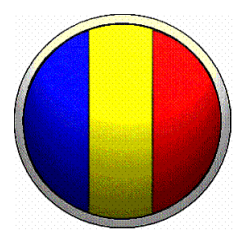


# ***Robotic and Autonomous Systems (RAS) Strategy Implementation Plan***

***(DRAFT)***



29 SEP 2017

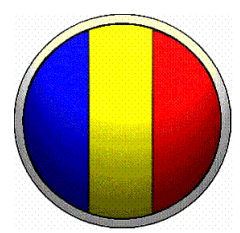


# Purpose & Agenda

**Purpose:** To inform TRADOC leadership and the Centers of Excellence about ongoing tasks within the RAS Strategy Implementation Plan

## Agenda:

- RAS Strategy Overview
- Tactical RAS Vision
- Implementation Plan
- Capability and Requirements Summary
- Way Ahead



# RAS Strategy

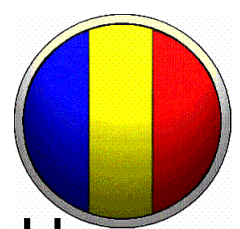


**Objective Capabilities:** Over the next 25 years, RAS supports the Army to:

1. Increase situational awareness
2. Lighten the Warfighters' physical and cognitive workloads
3. Sustain the force with improved distribution, throughput, and efficiency
4. Facilitate movement and maneuver
5. Protect the force

Approved by VCSA  
(GEN Allyn) in Feb 17

**Endstate:** Increase combat effectiveness of the future force and maintain overmatch against enemies.



# Tactical RAS Vision



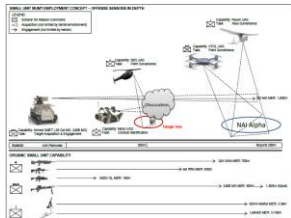
How can RAS enable formations to:

- Better shoot, move, and communicate
- Increase standoff & situational awareness

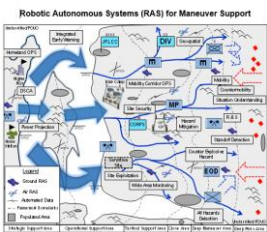
Inputs:

RAS Concepts of Employment White Paper:  
(staffing in SEP '17)

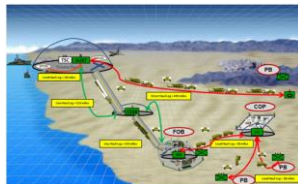
## Maneuver



## Maneuver Support

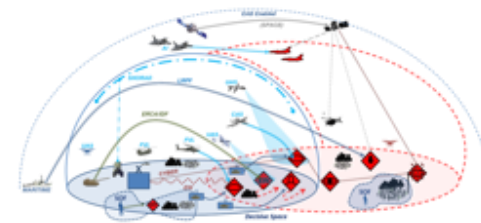


## Sustainment



## Robotic and Autonomous Systems Concepts for Employment

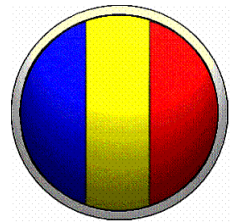
### White Paper



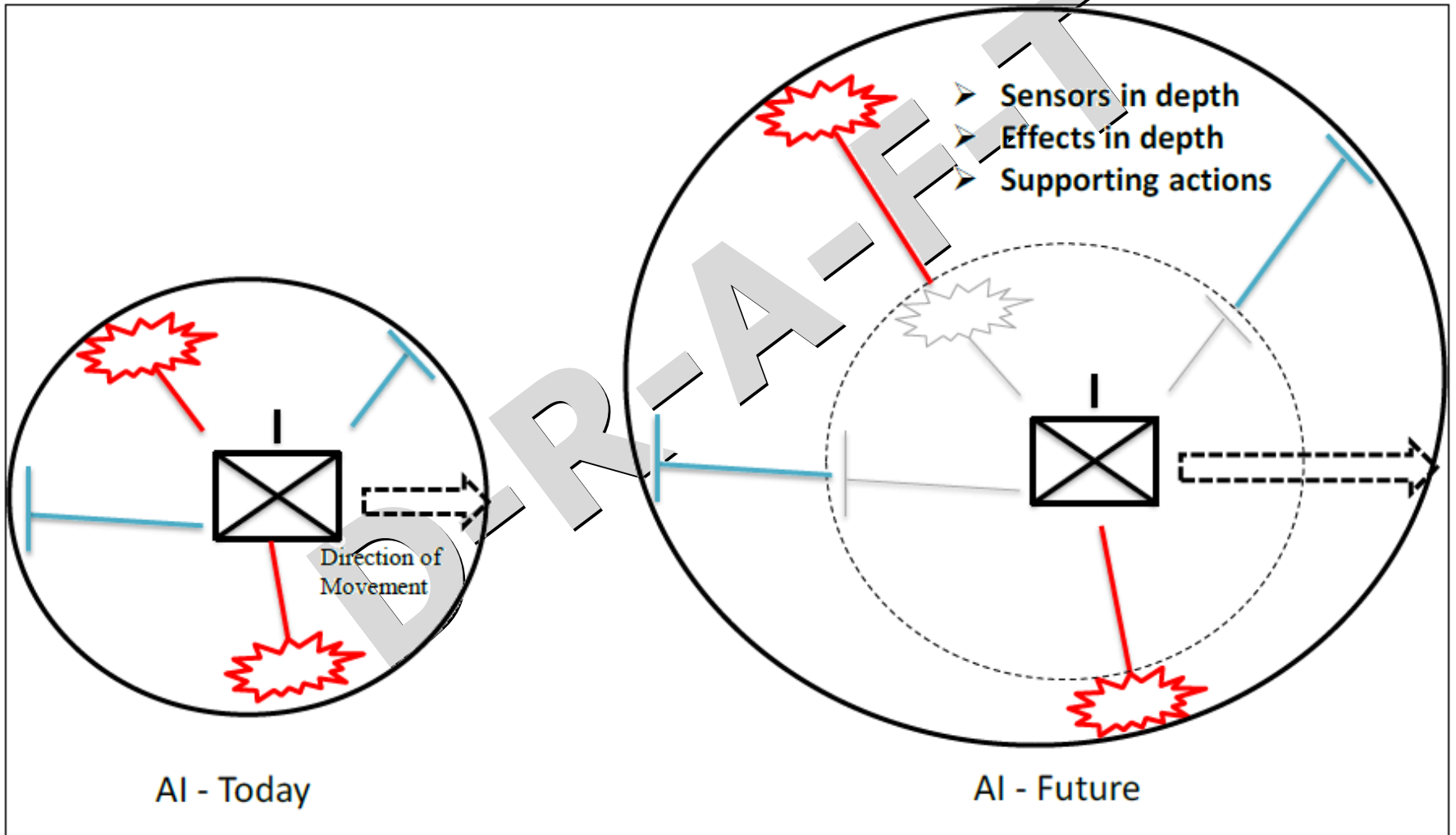
Prepared By:

Army Capabilities Integration Center, Fort Eustis VA

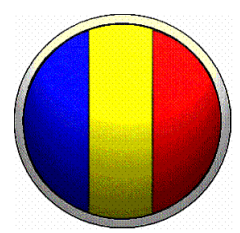
7 September 2017



# Zones of Unmanned Systems for the Dismounted Force



***Expanding the Area of Influence (AI)***



# Zones of Unmanned Systems for the Mounted Force

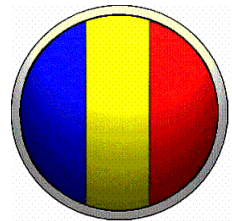


Unmanned Aircraft Systems

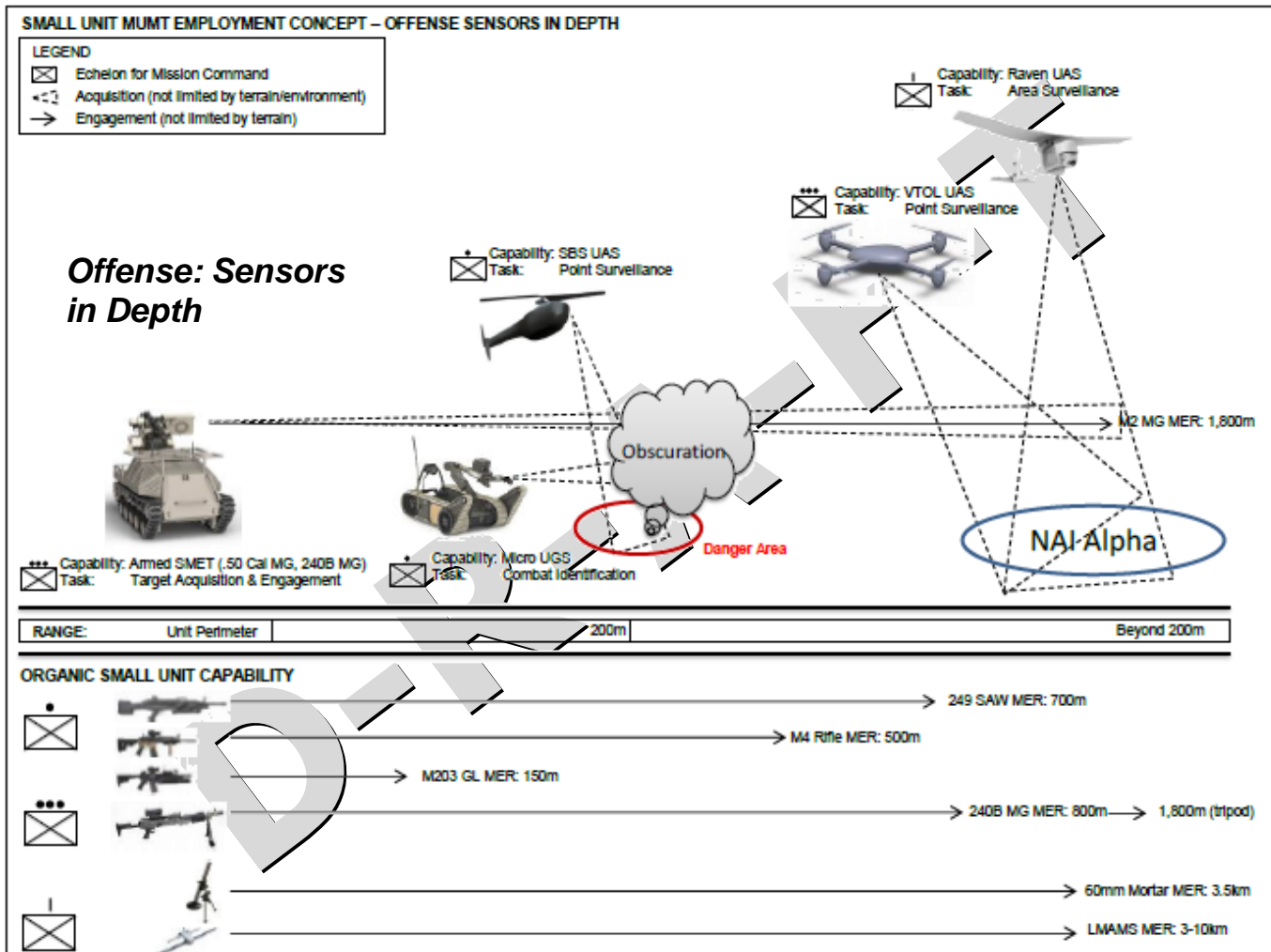
Unmanned Ground Systems

Manned Formations

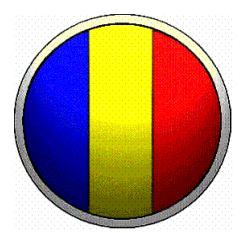




# RAS-Enabled Dismounted Offense



*\* Capabilities described above are PORs, emerging PORs, or draft ideas, but require significant oversight and DOTMLPF integration for success*



# Implementation Plan Logic (What we must do now)



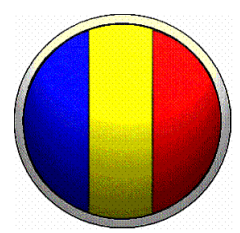
## Requirements:

- Existing requirements (PORs, ONS, DRs)
- Emerging requirements
- S&T Technology Development
- RAS CONEMPs White Paper (Draft)

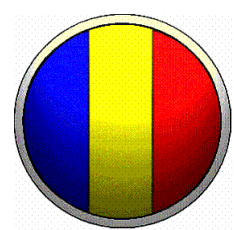
## Tasks:

- Generate requirements documents
- Develop, integrate in, and resource campaign of learning
- Conduct future capability development
- Align G8 Robotics Portfolio (SPAR)
- Align S&T Efforts
- Produce EXORD to capture required tasks and assign responsibilities
- Resource required staffing





# Capability and Requirements Summary

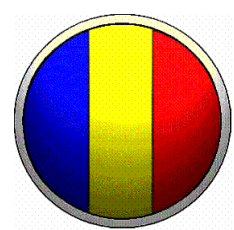


# Maneuver RAS Capabilities



**Robotic and Autonomous Systems Capability Matrix**

Formation/ Function	Capabilities	Near-Term Solutions (FY18-22)	Mid-Term Solutions (FY23-30)	Near-Term REQ DOX needed
<b>MANEUVER</b>				
IBCT, ABCT, SBCT, Recon	-Situational awareness, -Communication, -Standoff, -Targeting	<u>UAS</u> : Soldier Borne Sensor, -Rucksack Portable FoS (Puma, Raven, Short-range Micro), -LMAMS, -Tethered UAS	-2nd Increments of near-term solutions, -Additional payloads (comm's, lethal)	-Tethered UAS -Update to RPUAS CPD
	-Movement, -Lighten Soldier's load, -Situational awareness, -Standoff	<u>UGS</u> : SMET Equipment Transport, -CRS(I) Robot, -LR2 Throwable Robot, -Universal Controller, -Unattended Ground Sensors	-Exoskeleton, -2nd Increments of near-term solutions, -SMET payloads (lethal, engineer)	-Universal Controller CPD -CRS(I) Robot CPD -LR2 Throwable Robot CPD -Unattended Ground Sensors CPD -SMET CPD after DR
ABCT, SBCT, Recon	-Movement, -Maneuver, -Situational awareness, -Standoff	-Robotic Combat Vehicle (RCV)	-2nd Increments of near-term solutions, -Additional RCV payloads	-Robotic Combat Vehicle CDD



# Maneuver Support and Sustainment RAS Capabilities



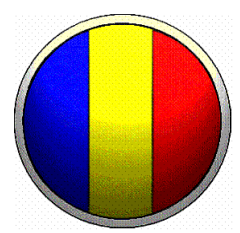
## Robotic and Autonomous Systems Capability Matrix

Formation/ Function	Capabilities	Near-Term Solutions (FY18-22)	Mid-Term Solutions (FY23-30)	Near-Term REQ DOX needed
<b>MANEUVER SUPPORT</b>				
<b>Engineer, CBRN, EOD</b>	-Situational awareness, -Communication, -Standoff	<u>UAS</u> : Soldier Borne Sensor, -Rucksack Portable FoS (Puma, Raven, Short-range Micro), -Tethered UAS	-2nd Increments of near-term solutions, -Additional payloads (comm's, lethal)	
	-Movement, -Lighten Soldier's load, -Situational awareness, -Standoff	<u>UGS</u> : SMET Equipment Transport, -CRS(I) Robot, -CRS(Heavy) Robot, -MTRS Inc 1/2 Robot, -ERP Payloads, -LR2 Throwable Robot, -Universal Controller, -Unattended Ground Sensors, -M160 Flail, -RCIS Interrogation System	-Exoskeleton, -2nd Increments of near-term solutions, -SMET payloads (lethal, engineer)	-DEMS SMET Payload CPD
<b>SUSTAINMENT</b>				
<b>Transportation</b>	-Movement, -Increased throughput, -Force protection	-Leader-Follower	-ACO Automated Convoy, -JTAARS Aerial Resupply	-LF CPD after DR -JTAARS CDD



# RAS Requirements Status

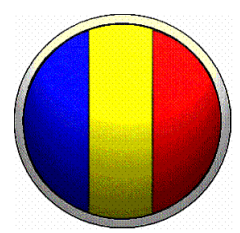
Proponent / Center of Excellence	RAS Capability	Program Status
Maneuver CoE	Soldier Borne Sensor (SBS)	CPD
Maneuver CoE	Squad Multipurpose Equipment transport (SMET) Inc 1	Directed Requirement + Draft CDD
Maneuver CoE	Robotic Combat Vehicle (RCV)	Draft CDD
Maneuver CoE	Universal Robotic Controller (URC)	CDD
Maneuver CoE	Short Range Micro SUAS	CPD
Maneuver CoE	Common Robotic System-Individual (CRS-I) Inc 1	CDD
Maneuver CoE	Lightweight Recon Robot (LR2-throwable)	Draft CPD
Maneuver CoE	Tethered UAS (EOD, EN, IN, AR)	Draft CPD
Maneuver CoE	SMET Payloads Inc 1 (e.g. DEMS for EN)	To Be Developed
Maneuver CoE	Network-expendable Sensor Technology (Unattended Ground Sensors)	Draft CPD
Maneuver CoE	Exoskeleton	Draft CDD
Maneuver CoE	Warrior Suit	To Be Developed
Explosive Ordnance Disposal	Enhanced Robotic Payloads (ERP)	Draft CDD
Explosive Ordnance Disposal	Man Transportable Robot System (MTRS) Inc 1	Non-standard equipment
Explosive Ordnance Disposal	Common Robotic System-Heavy (CRS-H) Inc 1	Draft CPD
Explosive Ordnance Disposal	Common Robotic System-Vehicle (CRS-V)	To Be Developed
Maneuver Support CoE	Man Transportable Robot System (MTRS) Inc 2	CDD
Maneuver Support CoE	M160 Light Flail	CPD
Sustainment Coe	Leader-Follower (LF)	DR + Draft CDD
Sustainment Coe	Joint Tactical Autonomous Aerial Resupply Vehicle (JTAARV)	Draft CDD



# Way Ahead



- Develop Campaign of Learning (e.g. align with ALPA events and USMC MUM-T)
- Produce requirements documents
- Conduct future capability development (e.g. SUAS)
- Align S&T Efforts
- Publish EXORD to capture tasks and assign responsibilities
- Resource staff requirements



# Questions