US Central Command Technology Development
Complex
• 20 Countries, 4.5 million square miles
• 1.1 Million square miles of ocean
• 531 Million people, 16 major ethnic groups
• 7 Major languages, hundreds of dialects
• 4 Major religions

Global Economic Impact
• Arabian Gulf produces ~ 31% of world crude oil
• Region exports ~ 26% of global LNG supply
• 3 x Strategic Choke Points
  • Appx 40% internationally traded oil transits SoH
  • 21% of LNG goes through Strait of Hormuz
Vision & Objectives

CENTCOM vision for the AOR is a region where improved security leads to greater stability and where regional cooperation helps to isolate and counter those who would use violence in pursuit of their goals . . . .

In pursuit of our vision we will:

- Expand stability, self-governance, development and security in Iraq
- Set conditions for security and strengthen governance in Afghanistan
- Degrade violent extremist networks, operations, and sanctuaries; with defeating al-Qaeda the priority
- Counter the proliferation of WMD
- Strengthen relationships and influence organizations and states to contribute to regional stability and the free flow of commerce
- Posture the force to build and sustain joint and combined warfighter capabilities and readiness
What keeps the Boss awake at night . . .

The enemy we don’t know

&

Has the ability to keep us at arms length

In a nutshell . . .

Anti-access / Area Denial & Indications & Warning are our biggest challenges as we end OEF, withdraw boots on the ground, and become more maritime focused.
The Role of Science & Technology
Charter

Conduct *discovery, research, analysis*, and *sponsor development* of new and emerging technologies and techniques which have the *potential to provide solutions* to Headquarters and Component validated Joint needs.

*Review* USCENTCOM and Component *plans, operations*, programs, policies and activities for areas where technology will improve efficiency and effectiveness.

*Integrate* across USCENTCOM headquarters and Component staffs for transformational, integrating, and experimentation activities.
What we do

• Technology discovery, research & analysis, and inform the staff & OSD on promising initiatives
  • Attend technology symposiums / reviews
    – Service Labs, DARPA, FFRDCs
    – Private industry & Academia
  • Conduct global market research
  • Provide initial feasibility / technical merit on proposals

• Needs pull
  • Conduct HQ USCENTCOM Leadership, Directorate, & Component outreach
  • Participate in planning, operations, & exercises
  • Review submissions from the requirements generation processes for technology needs to support the Warfighter

• Operationally Manage technologies we sponsor
• Participate in limited objective experiments
How we connect
U.S. Central Command Tech Focus

- We focus on the **JOINT** solution that has the potential to satisfy a **JOINT validated** need

- Separate from the many technology needs of our customer(s) those technology challenges which:
  - *Do not have a readily available solution*
  - For high-impact needs there is *insufficient activity pursuing a solution*

- Seek out game-changing technologies which our customer(s) don’t know they need
Some technology areas we “pursue”:

- Detection of CBRNE at tactically significant distances; with emphasis on a little “e”
- Pre-shot counter-sniper, counter-mortar, counter-RPG technologies; with emphasis on automated systems

Technologies which enable the transfer of information more securely, more quickly, to a wider set of users, to include the warfighter when it makes sense, with less bandwidth and dedicated support resources, e.g.:

- Multi-level Security over single architectures
- Bandwidth compression / reduction techniques
- Data to Decision [data=>info=>knowledge=>understanding=>wisdom]

Through automation, remote action, new and novel techniques & technologies which reduce risk and / or stress on the force and / or improve the efficiency and effectiveness of our action(s)

Technologies which allow for greater persistence over the battlespace with fewer platforms; employing improved sensor technology providing greater fidelity of information
**Thematic areas of concern**  
*(not in priority order)*

- **Detect / Defeat:**
  - IED initiators / initiator systems
  - Buried / concealed IEDs
  - Production and assembly of IEDs
- **HME production standoff detection**
- **Culvert access denial / alerting**
- **Persistence in surveillance**
- **Biometrics**
  - Identity dominance
  - Force protection / access
- **Non-lethal vehicle / vessel stop**
- **Reduce stress on the force:**
  - Force Protection requirements
  - Increased automation
- **Anti-swarm lethal / non-lethal**
- **More efficient / effective / timely trng**
- **Predictive analysis techniques**
- **Voice to text technologies**
- **C4ISR systems:**
  - Info sharing between systems
  - Multi-level security
  - Cross domain solutions
  - Faster … Better sorting / retrieval
  - On the move w/ GIG access to tactical edge
- **Tagging, Tracking, and Locating (TTL)**
- **Lightweight “x” with greater “y”**
- **More power per unit of weight**
- **Scalable effects – non-lethal to lethal**
  - Directed Energy
  - Kinetics
- **True SA for Blue … Fused Red**
- **Sustaining the force – reduced size, weight, amount, and retrograde**
- **Holding all targets at risk w/ min risk to US**
- **Any sensor any shooter; Soldier as a sensor; any adversary any battlespace … anytime**
- **All things ‘cyber’**
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Contact Info
Blah, Blah, Blah
The Nature of Our VEO Enemy

- Guided by ideology; fueled by militant zeal
- Amorphous global network which operates as a web of cells; stateless
- Powerful “Virtual Caliphate” - All directed toward the eventual establishment of a “Physical Caliphate”
- Seek safe-havens, physical footholds for recruitment, training, financing, and propaganda initiatives which complement its virtual element
- Well financed & has a simplified acquisition/training/fielding strategy

Maligned States & Rogue States

- Similar in many respects to VEOs, but . . .
- Has the capacity to hold us at distance and deny I&W
- Understands ‘the art of war’
- Exploits our political, policy, legal, & capability / capacity seams
Central Region
Crossroads of Three Continents
Strategic Interests & Mission

- Security of the U.S. citizens & the U.S. Homeland
- Regional stability
- International access to strategic resources, critical infrastructure, & global markets
- Promotion of human rights, rule of law, responsible & effective governance, & broad-based economic growth & opportunity

With national & international partners we will:

- Promote security & cooperation among nations
- Respond to crisis
- Deter & defeat state and non-state aggression
- Support development & reconstruction to establish conditions for regional security, stability, & prosperity
Major Activities

• Defeat al-Qaeda & associated movements
• Deny sanctuary & support for violent extremist groups
• Counter proliferation of WMD & associated technologies
• Deter & counter state-based aggression & proxy activities
• Protect freedom of navigation
• Support peaceful resolution to long-standing conflicts

• Develop partner nation capacity
• Assist nations in their ability to protect their critical infrastructure & support robust infrastructure development
• Bolster at-risk states
• Respond to humanitarian crisis
• Counter arms smuggling
Technology Review Process
## Overall Technology Investment Strategy

### Projects

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### Investment Balance

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### High Payoff Projects

- Candidate Growth-Oriented Enhanced Machine Interface
- Assured Performance Definition (A)
- Critical Element Analysis (CEA)
- Electro-Optical/Laser Weapon System
- Fixed Wing Advanced Precision Air Weapon System
- Internal Weapons System (IWS)
- IED/Mine Countermeasures (ICM)
- Integrated Battle Management System (IBMS)
- Intelligent Network (IN)
Simplified DoD Acquisition Process

Material Solution Analysis

Development Decision

Technology Development

Program Initiation

Engineering & Manufacturing Development

IOC

Production & Deployment

FOC

Operations & Support
When proposing a solution …
*The Heilmeier Questions … adapted*

- What are you trying to do?
  - Articulate your objectives using absolutely no jargon
- Who should care?
- How is it accomplished today?
- What are the limits of the current practice?
- What is new in your approach?
- Why do you think you will be successful?
  - How do you define / measure success?
  - What is your strategy to get there?
- How long will it take and at what cost?
- What are the risks?
- What is your risk reduction / mitigation strategy?
- What are the payoffs / return on investment?
For Technology Developers Some Points to Consider

• Seek to understand how your solution fits in the overall DoD system of systems
  – Integrate with legacy systems vice replace them
  – Open architectures receive higher interest / support

• Consider partnering with others to bring a ‘greater’ solution to the table - system best-of-breed vice at the component level

• Determine your impact to a Service program of record
  – Training
  – Initial fielding
  – Sustainment

• Substantiate your position with data
  – Testing
  – Cost-benefit analysis
Al Qa’ida and Associated Movements (AQAM)
AQAM: A Threat in All Realms

Recruitment and Education
Internet and Proselytizing

Media and Propaganda

Ideologically Sympathetic NGO’s

Financiers

Facilitators, Smugglers

Technical Expertise, Weapons Suppliers

Human Capital, Fighters and Leaders

Sympathetic Members of Legitimate Govt’s

Front Companies

Safe Havens

Training Camps

Virtual
Geographic
It Takes a Network … To Defeat a Network