



Joint Fight / Joint Solutions

**Robotic and Autonomous Systems (RAS)
and the Joint Force**

***Col Hank Lutz, USMC
Officer in Charge***

Joint Staff Robotic and Autonomous Systems Team

Joint Staff J-8

March 2016

Joint Concept for Robotic and Autonomous Systems



Operational Challenge: How will the joint force employ RAS to gain and maintain operational advantage in a future operating environment featuring increased lethality and sophistication, accelerated pace of operations, eroding military advantages, and congested environments?

Central Idea: By 2035, the Joint Force will employ integrated teams of RAS and humans in a wide variety of combinations to expand the Joint Force commander's options.

Precept #1: Employ RAS-Human Teams

Precept #2: Leverage Autonomy as a Key Enabler

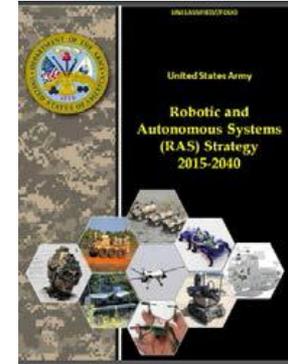
Precept #3: Integrate RAS to Develop Innovative CONOPs

Service RAS Concept Development



Army RAS Strategy

- 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



Unmanned Warfare Systems directorate (N99)

- Identify, develop, and field unmanned technologies and systems that sustain and advance our warfighting capabilities; accelerate the development of unmanned prototypes and Fleet experimentation
- Improve our ability to develop new operational concepts that incorporate unmanned technologies into our warfighting capabilities
- Align our unmanned investment strategy to deliver future naval warfighting capabilities
- Independently assess Navy's future unmanned warfighting capabilities

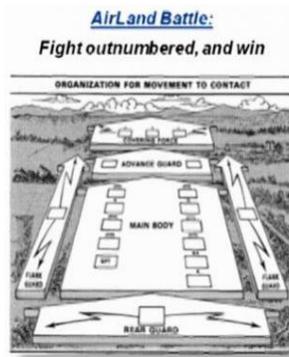


Third Offset Strategy

First Offset



Second Offset



Third Offset



Third Offset Key Points

- Autonomous "deep learning" machines and systems
- Human-machine collaboration for decision-making
- Assisted-human operations
- Advanced human-machine teaming, where a human is working with an unmanned system.
- Semi-autonomous weapons that are hardened to operate in an electronic warfare environment

Ground RAS Innovation

