The Third Offset Strategy
and Implications for White Sands Missile Range

Commanding General
White Sands Missile Range
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21 July 16

U.S. Army Test and Evaluation Command

WSMR Mission

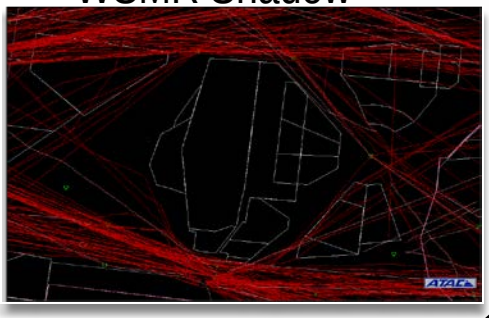
Provide Army, Navy, Air Force, DoD, foreign allies, and other customers with high quality services for experimentation, test, research, assessment, development, and training in support of the Nation.

Major Range and Test Facility Base (MRTFB)

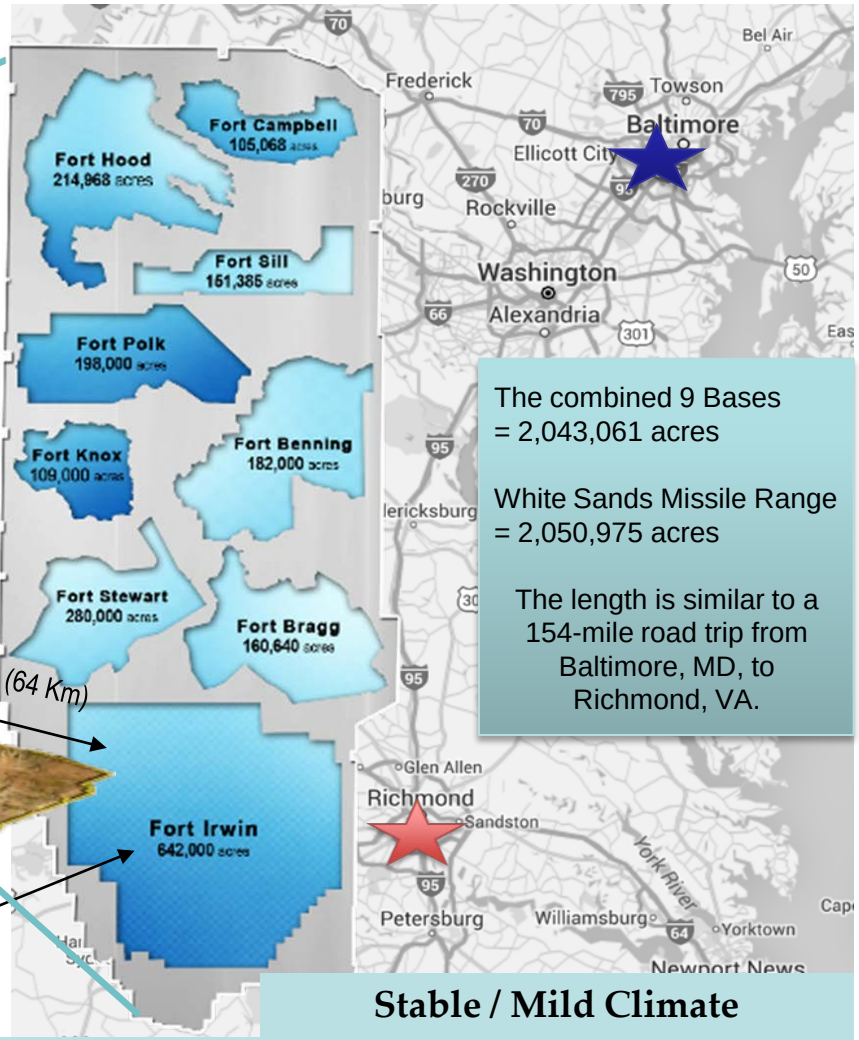
- *National Defense Authorization Act 2003 (NDAA 03) established MRTFB funding rules:*
- *Funding for indirect costs associated with test events is not chargeable to DoD test customers*
- *Only direct costs directly attributable to a specific test can be charged to DoD test customers*
- *Ranges/Capabilities are available to commercial and foreign military users on a fully reimbursable basis*

A National Treasure

"WSMR Shadow"



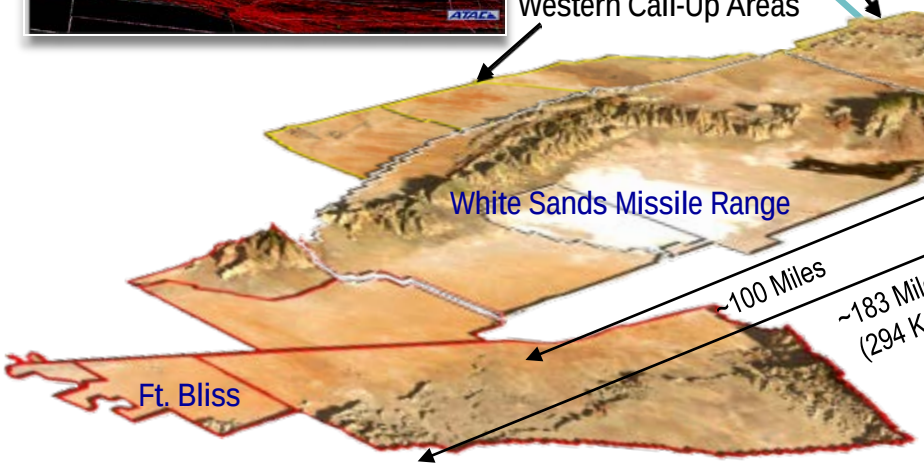
- Land area
- Air space
- Frequency



The combined 9 Bases
= 2,043,061 acres

White Sands Missile Range
= 2,050,975 acres

The length is similar to a 154-mile road trip from Baltimore, MD, to Richmond, VA.



Stable / Mild Climate

Dry / Clear Atmosphere

Avg. RH- 42%, Avg. Rainfall 11.7"

Avg. Visibility 30 km

20yr Avg. Temperature.

	Winter	Summer
High	61°F	92°F
Low	36°F	69°F

Previous Offset Strategies

"First Offset Strategy"

- Emphasis on *nuclear deterrence to avoid the large increase in defense expenditures* necessary to conventionally deter Warsaw Pact forces during the 1950s.

"Second Offset Strategy"

- Following the Vietnam War, U.S. tolerance for defense expenditures plummeted while Warsaw Pact forces outnumbered NATO forces by three to one in Europe.
- DoD sought *technology to "offset" the numerical advantages* held by U.S. adversaries.
  - Emphasized: Intelligence, Surveillance, and Reconnaissance (ISR) platforms; Precision-Guided Weapons; Stealth; and the expansion of space's role in military communications and navigation.
  - Guided by a long-range research and development plan that enabled U.S. and allied forces to hold adversary forces at risk long before they could bring superior numbers to bear.
- *Shaped, in many ways, the U.S. military of today.* Key resulting systems include:
  - Airborne Warning and Control System (AWACS) found on the E-2s and E-3s
  - F-117 stealth fighter and its successors
  - Modern precision-guided munitions
  - Global Positioning System (GPS)
  - Significant enhancements in reconnaissance, communications, and battle management

2nd Offset Strategy Tested at WSMR in 1982

The Third Offset Strategy

DoD developing a “Third Offset Strategy” to offset growing disadvantages U.S. forces.

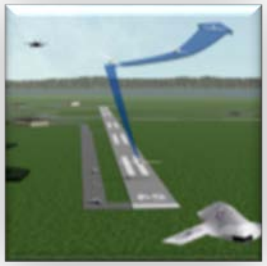
- Technologies will include **robotics, system autonomy**, miniaturization, big data, and advanced manufacturing

- Next-generation power projection platforms like **unmanned autonomous strike aircraft, Long Range Strike - Bomber,** undersea warfare systems and **non-line of sight communications**

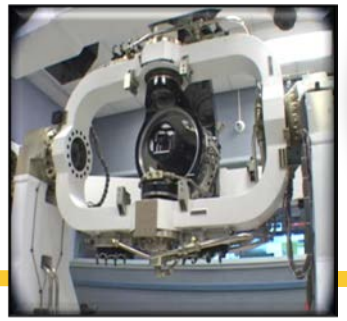
Innovation Opportunities

Prototyping and Experimentation

Autonomy & Robotics	Strong WSMR Test Role
Biomedical	
Electronic Warfare / Cyber	Possible WSMR Test Role
Future of Computing / Micro-electronics	
Hypersonics	Strong WSMR Test Role
Directed Energy	Strong WSMR Test Role
Manufacturing	
… ?	Possible WSMR Test Role





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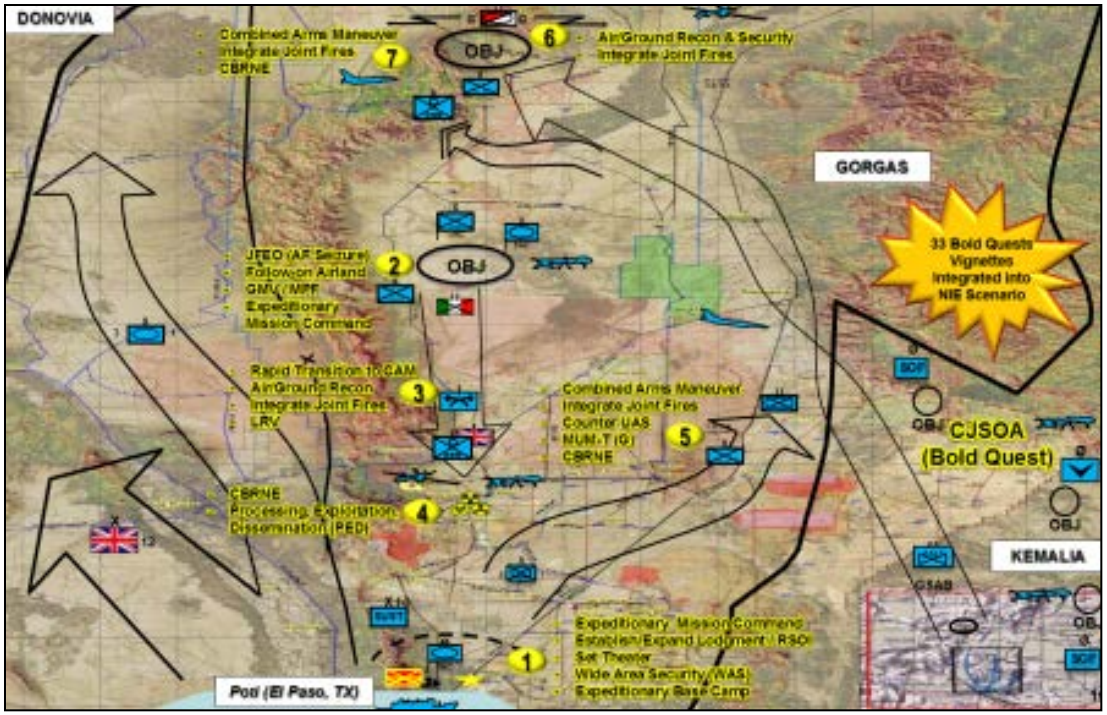
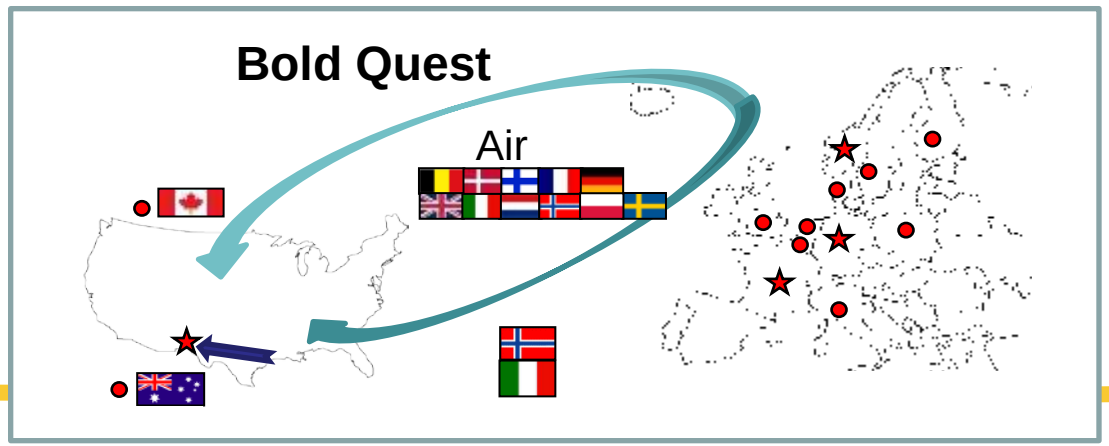
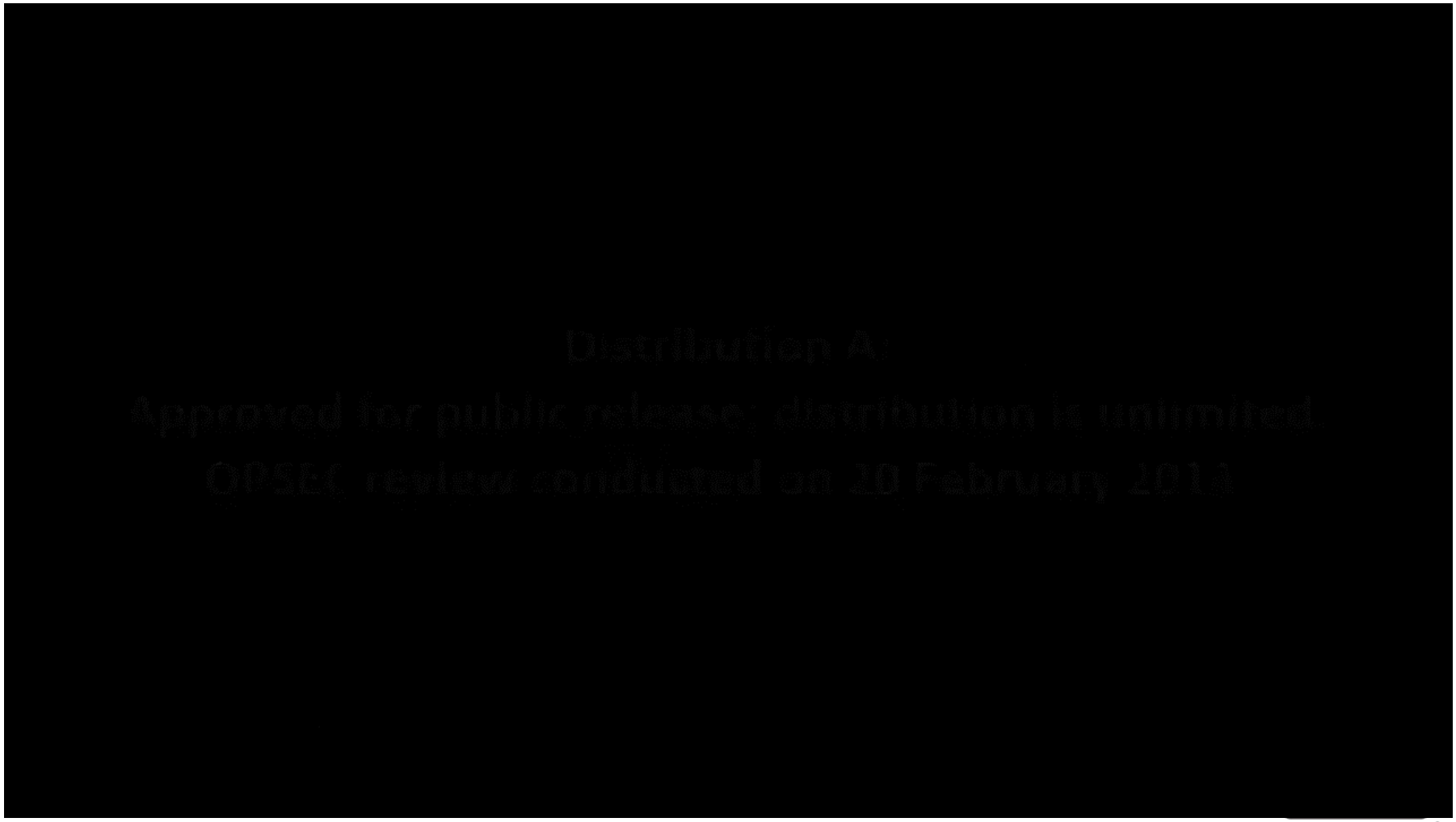
Non-line Of Sight and Networked Systems Testing





WSMR Laser Testing Video



Other Examples

Unmanned autonomous strike aircraft

Long Range Strike – Bomber

Others: Deep Learning, Human Machine collaboration, Human Machine Combat, Assisted Human Operations

WSMR Vision 2046
Preliminary Conclusions

- **Future Testing needs for Country/WSMR**
  - Autonomous and Self-Learning (AI)
    - Robotics, Unmanned, Man in the Loop
  - Long-Range Weapons and Hypersonics
  - Directed Energy Programs
  - Network Testing
  - Swarm
  - Cloud Computing Systems
  - More Safari/Expedition support
  - Unique Targets
  - More “Systems of Systems” Testing
  - Nuclear Threats and Weapons Modernization

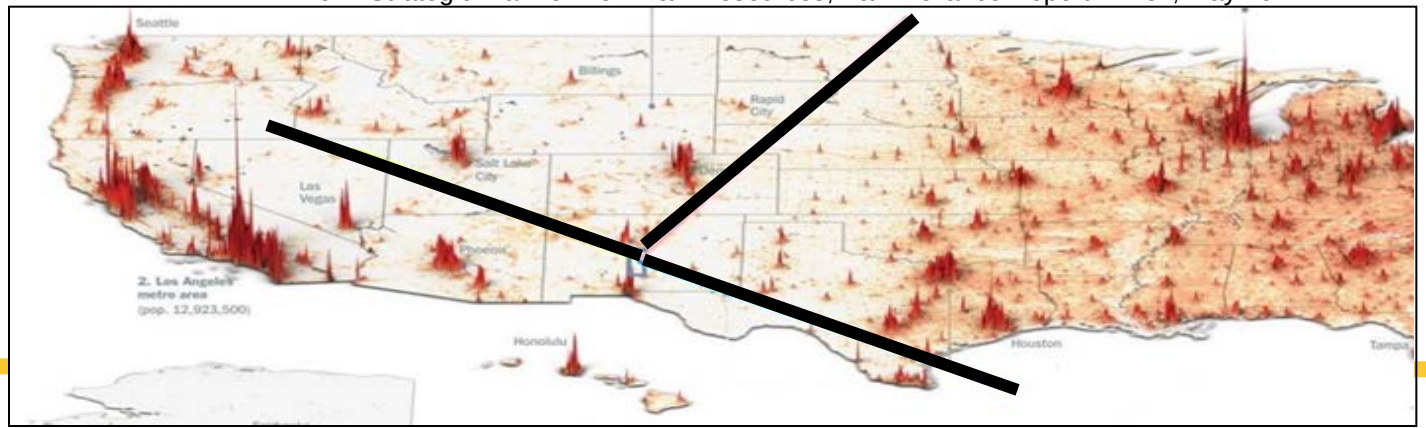
- **Some Current Challenges/Constraints**
  - Infrastructure Obsolescence and Maintenance
  - Current Budget and Resource/Business Model
  - Encroachment (Spectrum, Land Buffer, 10-1 Series)
  - LRC, MICC, and CPAC support

WSMR Vision 2046
Initial Analysis/Assessment

Some Initial Thoughts/Assessments

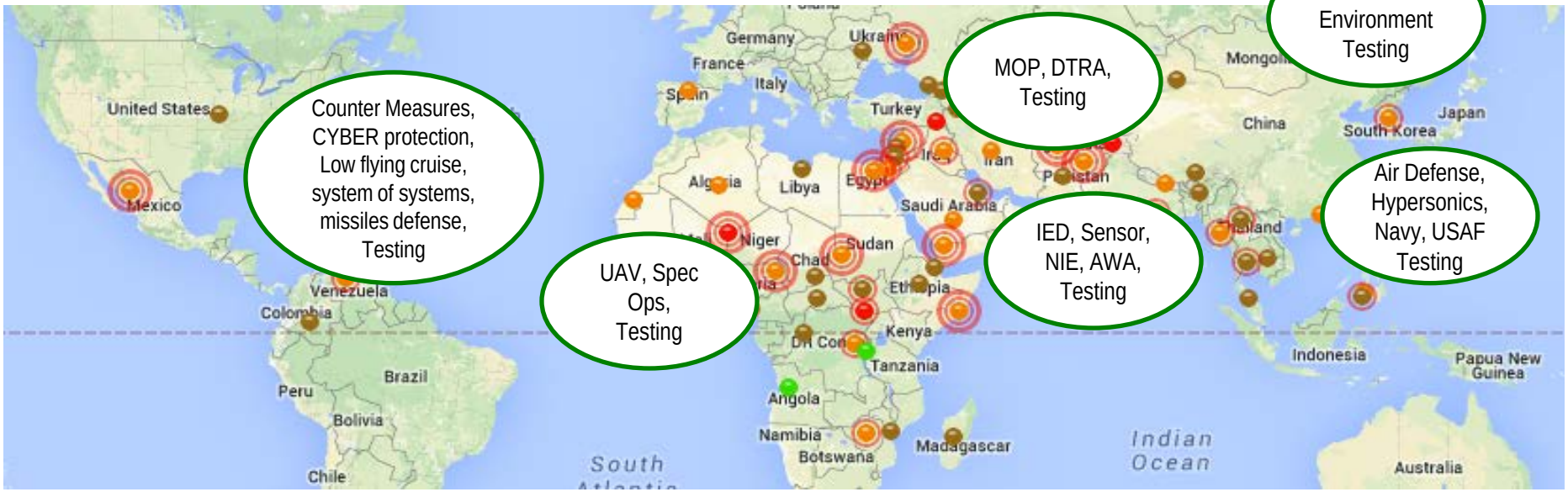
- Change our Resource Model
- Develop Longer Off-range Corridors
- Test Environment Characterization and Situational Awareness
- Develop Flight Safety Innovations – e.g., Geo Fences
- Additional Mobile and Remote Capabilities
- Improve Test Cost Management & Real-time Cost Awareness
- Enhance Communications (VOIP, wireless, unobtrusive)
- Define, Recruit, Develop, New Skill Sets Needed For Testing – Obtain Direct Hire Authority

2012 Strategic Plan for DoD T&E Resources, T&E Reliance Report Annex, May 2012



Questions?

World Wide Conflicts And Related Testing Requirements



World Wide Threats are divest and complex. They vary from low tech IED to high tech hypersonic weapons. WSMR remains a critical, and sometimes the only, test range that can support testing needs.

Future threats like hypersonic weapons and proposed defensive systems such as lasers systems will increase WSMR importance

Autonomy & Robotics
Huge Role for Testing!

Autonomous Learning Systems

- Delegating decisions to machines in applications that require faster-than-human reaction times

Human-Machine Collaborative Decision Making

- Exploiting the advantages of both humans and machines for better and faster human decisions

Assisted Human Operations

- Helping humans perform better in combat

Advanced Manned-Unmanned System Operations

- Employing innovative cooperative operations between manned and unmanned platforms

Network-enable, autonomous weapons hardened to operate in a future Cyber/EW Environment

- Cooperative weapon concepts in communications-denied environments

Simulation coupled with **multiple** open air tests on a large range is only way to test these systems

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