HQ USEUCOM Science & Technology

Science and Technology Vision

An innovative team of experts pursuing technological solutions that sustain and further develop the forces that underpin enduring stability and peace in Europe and Eurasia

"Leveraging technology to make us stronger together"

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Deputy Science Advisor
19 April 2012
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$$G_{ab} = \frac{8\pi G}{c^4} T_{ab}$$

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ECJ8-Q Team

**Sourced by RDECOM and NAVSEA
Funded by RDECOM, NAVSEA, and OSD**

Fully integrated as EUCOM AOs

Greg Bader
EUCOM Science Advisor

Provided by RDECOM FAST

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Mission

- Defend the Homeland forward and support U.S. strategic interests
  - Maintain ready forces for global operations
  - Secure strategic access and enable global freedom of action
  - Enhance trans-Atlantic security through support of NATO
  - Promote regional stability
  - Counter terrorism

Building Partner Capacity is essential to all our efforts

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Technology Strategy

- Identify innovative technology solutions to emerging and persistent security concerns

- Develop partnerships that can execute on accelerated schedules

  - Government agencies with equities in the problem

  - Prime contractors with success in DoD acquisition

  - Small technology providers that are adaptive and agile

  - A coordinating entity to bring it all together

  - A sustaining entity to keep it going

- Develop, demonstrate, and transition capabilities

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Technology in Support of Validated Shortfalls

- Ballistic Missile Defense

- Theater ISR

- UHF Communications

- Flashpoint Rapid Response

- Seamless Information Exchange

- Cyberspace Domain Awareness and Superiority

- Geospatial Intelligence (GEOINT)

- Assured Nuclear Command & Control

- Identity Intelligence & Operations

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Ballistic Missile Defense

- Technology Objectives
  - Improve the ability to defend against Large Scale Attacks, Dense Raid Sizes, and Structured Attacks
  - Improve the integration of U.S., Allies, and Partners existing and planned AMD Systems/Contributions, Operational Elements, and Planning Tools
- Areas of Interest
  - Improve resolution of Overhead Persistent Infrared
  - Improve target discrimination
  - Improve sensor capability to detect ballistic missile launches
  - Develop effective and affordable intercept alternatives
  - Develop capabilities for integrating U.S. and allied BMD planning
- Future S&T Focus
  - Higher-quality teleconferencing to support missile defense coordination
  - Non-kinetic intercept capability
  - Affordable orbital systems with increased sensor coverage of European AOR

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Theater ISR

- Technology Objectives
  - Improve the ability to detect, locate, and monitor transnational threats
  - Increase the availability of persistent ISR assets to the COCOM
- Areas of Interest
  - Improve capability to geo-locate targets in full motion video
  - Improve tagging, tracking, locating sensors to allow them to be maintained and deployed at a local level
  - Improve availability of persistent ISR assets through development of:
    - UAVs
    - Hybrid/lighter than air assets
    - Small scale satellites
- Future S&T Focus
  - Innovative long endurance platforms
  - Improved matrix networked extremely long life, unattended ground sensors
  - Enhanced real-time world-wide unclassified maritime ship tracking

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UHF Communication

- Technology Objectives
  - Ensure uninterrupted access to required UHF MILSATCOM bandwidth
- Areas of Interest
  - Develop handheld radios/smartphones capable of utilizing the Wideband Code Division Multiple Access (WCDMA) technologies being deployed on the Mobile User Objective System (MUOS) satellites
  - Develop mobile devices smaller than man-packs which are MUOS WCDMA capable
  - Develop and validate use of Integrated Waveform to maximize existing bandwidth utilization
- Future S&T Focus
  - Alternative ground station capabilities
  - Enhanced satellite coverage
  - Alternative command and control systems
  - Integrated waveform technology on existing platforms

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Flashpoint Rapid Response

- Technology Objectives
  - Provide the ability to rapidly extract large numbers of non-combatants from an austere location
- Areas of Interest
  - Improve capability to utilize existing assets in an austere environment
  - Develop ability to extract non-combatants using hybrid air assets
  - Develop social media and crowd sourcing tools to enhance situational awareness, posture, and predict potential hot spots in areas of concern
- Future S&T Focus
  - Logistics variant hybrid-airship, based on the technology proven in the LEMV JCTD
  - Rotor-less VTOL aircraft
  - Social media and crowd sourcing tools to enable situational awareness in areas of concern

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Seamless Information Exchange

- Technology Objectives
  - Improve the ability to share essential classified and unclassified information in bi-lateral or multilateral efforts in the AOR
  - Enable rapid establishment of secure multinational networks supporting command and control requirements in a coalition environment
  - Enable comprehensive shared situational awareness for full understanding based on relevant data sources

- Areas of Interest
  - Develop a cross-domain interface that allows for a common "come- as-you-are" methodology to rapidly connect in a secure manner all actors to share information
  - Develop cross-domain solutions to meet war fighter requirements in concert with the Unified Cross Domain Management Office
  - Develop machine language, semantic translation technology

- Future S&T Focus
  - Real-time cross-language VTC

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Cyberspace Domain Awareness and Superiority

- Technology Objectives
  - Provide a Cyberspace Common Operational Picture to ensure freedom of action to support power projection, protect C2, execute networking and engagement activities, and defend transactional information
- Areas of Interest
  - Develop capability to fuse, correlate, and display data from Service, DOD, inter-agency, and commercial network sensors
  - Improve the capability to analyze sensor data to detect anomalous behavior and identify malicious activity by intruders or insiders
  - Provide a reliable and dedicated friendly network/cyber operational picture that maps friendly cyber terrain and provides visibility of current cyber security status
  - Develop robust theater wide cyber indications and warning capability to provide sufficient early warning of adversary cyber actions in order to detect and proactively counter attempts to disrupt friendly C2
- Future S&T Focus
  - Theater-wide internal network protection tools
  - Tools that support emerging policies for cyber defense and attack

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Geospatial Intelligence (GEOINT)

- Technology Objectives
  - Improve in the ability to collect and disseminate Geospatial Intelligence
- Areas of Interest
  - Develop capability to generate and seamlessly share GEOINT data across USG organizations
  - Develop collection management tools that integrate planning intelligence requirements & NGA processes
- Future S&T Focus
  - Hybrid airship ISR platforms
  - Hand-held portable mensuration enabling accurate geographic location

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Assured Nuclear Command & Control

- Technology Objectives

  - Improve defense of C2 systems against the effects of Electromagnetic Pulses

- Areas of Interest

  - Improve capability to minimize or eliminate the effects of EMP on communications systems

- Future S&T Focus

  - Laser-based C2 systems

  - Enhanced fiber optics

  - Backup technologies for ELF and VLF

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Identity Intelligence & Operations

- Technology Objectives
  - Improve the ability to disseminate biometric data with partner nations, allies, and coalitions across the whole-of-government to identify, interdict, and counter transnational threats transiting through and operating in the AOR

- Areas of Interest
  - Enhance biometrics collection capabilities
  - Enhance biometrics sharing capabilities

- Future S&T Focus
  - MIO collection
  - Binary DNA identification and resolution
  - Standoff iris ID resolution
  - Cooperative international ID resolution database

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QUESTIONS

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EUCOM / AFRICOM S&T Conference
25–28 June 2012

"Preserving Strategic Partnerships and Preparing for Transnational Threats"

SI-Centrum, Stuttgart, Germany
Dormero Hotel (formerly The Millennium Hotel)

Focus Areas:
Preserving Strategic Partnerships
Regional Energy Security through Technology Trends
DOD, NATO, & EU R&D efforts: Working Together to Promote Stability
Seamless Information Sharing: Social Media & Cyber Issues
Promoting Arctic Cooperation: Arctic activities, Strategy and Technologies
Preparing for Transnational Threats in Weapons of Mass Destruction

Keynote speaker: Mr. Douglas J. Bruder, Associate Director, DTRA

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