



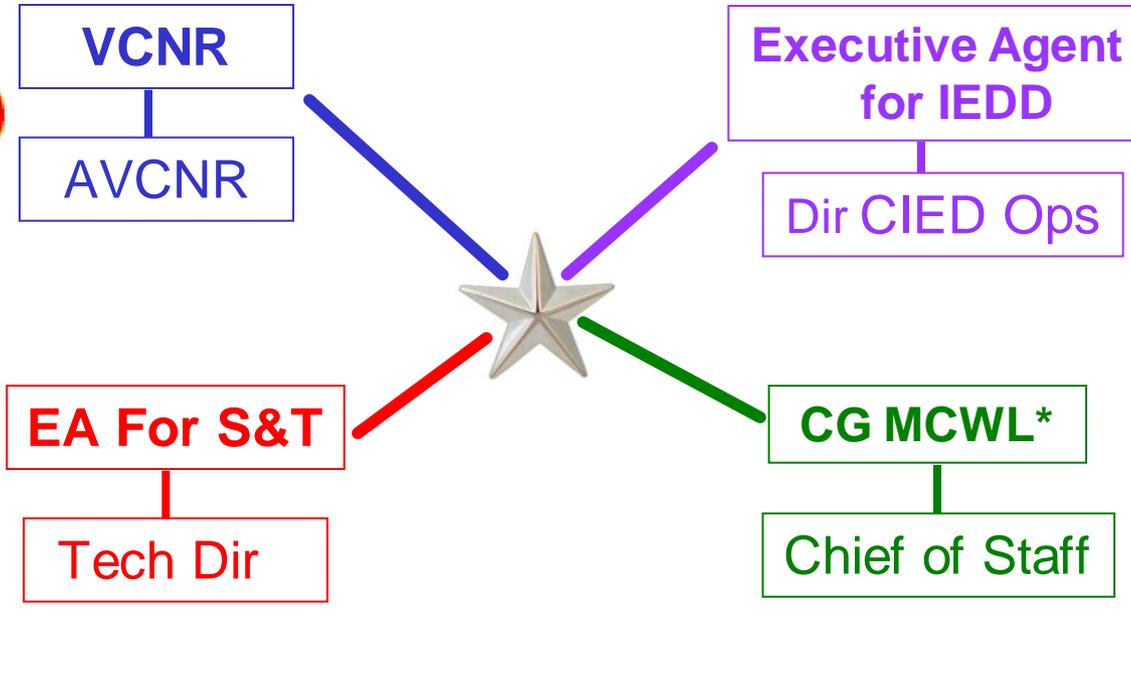
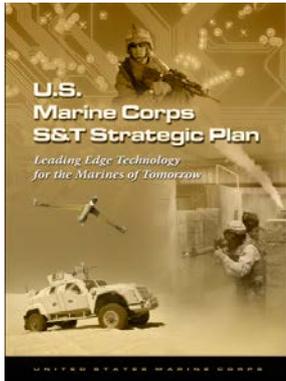
Expeditionary Warfare Conference

11 September 2012

Brigadier General Mark R. Wise, USMC
Commanding General Marine Corps Warfighting Lab
Vice Chief of Naval Research



Marine Corps Warfighting Laboratory (MCWL)



A Balance Between “Thoughts and Things”

Enhance the current and determine the future Marine Corps strategic landscape by defining the Marine Corps' next warfighting concepts and capabilities via development and evaluation of innovative tactics, techniques, procedures, organizations and technologies using an integral combination of concept based experimentation, technology assessments, wargaming, and analysis which will provide the strategic axis of advance for the Corps' entire enterprise. Serve as the USMC Executive Agent for Marine Corps Science and Technology (S&T), Counter Improvised Explosive Devices (CIED), and as the Marine Corps' liaison to the Joint Staff for Joint Concept Development and Experimentation.



Where are we and where are we going?

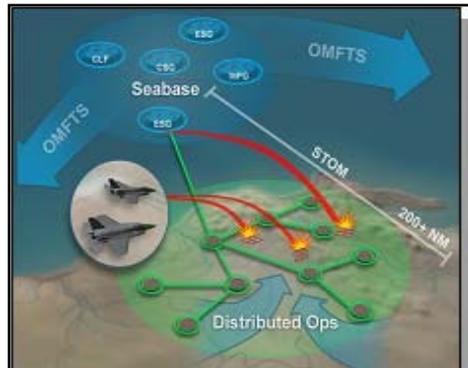
Today's Fight

- Armored MTRVs / MRAPs
- Forward Operating Bases (FOBs)
- Heavy → Required to meet today's challenges, in today's theater



Where do we need to go?

- Respond to today's crisis, with today's force ...**TODAY!**
- Lab focus → tomorrow; apply that mindset to future threat, "where Microsoft coexists with machetes, and stealth is met by suicide bombers"

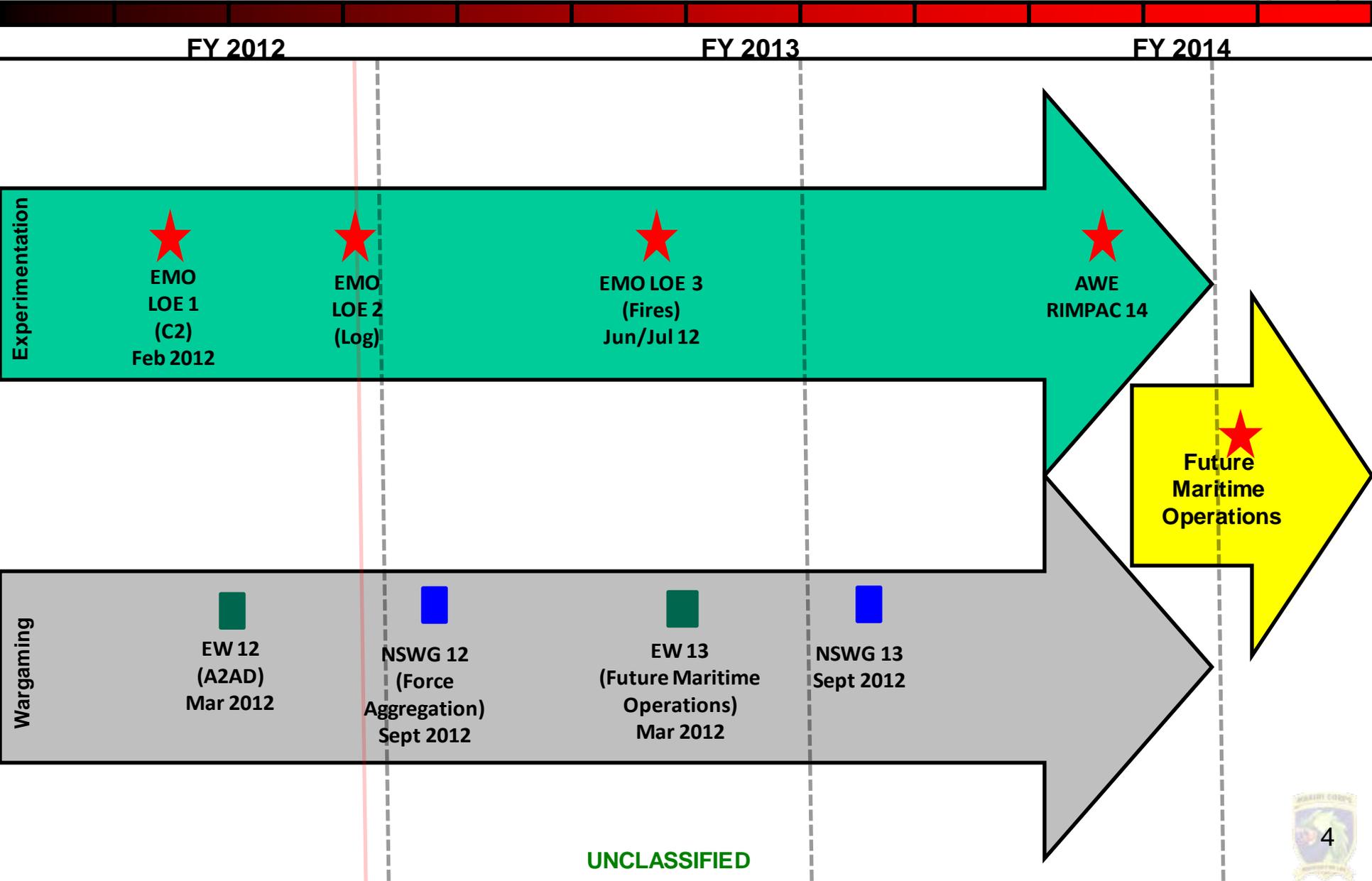


- "A **middleweight force**, -- light enough to get there quickly, but heavy enough to carry the day upon arrival, and capable of operating independent of local infrastructure."*
- "We will rebalance our Corps, posture it for the future and **aggressively experiment** with and **implement new capabilities and organizations**."*
- "We will better educate and train our Marines to **succeed in distributed operations** and increasingly complex environments."*
- "A Marine Corps that is a multi-capable, combined arms force, comfortable operating at **the high and low ends of the threat spectrum**, or in the shaded areas where they overlap."*
- "Leverage the significant advantages that **amphibious forces** provide a maritime power"*





MCWL Campaign Plan





Marine Corps Warfighting Laboratory



Counter IED

Future Threats &
Opportunities

Experimentation

Technology

Counter IED

CETO

Wargaming

JCDE

Experiment

Technology

OSTI

CTO

USMC
CIED WG

A Balance Between “Thoughts and Things”

Lead, advocate, and coordinate all counter-IED (C-IED) efforts in the Marine Corps in order to defeat IED networks and their associated devices. Serve as the Marine Corps’ coordinating authority for all Joint Improvised Explosive Device Defeat Organization (JIEDDO) issues.





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THE IED THREAT PERSISTENT, EXTENSIVE, & WORLDWIDE

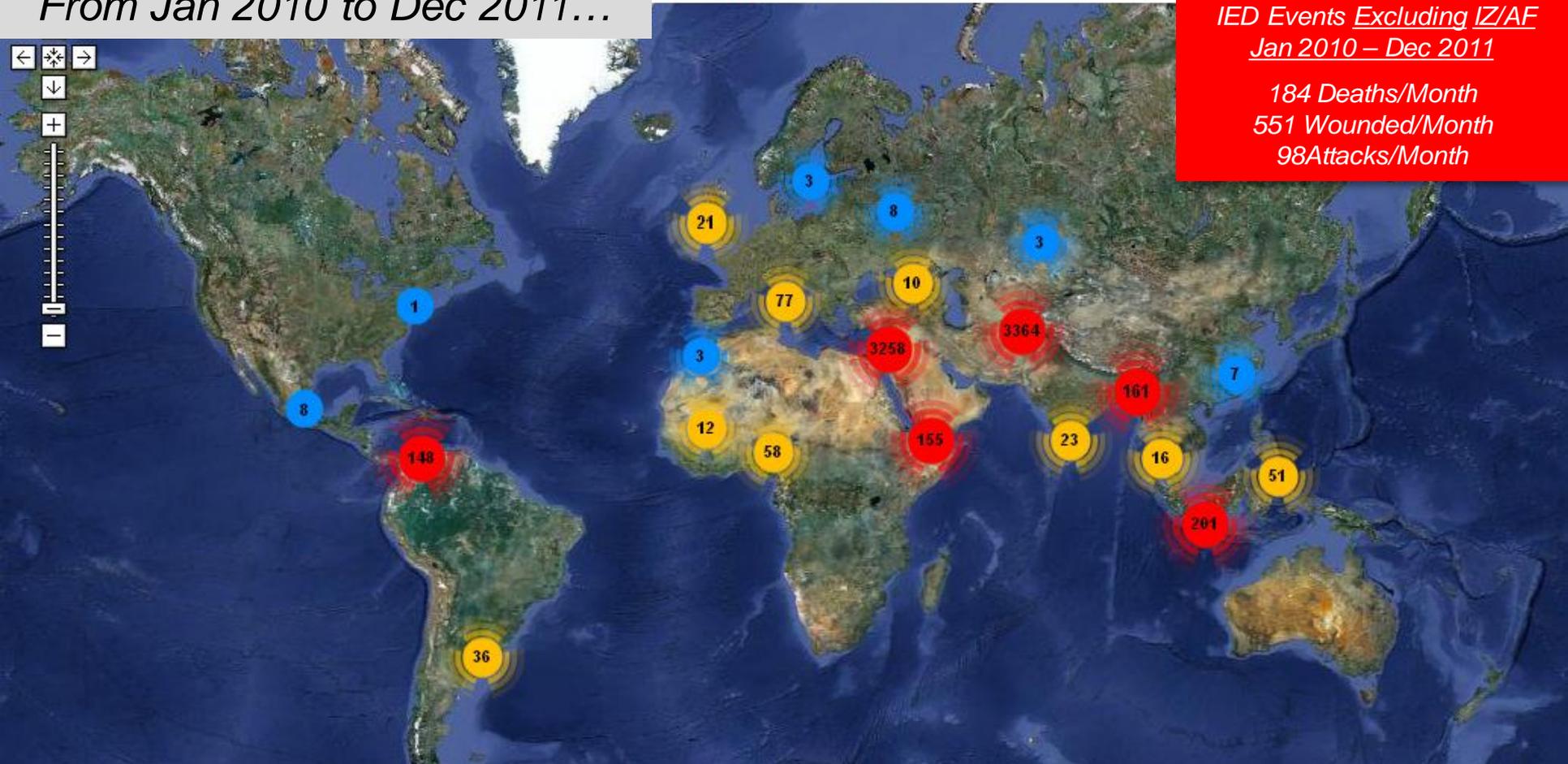


From Jan 2010 to Dec 2011...

Displaying 7,624 Attacks

Worldwide Monthly
IED Events Excluding IZ/AF
Jan 2010 – Dec 2011

184 Deaths/Month
551 Wounded/Month
98 Attacks/Month



...12,740 deaths and 39,111 wounded attributed to 7,624 IED attacks worldwide.

MAGTFs must be prepared to counter the global IED threat. Our enemy will use IEDs when we maneuver in support of national policy in the Pacific Rim and other Security Cooperation objectives.

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Source: National Counter Terrorism Center
Worldwide Incidents Tracking System 120409
<https://wits.nctc.gov/FederalDiscoverWITS>





Where We Are



**Command Wire
Pre-det**

**Pressure
Devices**

RC Neutralize

**Persistent
Surveillance**

**Low/No-Metallic
Detection**

**Explosives
Detection**





Marine Corps Warfighting Laboratory



Counter IED

Future Threats &
Opportunities

Experimentation

Technology

Counter IED

CETO

Wargaming

JCDE /
EWCT

Experiment

Technology

OSTI

CTO

USMC
CIED WG

A Balance Between “Thoughts and Things”

Plan, execute, analyze, and disseminate the results of a coherent and integrated program of concept-based experimentation, including modeling and simulation (M&S) initiatives in order to inform the Deputy Commandant, Combat Development and Integration. Results include development and promulgation of new and innovative tactics, techniques, and procedures (TTPs), and recommended enhancements to current organizational structures and training, as needed



EMO LOE-1 Design/Objectives/Partners



Who: Commander Fleet Forces Command, II MEF/2d MEB

What: Live force experiment with 24th Marine Expeditionary Unit

When: Feb 2012

Where: From the sea (C2 from IWO ARG/MEU), ops ashore Ft Pickett VA .

Why: Generate new thinking on amphibious ops; develop/exploit emerging technologies



February 2012

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
D - Day ⁵ X - 2	X - 1 ⁶	Insertion ⁷ X - Day	X + 1 ⁸	X + 2 ⁹	X + 3 ¹⁰	Live Fire ¹¹ X + 4
EMO LOE 1						

Experiment Objectives

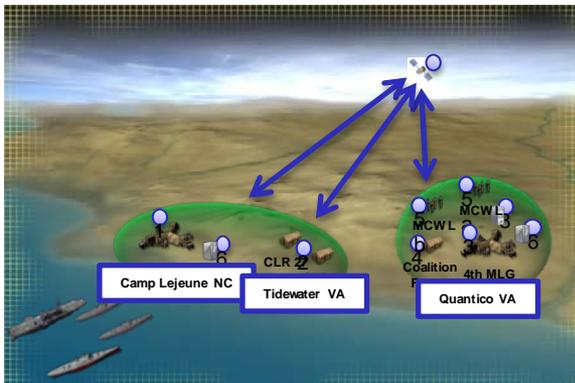
1. Examine MAGTF extended range C2
2. Employ/assess SOF integration
3. Examine sea based MAGTF's ability to sustain ground forces conducting kinetic operations at extended range; include MPF-SE/T-AKE participation
4. Employ/assess experimental C4ISR enablers
5. Employ/assess energy efficiencies for a dismounted tactical formation



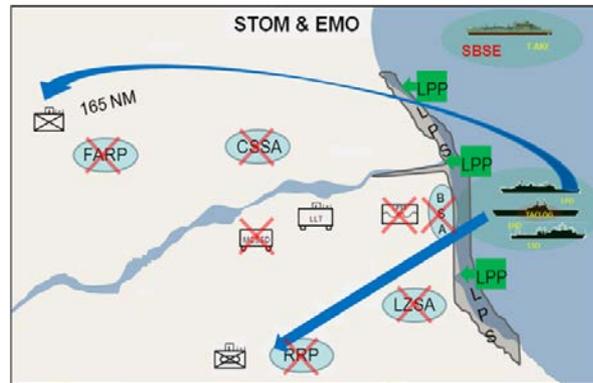


EMO LOE 2 – Distributed / Seabased Logistics

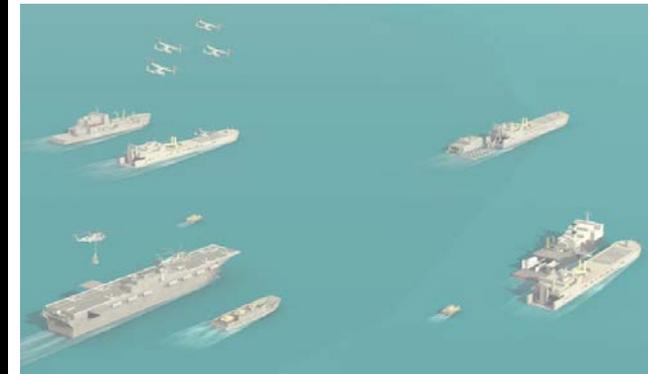
LOE 2.1 – Logistics C4I Wargame, June 2012



LOE 2.2 – Develop and assess new TTP's and technologies to logistically support EMO, July/August 2012



LOE 2.3 – Live in-stream MPF offload with EMO/STOM concept integration, Coconut Grove TSC, Maldives 2013



Findings:

- In support of EMO-type operations the Rapid Response Applet (RRA) improved the MAGTF's ability to provide logistics support to subordinate elements.

Findings:

- With proper training, task-organization and enabling technologies, the LCE is capable of conducting sustainment and distribution operations as an independent maneuver element in support of EMO.

Objectives:

1. Examine the capability to logistically support and sustain multiple, non-contiguous tactical units from a sea base.
2. Examine communications between MPF-SE and the MAGTF in support of EMO sustainment.
3. Develop recommended solutions for sustainment-related capability gaps.



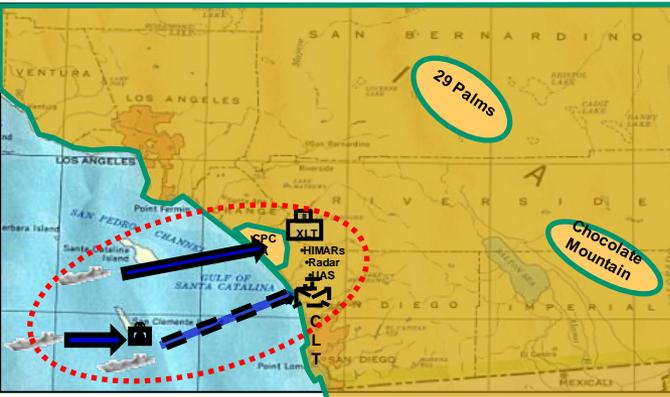


Future EMO LOEs

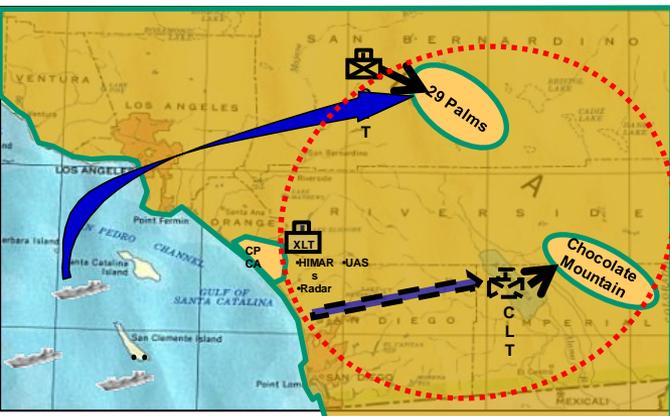
LOE 3: Fires (kinetic / non-kinetic) iso distributed operations (Jul 13, CPCA)

- Fires request and approval process
- JTAC /JFO suite
- HIMARS from amphibious shipping
- SOF integration
- Cyber

Part 1 - Amphibious operations

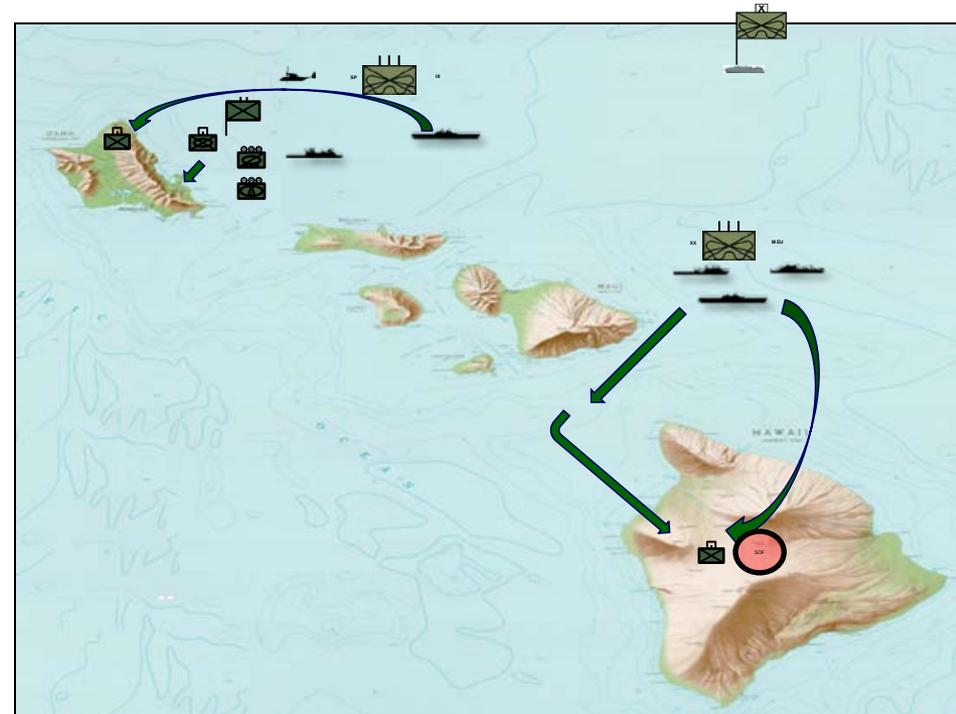


Part 2 - CPX/Live Force experiment



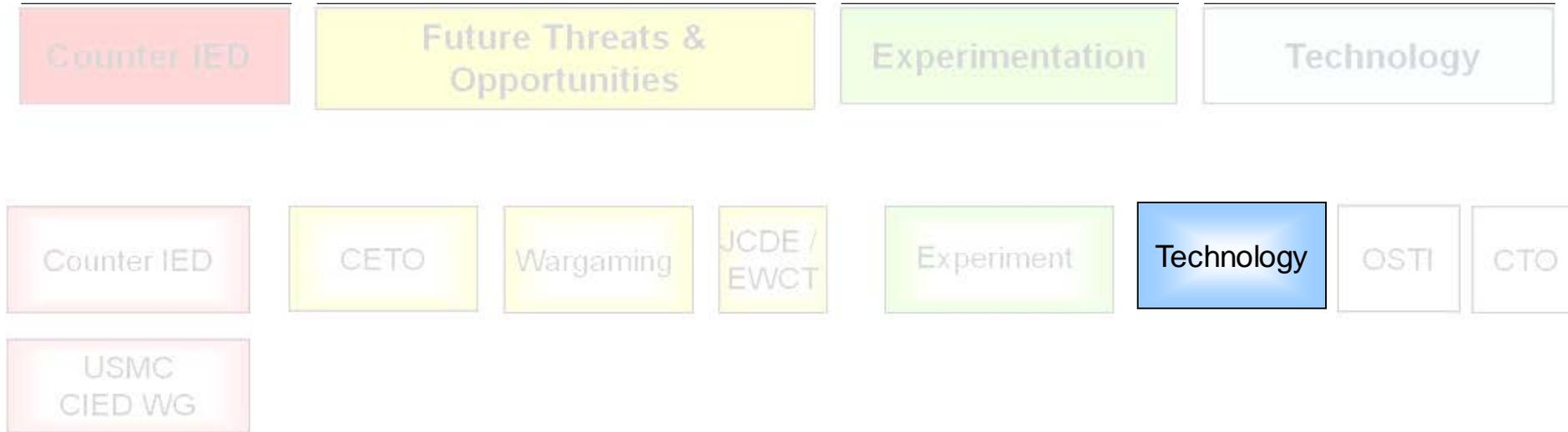
Advanced Warfighting Experiment (AWE):

- Crisis response exercise requiring force aggregation of Fly-In MEB CE, forward-deployed forces, and an afloat MEU.
- MEB will conduct STOM while employing multiple, distributed XLTs, all supported from the sea base
 - RIMPAC 2014
 - Hawaiian Archipelago
 - Employs all facets of EMO concurrently IOT validate / invalidate concept prior to transitioning to Future Maritime Operations (FMO)





Marine Corps Warfighting Laboratory



A Balance Between “Thoughts and Things”

Identify, modify where appropriate, and evaluate technological capabilities that support advanced warfighting concepts. Conduct assessments of emerging commercial technologies with potential military utility



EMO LOE-1 Advanced Communications

Distributed Tactical Communications System (DTCS)

Range: 300 miles (90%)
700 miles (30%)
Weight: 1.5 lbs
Power Source: BA123 (4)
Wave Form: Netted Iridium
Distribution: MEB / MEU / BLT / Comp / Plat / Squad
Notes: OTH / OTM / BLOS.
Provides PLI, 2.4kbps data channel

Plat / Squad Digital Device

- View PLI (DTCS & TW)
- Email/File Transfer (TW)
- Photo/Video
- Connect to DTCS & TW
- Text capability (DTCS)

TrellisWare Radio (TWR)

Range: Network / Link Dependent
Weight: 1.5
Power Source: MBTR Recharge / CR 123 (12)
Wave Form: MANET / VHF (PT) / UHF (PT)
Distribution: Comp / Plat / Squad / Team

Notes: -Simultaneous data and multiple digital voice
-8 hops
-2 Mb – 512Kb data channel (1-8 hops)
-Provides PLI

Company Digital Tablet

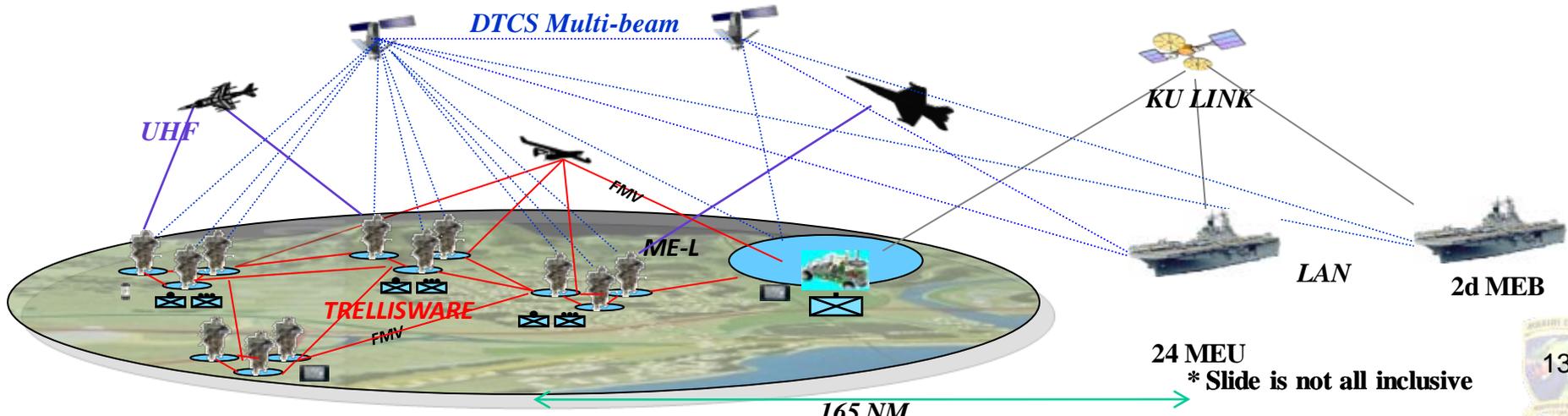
- View PLI (DTCS & TW)
- Email/File Transfer (TW)
- Text capability (DTCS)
- Connect to DTCS & TW

MAGTF Enabler-Light (MEL)

- Internally Transportable in MV-22 / CH-53
- KU SAT
- NIPR LAN (Email – File Transfer)
- DTCS / TWR (Amp)
- UHF / VHF / HF (AMP)
- 3 Workstations / 6 Tablets

Aerial Mobile Ad-hoc Networking Passive Relay (AMPR)

- Enhance the distance over which ground units can effectively communicate using XE240 Stalker UAS
- Provide UAS FMV feed over a meshed network



24 MEU
* Slide is not all inclusive



Logistics Demand Reduction



200-699 pounds

Aerial Delivery

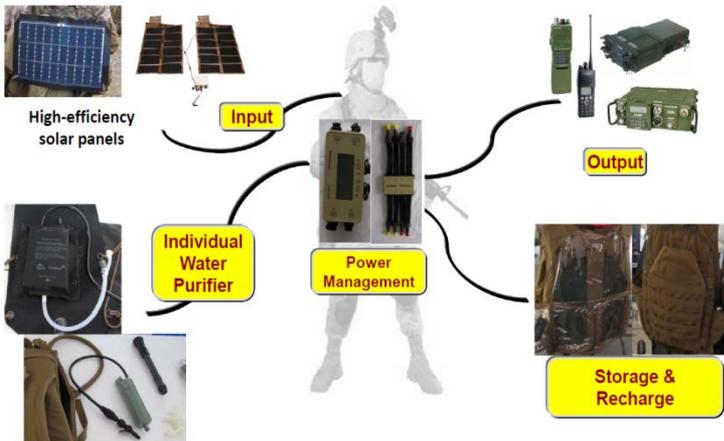


LED Lights



SPACES
Battery Charger

- Lighten the Load
- Tactical Logistics Distribution



Marine Austere Patrolling System



GREENS
(300 Watts Continuous Power)



SLMCO 5.0 Small Unit Water Purifier
 Production: 1,000 Gallons / Day
 Weight: 60 lbs
 Set up Time: 4 min / 1 Marine
 Power: NATO Slave 24VDC, (300 watt)

Demand signals...





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Unmanned Systems Enabling Battlefield Functions



**ONR Gyrocopter
(MMIST)**



DARPA Enhanced Endurance UAS
Propane Fuel Cell~6 hours
Lockheed Martin Stalker
EO/ISR / HD
Focus on Tactical Relay



**TATRC "Black Knight"
(Advanced Tactics, Inc.)**



**Cargo UGV
(Optionally Autonomous
MTRV)**



**GUSS
(Optionally Autonomous
ITV)**



DARPA LS3



DARPA Shrike



DARPA Switchblade

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How can industry help?

Middle Weight Force

- **Versatile → Can evolve with the threat—open architecture mindset**
- **Intuitive → Leverage technological approach that Marines are familiar with**

Lighten the MAGTF

- **Reduce our footprint → replace larger or multiple items with smaller more multifunctional ones**

Seabasing

- **Gear must be able embarkable and employable from a seabase**
- **Ability to swiftly build up combat power and land at sites of our choosing**

Individual Marine

- **Capable → Survivable**
- **Light enough to fight in any climb and place!**

Think Differently!



What is the next technological “tipping point”?



- **Amphibious Operations**
 - Ship to Objective Maneuver (STOM)
 - Operational Maneuver from the Sea (OMFTS)
 - Rapid build up of combat power (Force Aggregation)
- **Tactical Energy / Water Solutions**
 - Decreasing the demand...
- **Robotics / Autonomous Capabilities**
 - Lighten the load physically and mentally...
- **Advanced technology to augment human information processing**
- **Distributed Operations**
 - Command, Control, Communications...



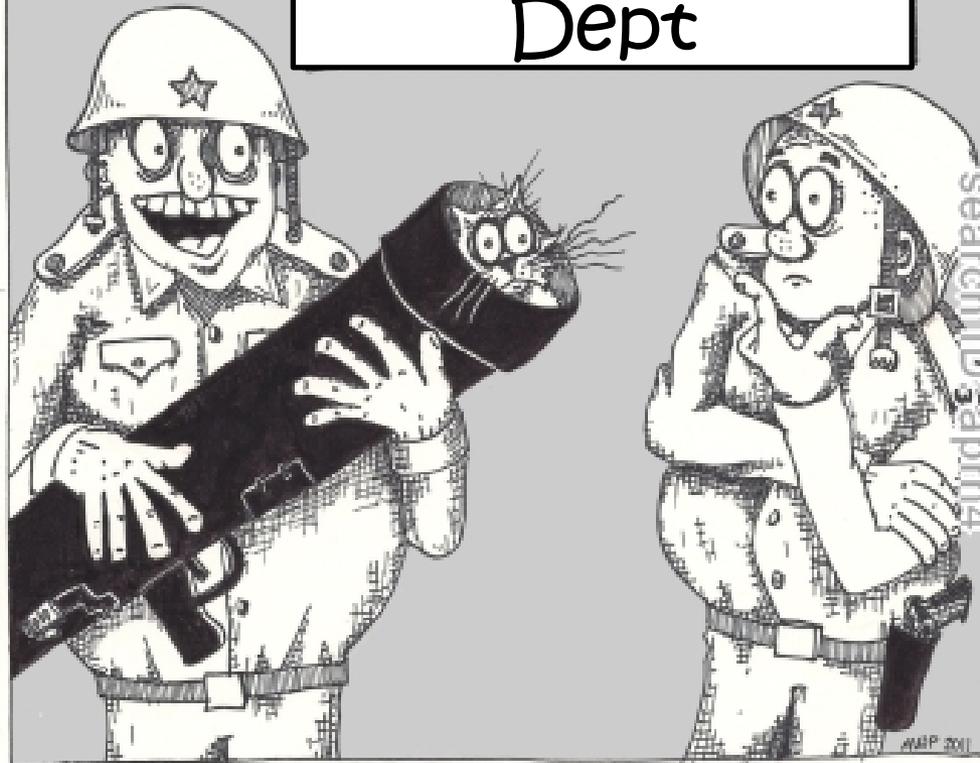
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Questions

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Experimental Weapons Dept



I know it doesn't look like much, but have you ever
 been shot in the face with a pissed-off cat?