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Advanced Defeating IEDs Training Workshop and Live  
Demonstrations  
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## *“Army Electronic Warfare”*

*Army Electronic Warfare – Establishing an Enduring Core Competency for Today’s  
Fight...and Tomorrow’s*

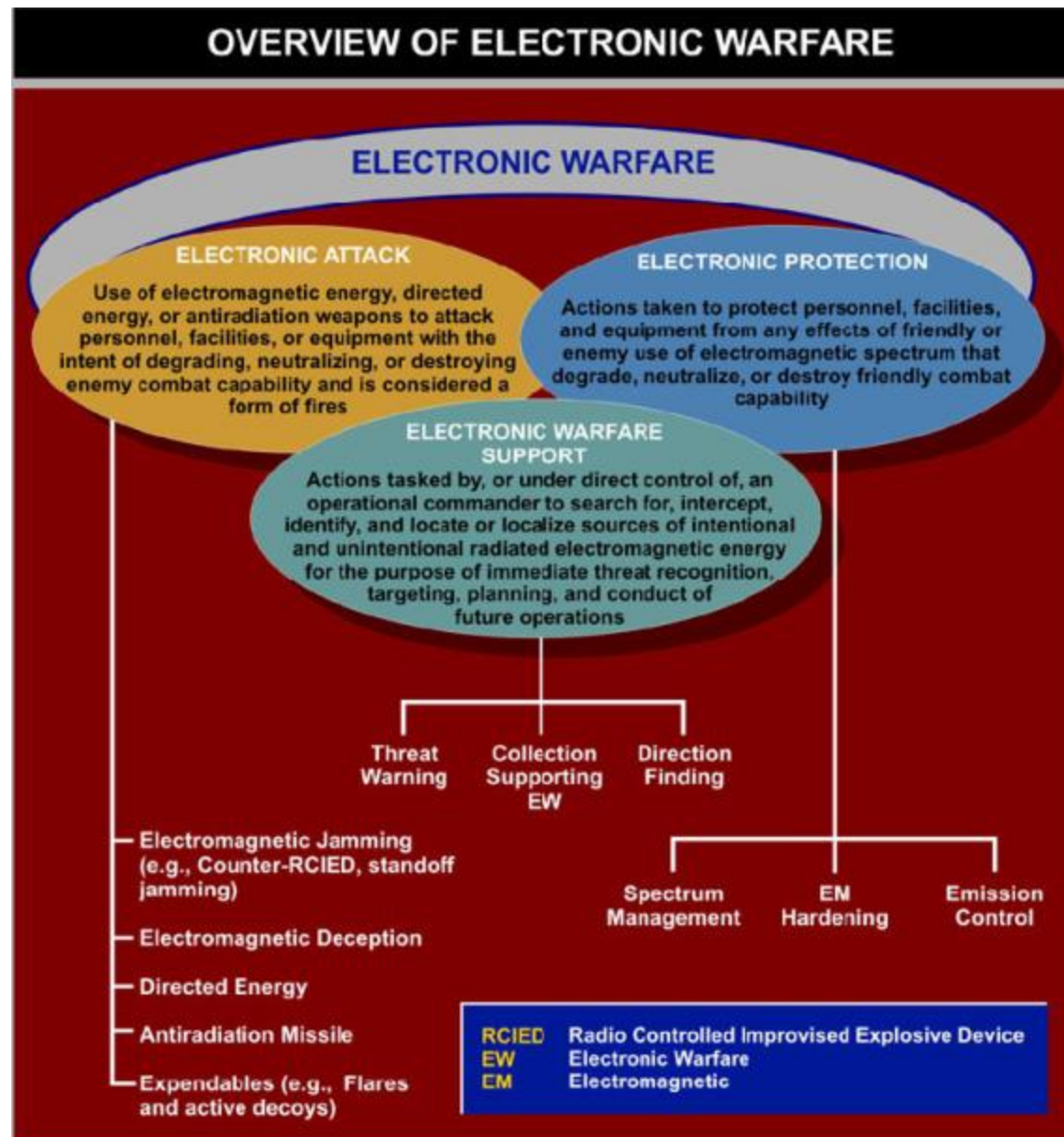
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# What is Electronic Warfare ?

The term electronic warfare (EW) refers to any action involving the use of electromagnetic (EM) or directed energy (DE) to control the electromagnetic spectrum (EMS) or to attack the enemy. EW includes three major subdivisions: electronic attack (EA), electronic protection (EP), and electronic warfare support (ES). Figure I-2 depicts an overview of EW, the relationships of the three subdivisions, and the relationship of the subdivisions to principal EW activities.



# Senior Leadership Support for Electronic Warfare

*"We must adapt and make tradeoffs among systems originally designed for the Cold War and those required for current and future challenges. We need greater investment in advanced technology, ... like unmanned aerial vehicles and electronic warfare capabilities."*

*President Barack Obama, Commander-in-Chief*



*"One of the enduring features of any future battlefield will be determined (by) resourceful enemies attempting to undermine our will by leveraging the electronic spectrum. Building an EW structure within the Army will greatly enhance our ability to proactively counter these threats. A commitment to EW allows us to tightly integrate non-kinetic and kinetic capabilities across the Army and as part of joint operations."*

*GEN Peter Chiarelli, Vice Chief of Staff of the US Army*



# Threat

(Open Source)



## China EW Threat

- Jan 07 – Anti Satellite Weapon
- UHF-band Satellite Comms Jammers
- PLA is investing in electronic countermeasures, defenses against electronic attack (e.g., electronic and infrared decoys, angle reflectors, and false target generators)
- "Gaoxin Project" - Y-8 EW Aircraft series
- Manpack Direction-Finding (DF) system for the Very-High-Frequency (VHF) Band
- Portable Signal Collection System for Locating and "Fingerprinting" Radars

## Al Qaeda EW Threat

- 2004 – Emergence of IEDs / VBIEDs
- **Composition:** artillery, mortar shells or homemade explosive, complex explosives poured into concrete
- **Triggers & Methods:** mobile phones, washing machine timers, pagers, garage door openers, burglar alarms, key fobs, doorbells, or remote controls for toy cars
- Increase in remote detonation, command detonated, radio, cell phone, victim operated, infrared
- Man portable air defense systems (MANPADS)



## Iranian EW Threat

- Iran has an array of ground based jammers
- Hizballah's Iranian systems neutralized Israeli EW
- Iranian EW installed radar stations blocked the Barak anti-missile missiles aboard Israeli warships
- Hezbollah's use of Iranian Unmanned Aerial Vehicles (UAV)
- Iran Electronics Industries (IEI) makes electro-optics and lasers, communication equipment, telecommunication security equipment, electronic warfare equipment, new and refurbished radar tubes, and missile launchers



## Russia EW Threat

- Russia has high power laser operated systems, the Rosa-E and the Ranet-E that are designed to neutralize hostile radars and neutralize attack systems that use electronic signals.
- Radio Frequency Directed–Energy Weapons
- Improved anti-air and anti-ship missiles with sophisticated tracking and guidance radars that incorporate EW countermeasures.
- Has deployed anti-satellite weapons and is developing anti-satellite jamming weapons



# How did the RF Spectrum become so important?

- First “need” for wireless – 1921 Detroit public safety to put radios in patrol cars... completed in 1924
- Country which had the first commercial cell network
  - Bahrain – 1979..... US (Chicago) 1983
- First SMS Text sent Dec 92.... Now, exceed planet population daily
- Skype - Free phone calls from your computer (or ipod)
- Wifi connectivity is now the #3 requirement for hotel booking
- WiMAX, 4G, and WiFi N – all wide area wireless
- 4G cell capability will push 100MBps – 2011 / 2012
  - Twice the speed of your household WiFi router
  - It’s here – mobile wifi router by Sprint (marketed Aug 09)





# Army EW Today

Vice Chief of Staff Direction, May 06

In order to address not only the IED-DEFEAT issue but to operate synergistically in a joint environment, Electronic Warfare must be an Army enduring core competency. In order to fight jointly, the Army must have an EW capability commensurate with that of other services. Soldiers must be trained at all ranks, and at different tiers, in EW skills.

Keep it Joint

Keep it effects oriented

Approved an enlisted and warrant officer MOS and an officer career field.

Current VCSA validated EW Way Ahead. VCSA also approved the total EW requirement of 3,719 EW spaces and authorized the EW FDU to compete in TAA 10-15. TAA 10-15 has approved initial resourcing of 1,664 spaces.

## Army Electronic Warfare Vision

To establish *The Army with a robust Land Component Electronic Warfare capability through the establishment, integration and sustainment of Electronic Warfare as an enduring Army core competency*



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# Army Manpower: New 29-Series EW Career Field

So far, the Army has trained 2,200 total force at Fort Huachuca and Fort Sill (Tactical and Planners course)

The Army approved resourcing of an enduring 1,664 EW personnel

The Army approved the EW career field: career pilot course training underway at Fort Sill



The career management field identifiers:

- FA 29 - officers
- MOS 290A - warrant officers
- MOS 29E - enlisted

The Army is now capable of contributing to a robust Joint EW construct

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# VCSA Approved EW Way Ahead Past CREW

## Background

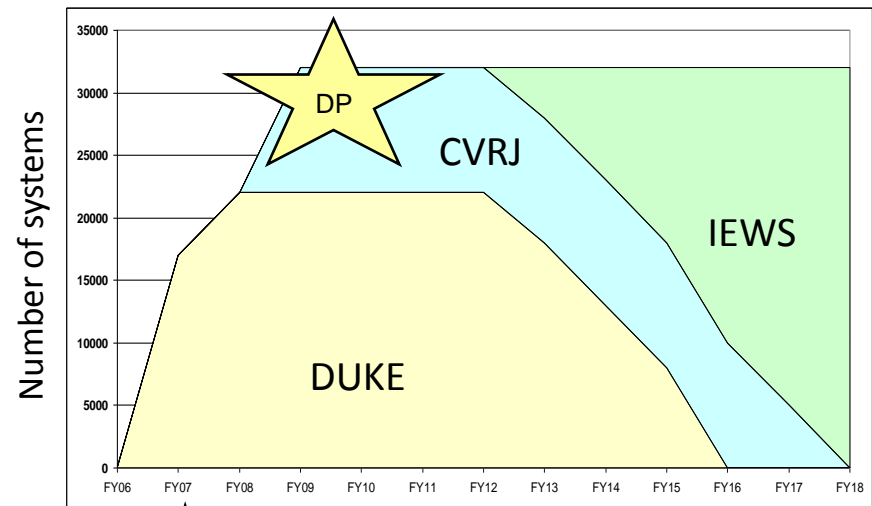
- Current threat has driven Army to field a myriad of stove-piped EW systems – single-shot, un-integrated boxes, fratricidal to communications and Battle Command systems.
- Joint Airborne Electronic Attack unavailable to Army ground forces in 2012.
- Considerable gaps remain across EMD.

## Way Ahead

- 21 Dec 07 JCS Tank acknowledged OSD-wide EW shortfalls and directed STRATCOM to conduct a Quick-Look CBA of Joint EW capabilities.
- An integrated Electronic Warfare system providing full frequency range through sophisticated techniques and power management with directionality, frequency specificity, and C4 and BC interoperability.
- Multi-function and multi-platform (Air and Ground)

## IEWS

- USSTRATCOM Joint EW Functional Solutions Analysis (FSA) and Initial Capabilities Document (ICD)
- IEWS is the top ranked material solution for land forces
- Encompasses CREW mission as part of a multifunction EW solution
- Army IEWS has a dedicated annex in the FSA
- The ICD will be used for requirements documentation for IEWS
- Next step in the JCIDS is a Material Development Decision (MDD)
- Will be followed by the Analysis of Alternatives (AoA)
  - Objective is to initiate process immediately following MDD



★ IEWS JCIDS documentation complete FY09





# Single Box Technologies

Creates box by box solution mindset...



...that chases the threat...



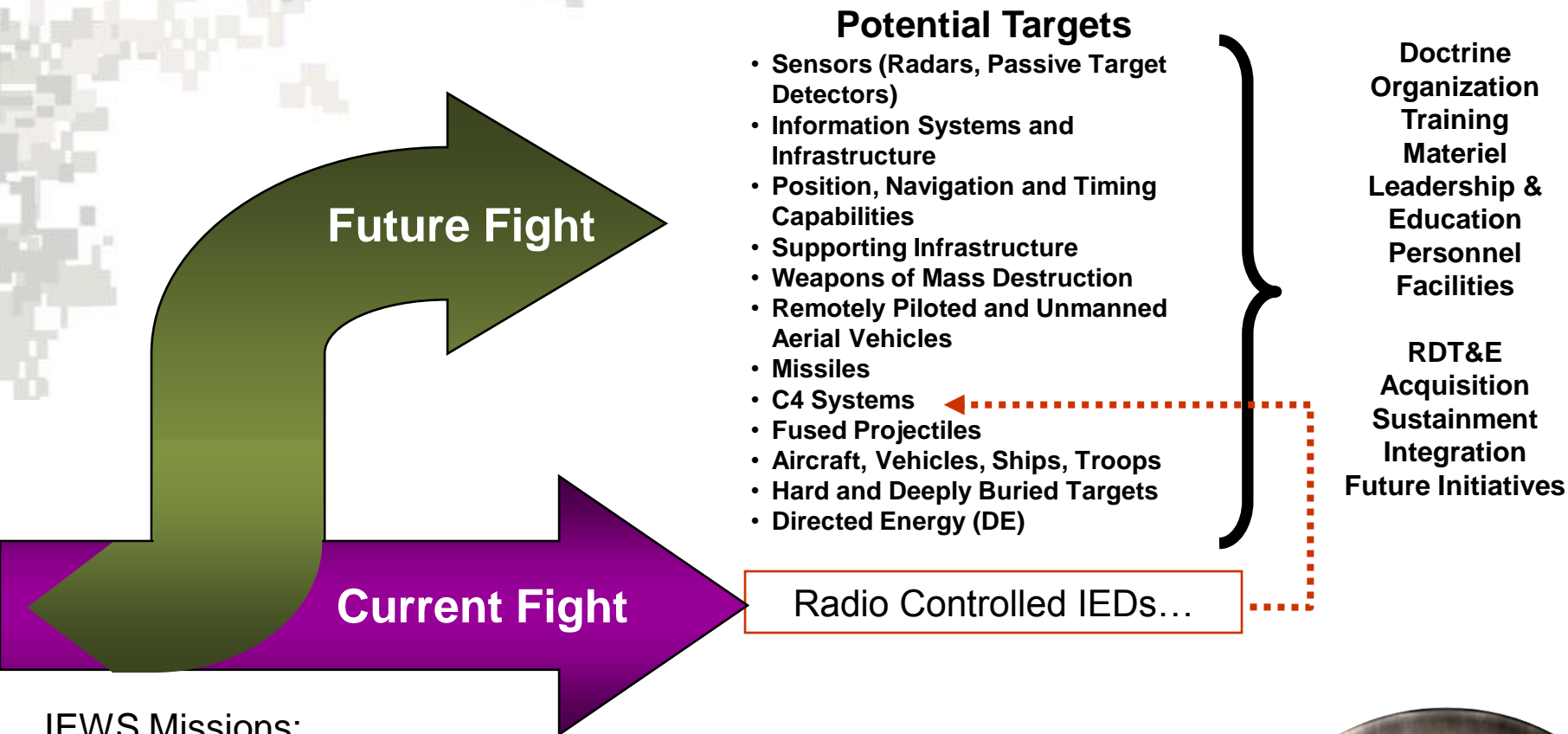
...and remains reactionary ...



We need to be ahead of the threat



# Future Army EW Materiel



## IEWS Missions:

- Counter-sensor (aircraft, UAS, and ground radars, SIGINT/ES, etc.)
- Counter-communications (data and control links and voice, air and ground)
- Counter-seeker (cruise missile seekers, RF fuses, etc.)
- Counter-position, timing, navigation (GPS, altimeter, etc)
- Counter-electronics (includes platforms)





# Integrated EW System Key Elements

- **POM submission (new start program)**
- **Analysis of Alternatives will identify breadth and scope**
- **Systems include sensors; jammers; mounted, unattended, fixed site, and airborne variants; and home-on-jam weaponry**
- **Planning and execution tools including real time data links**
- **Modular open systems approach (MOSA) for rapid technology infusion, low maintainability, technology re-use**
- **Services Oriented Architecture for data exchange compatibility**
- **Embedded training and maintenance capabilities**





# Final Thoughts

**The United States must change how we define, develop, and fund Electronic Warfare capabilities. We must move beyond Cold War themes into realistic scenarios that accurately prepare us for enduring expeditionary engagements, for irregular and asymmetric warfare, for the safe conduct of peacekeeping activities, and for high and low intensity ground conflict around the globe.**



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