US Army Strategy for Robotic and Autonomous Systems (RAS)

Agenda:
• Operating Environment
• Background
• Purpose/Vision
• Strategy

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Operating Environment

Threats:
- Increased lethality and sophistication.
- Accelerated pace of operations.
- Eroding military advantage.
- Congested operating environment.

Opportunities:
- Greater situational awareness.
- Higher performance compared to manned, opt.-manned systems.
- Greater flexibility.
- Operate at machine speed.
- Leverage cloud robotics.
- Ability to learn.
The Strategy Development Path

Army Internal Guidance
1. CSA-GEN Odierno: 2013 guidance to TRADOC
2. Army Operating Concept

External Guidance
3. 2014 Quadrennial Defense Review
4. 18th Chairman’s Strategic Direction

Key Point: Senior Leader Emphasis

CSA 2013 Guidance on Army Innovation

Oct 2014 Army Operating Concept
Purpose - Articulate a strategy that will:

- **Align** and prioritize robotics and autonomous systems requirements across all formations
- **Describe** operational employment of RAS in Force 2025 and Beyond
- **Integrate** RAS as an increase in capability and a key to the Army’s *differential advantage* over adversaries

Vision - RAS priorities:

1) **Protect the force** at increased stand-off distances
2) **Improve** situational awareness
3) **Lighten** physical and cognitive *workloads*
4) **Sustain** with increased throughput and efficiency
5) **Facilitate maneuver** in Combined Arms Operations and Wide Area Security
6) **Conduct lethal and non-lethal engagements** where manned systems are limited, denied entry, or unavailable

*(From a January 2013 Sec. Army (McHugh) approved plan)*

RAS must enable Army formations to retain overmatch, support expeditionary and *joint combined arms maneuver*, and enable Army forces to win in unified land operations.
The Strategy: “Turning ideas into valued outcomes”

RAS Strategy

**Means:**
- Technology
- Organizations
- Funding

**Ways:**
Tenets of Modernization:
- Evaluating trends.
- Innovation occurs through SIDRA: *sustain, improve, develop, replace, assess.*
- Prioritization through value and risk.

**Ends:**
Robotic and Autonomous Systems (RAS) increase Army capabilities in situational understanding, mobility, protection, lethality, and sustainment in ways that cannot be achieved elsewhere. RAS presents multiple dilemmas to our adversaries and provides overmatch through a differential advantage, across the range of military operations.
Framing the Plan in Three Phases

As the Army articulates RAS integration across multiple Warfighting Functions, this vision must also show realistic objectives in the near-term, feasible objectives in the mid-term, and visionary objectives for the far-term. Beginning with near-term objectives, each successive phase links its objectives to and builds from the achievements of the previous phase.

Near-Term Vision - Adapt

Mid-Term Vision (F2025) - Evolve

Far-Term Vision - Innovate

Source for All Listed Objectives: TRADOC Pam 525-3-1, Army Operating Concept, Appendix C-2.
# Army RAS

<table>
<thead>
<tr>
<th>Soldier Transportable</th>
<th>Vehicle Transportable</th>
<th>Self Transportable</th>
<th>Robotic Appliqué</th>
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</thead>
<tbody>
<tr>
<td>Small</td>
<td>Mounted</td>
<td>Soldier Follower</td>
<td>Remote Operation</td>
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<tr>
<td><strong>COMMUN ROBOTIC SYSTEM – INDIVIDUAL (CRS-I)</strong></td>
<td><strong>MAN TRANSPORTABLE ROBOT SYSTEM (MTRS) Inc 2</strong></td>
<td><strong>SQUAD MULTIPURPOSE EQUIPMENT TRANSPORT (SMET)</strong></td>
<td><strong>HUSKY MOUNTED DETECTION SYSTEM (HMDS)</strong></td>
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<tr>
<td>Platoon</td>
<td>Towed</td>
<td>Recon/Security</td>
<td>Supervised Autonomy</td>
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<td><strong>SHORT RANGE MICRO UAS</strong></td>
<td><strong>M160 LIGHT FLAIL</strong></td>
<td><strong>MOBILE DETECTION ASSESSMENT AND RESPONSE SYSTEM (MDARS)</strong></td>
<td><strong>AUTOMATED CONVOY OPERATIONS (ACO)</strong></td>
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<tr>
<td>Squad</td>
<td>Installed</td>
<td>Robotic Wingman</td>
<td>Exoskeleton</td>
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<td><strong>SOLDIER BORNE SENSOR</strong></td>
<td><strong>DA VINCI SURGICAL SYSTEM</strong></td>
<td><strong>TACTICAL ASSAULT LIGHT OPERATOR SUIT (TALOS)</strong></td>
<td>Prosthetics</td>
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<td>Nano Bot</td>
<td>Humanoid</td>
<td>Squad Member</td>
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<td><strong>DARPA ROBOTIC CHALLENGE</strong></td>
<td><strong>DARPA LEGGED SQUAD SUPPORT SYSTEM (LS3)</strong></td>
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Photos are Notional Representations

Program of Record
Draft JCIDS Requirement
Technology Initiative

Prepared by: DAPR-FDD
NIE 16.1 & Sikorsky ERWR Demo SEP+OCT
RAS provide the Army with differential advantages over adversaries and this Strategy will seek to exploit those capabilities

The Army Robotics and Autonomous Systems Strategy will:
- Focus near-term capabilities to enable the Soldier
- Focus mid-term capabilities to improve the unit capabilities and human-machine collaborations and teaming
- Scope far-term capabilities to improve operations and achieve transformative capabilities
- Prioritize rapid fielding of mature robotic technologies into the hands of the Warfighter

Army Warfighting Assessments and other events within the Campaign Of Learning will inform RAS development efforts
Questions?