



National Defense Industrial Association

*16th Annual Expeditionary
Warfare Conference*

24 -27 October 2011

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

Marine Corps Warfighting Laboratory (MCWL)



VCNR
AVCNR

Coordinating
Authority
for IEDD

Dir CIED Ops

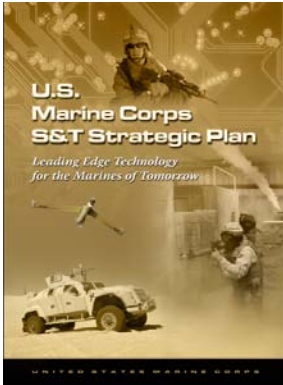


EA For S&T

Tech Dir

CG
MCWL*

Chief of Staff



A Balance Between "Thoughts and Things"

MCWL Mission

Conduct concept based experimentation and wargaming to develop and evaluate tactics, techniques, procedures and technologies in order to support the warfighter by enhancing current and future warfighting capabilities, and serves as executive agent for Counter IED, Science and Technology and Joint Concept Development and Experimentation.





Where are we?

- **Today's Fight**
 - **Armored Medium Tactical Vehicle Replacement (7-ton truck)**
 - **MRAPs**
 - **Forward Operating Bases (FOBs)**
- **Heavy** → Required to meet today's challenges, in today's theater





Where do we need to be?

- **We will respond to today's crisis, with today's force ...TODAY!**



- **The Lab's job is to focus on tomorrow so we can effectively apply that mindset to tomorrow's threat, in a world "where Microsoft coexists with machetes, and stealth is met by suicide bombers"---SecDef Gates**





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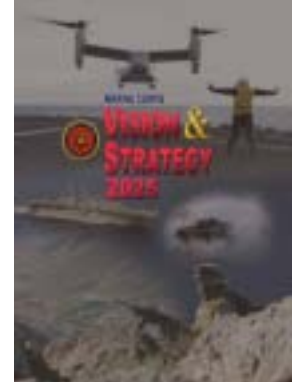
Where Are We Going?

Experimentation + (S&T) for the Future Middle Weight Force



2010

- Provide the best trained and equipped Marine units to Afghanistan
- Rebalance and posture the Corps for the future and aggressively experiment with and implement new capabilities and organizations
- Better educate and train Marines to succeed in distributed operations and increasingly complex environments
- Keep faith with our Marines, our Sailors and our families



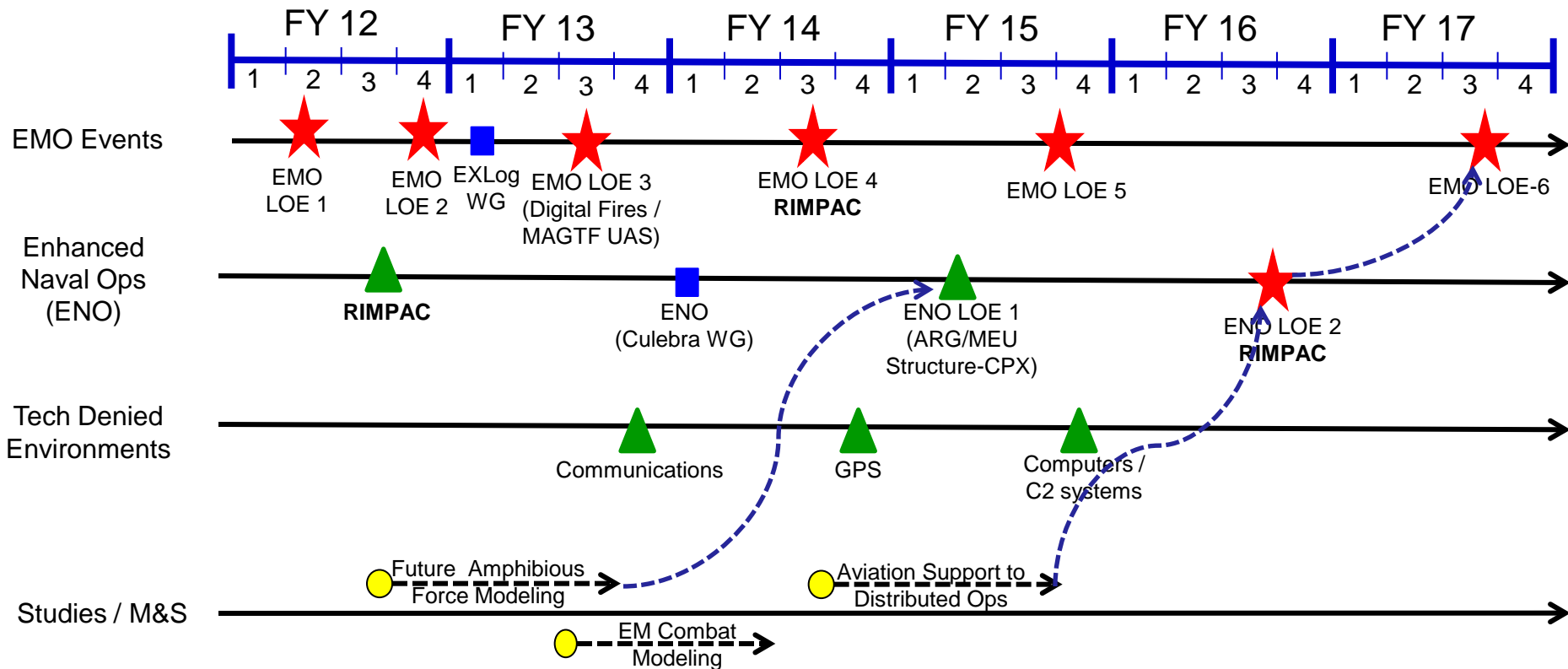
- *“A **middleweight force**, -- light enough to get there quickly, but heavy enough to carry the day upon arrival, and capable of operating independent of local infrastructure.”*
- *“We will rebalance our Corps, posture it for the future and **aggressively experiment** with and **implement new capabilities** 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”*

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Experiment Campaign Plan



❖ Energy Efficiency & Logistics Demand Reduction (LDR) initiatives will be examined in all LOEs.

❖ Small-scale Technology-Based LOEs can be facilitated (as required) to ensure Tech inserts are proven in an operational setting prior to insertion into LOEs

- Wargame
- ▲ Named LOE – Small scale / CPX
- ★ Numbered LOE – Larger scale





EMO LOE 1 Overview



Who: 2nd MEB and 2nd Fleet ICW Exercise Bold Alligator 2012.

What: Live force experiment with 24th MEU tied to the MEU CERTEX

When: 28 Jan 2012 – 12 Feb 2012

Where : Fort Pickett Virginia with C2 sea-based from IWO ARG.

Why: Test C2 and sustainment enhancements, and examine sea-based operating parameters.



February 2012

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

Experiment Objectives

1. Examine MAGTF ability to command and control at extended range.
2. Examine MAGTF command and control organizations' (LFOC/SACC/TACC/TACLOG) ability to do their job now – *and in the future*
3. Examine MAGTF/SOF integration
4. Examine MAGTF ability to sustain ground forces conducting kinetic operations at extended ranges. *Incl T-AKE participation.*
5. Examine fire support issues related to extended range, sea-based operations, digital interoperability.
6. Assess experimental C4ISR enablers.
7. Employ/assess energy efficiencies for a dismounted infantry force.



Logistics Demand Reduction



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)

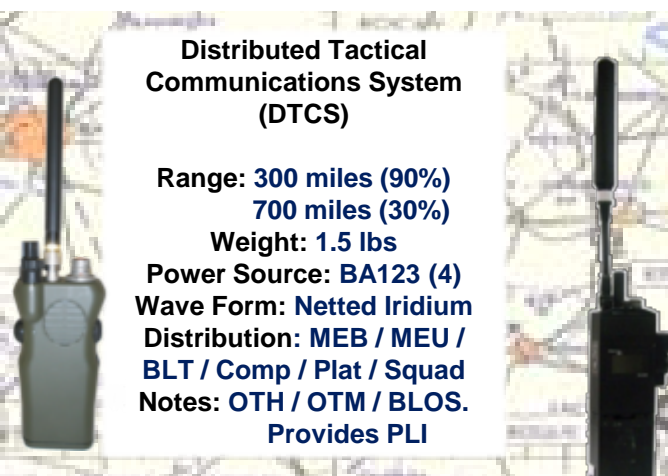


GUSS
 (Optionally
 Autonomous ITV)



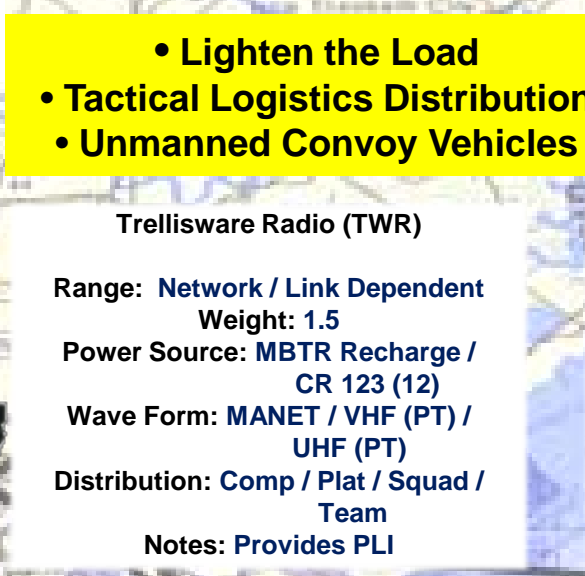
SPACES
 Battery Charger

- Lighten the Load
- Tactical Logistics Distribution
- Unmanned Convoy Vehicles



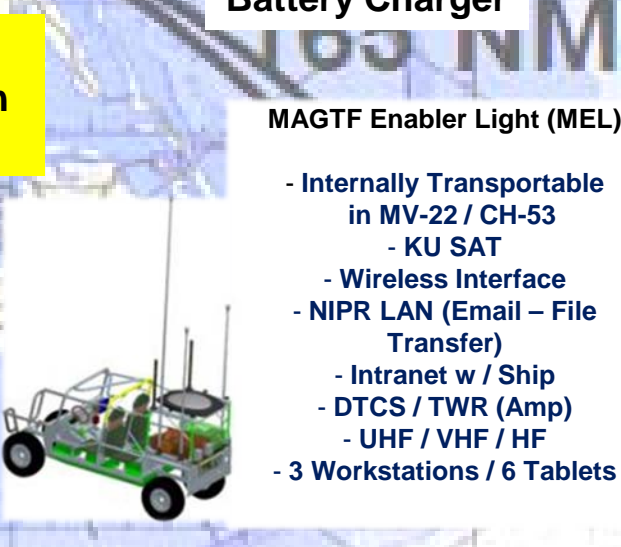
Distributed Tactical Communications System (DTCS)

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



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: Provides PLI



MAGTF Enabler Light (MEL)

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



Squad Digital Device (Smart Phone Caps)

- View PLI / File Transfer
- Wireless to TRW
- Cable to DTCS

Demand signals...



Company / Plat Digital Tablet

- View PLI / File Transfer
- Wireless to TRW
- Cable to DTCS



Group 1 UAS Aerial Relay

- **DARPA Enhanced Endurance UAS**
 - **Propane Fuel Cell**
 - ~6 hours
- Lockheed Martin Stalker (or AV Puma)
 - EO/ISR
 - HD
- *Focus on Tactical Relay*



Scan Eagle in LOEs in FY12; Stalker in FY 12-15?



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Unmanned Systems Enabling Battlefield Functions



**ONR Gyrocopter
(MMIST)**



**Cargo UGV
(Optionally
Autonomous MTRV)**



DARPA LS3



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



DARPA Shrike



DARPA Switchblade



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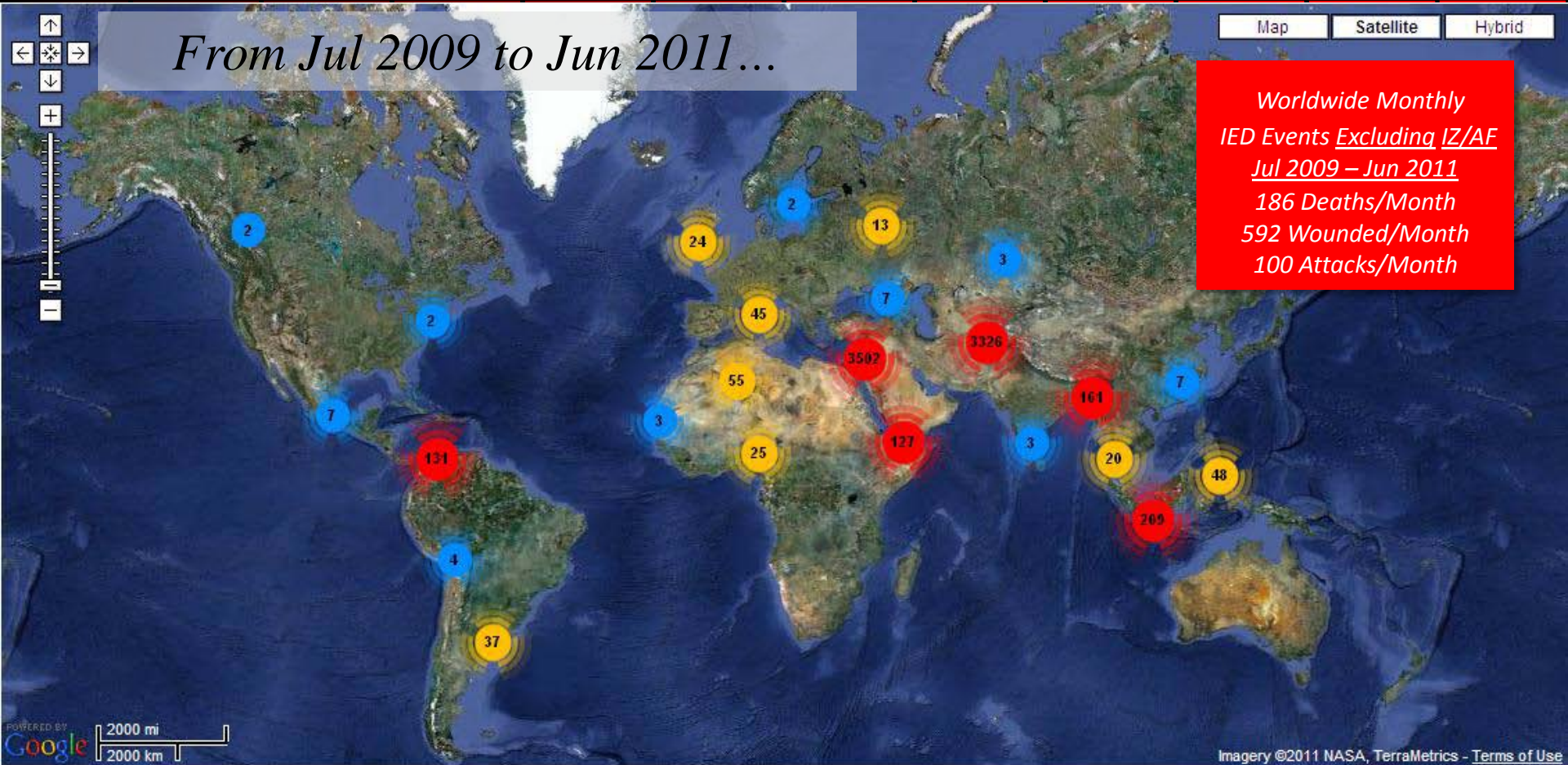


The IED Threat Persistent, Extensive, & Worldwide

From Jul 2009 to Jun 2011...

Map Satellite Hybrid

*Worldwide Monthly
IED Events Excluding IZ/AF
Jul 2009 – Jun 2011
186 Deaths/Month
592 Wounded/Month
100 Attacks/Month*



POWERED BY Google 2000 mi 2000 km

Imagery ©2011 NASA, TerraMetrics - Terms of Use

...13,124 deaths and 43,733 wounded attributed to 7,763 IED attacks worldwide.

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

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What is the next technological “tipping point”?



- **Tactical Energy / Water Solutions**
- **Autonomous Capabilities**
- **Distributed / Deep Operations**
 - Networking on the move
 - Networked long range communications
- **Robotics**
- **Advanced technology to augment human information processing**
- **Amphibious Operations**
 - Surface to Objective Maneuver
 - Rapid build up of combat power
 - Assaults of yesterday are unlikely



Higgins Boat Transformational



Where can industry help



- **Versatile capability (Middleweight Force)**
 - Multifunctional to max extent possible
 - Can evolve with the threat—open architecture mindset
 - Less is better
- **Lighter / More Agile (Lighten the load)**
 - Energy innovation → Smaller, longer lasting, more capable
 - Water → Man-portable, individual systems
 - C2 → Fewer systems, more versatile
 - Fits naval shipping
 - Reliance on satellites → jamming threat
 - Individual Marine
 - Survivability → Resistant to IED Threat
 - Light enough to fight



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What does the Marine Corps need?



"Andrew Higgins ... is the man who won the war for us. ... If Higgins had not designed and built those LCVPs, we never could have landed over an open beach. The whole strategy of the war would have been different."

Gen Dwight Eisenhower

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Questions