70 to 80% solutions
Dual Use Technologies

• Obstacle detection & avoidance
  – Military: pedestrians, terrain and man-made obstacles
  – Civilian: automobile safety technologies – active cruise control

• Autonomous navigation
  – Military: resupply, dynamic path planning
  – Civilian: automobile safety technologies – active cruise control

• Increased communication range
  – Military: increased standoff
  – Civilian: command post (DHS/1st Responders), wireless networks

• Multi robot control
  – Military: one controller/many robots, manning levels
  – Civilian: warehousing

• Interoperability
  – Military: agile mission response
  – Civilian: USB ports, iPhone

• Improved battery technologies / fuel cells
  – Military: longer life, reduced soldier load
  – Civilian: fossil fuel dependence