Dual Use Material Developers Panel

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18 March 2010

UNCLASSIFIED: Dist. A - Approved for public release
**Dual Use Material Developers Panel**

1. REPORT DATE  
**17 MAR 2010**

2. REPORT TYPE  
**N/A**

3. DATES COVERED  
**-**

4. TITLE AND SUBTITLE  
**Dual Use Material Developers Panel**

5a. CONTRACT NUMBER  
**-**

5b. GRANT NUMBER  
**-**

5c. PROGRAM ELEMENT NUMBER  
**-**

5d. PROJECT NUMBER  
**-**

5e. TASK NUMBER  
**-**

5f. WORK UNIT NUMBER  
**-**

6. AUTHOR(S)  
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7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)  
**US Army RDECOM-TARDEC 6501 E 11 Mile Rd Warren, MI 48397-5000, USA**

8. PERFORMING ORGANIZATION REPORT NUMBER  
**#20609RC**

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)  
**TACOM/TARDEC**

10. SPONSOR/MONITOR’S ACRONYM(S)  
**-**

11. SPONSOR/MONITOR’S REPORT NUMBER(S)  
**#20609RC**

12. DISTRIBUTION/AVAILABILITY STATEMENT  
**Approved for public release, distribution unlimited**

13. SUPPLEMENTARY NOTES  
**Presented at NDIA Ground Robotics Capabilities Conference & Exhibition, March 16-18, 2010, Miami FL, USA, The original document contains color images.**

14. ABSTRACT  
**-**

15. SUBJECT TERMS  
**-**

16. SECURITY CLASSIFICATION OF:

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17. LIMITATION OF ABSTRACT  
**SAR**

18. NUMBER OF PAGES  
**6**

19a. NAME OF RESPONSIBLE PERSON  
**-**
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
Robotic Modernization

Enhancing Warfighter Capabilities

2004 CAPABILITY
Dedicated OCU
Improved Communications for: standoff range, crew compatibility

2010 CAPABILITY
SUPERVISED AUTONOMY
INTEROPERABILITY
Operational Environment

Tele-op

RSTA
Endurance
Power/Energy

CBRNE Detection
EOD

Maneuver
Armee

Route Clearance/Engineering
IEC

55 lbs
90 lbs
35 LBS

Arm Strength
Dexterity
Joint Robotic Repair and Fielding JRRF

BACKGROUND
• The Joint Robotics Repair and Fielding (JRRF) activity was established in mid 2004 to provide maintenance, supply and training for all Joint Service Non Standard Equipment Robotic systems.

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

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

Training, Sustainment, Assessment, and Accountability
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