

This Brief is Unclassified

Assured Dynamic Spectrum Access, Evolving Toward Revolutionary Change A DoD Perspective

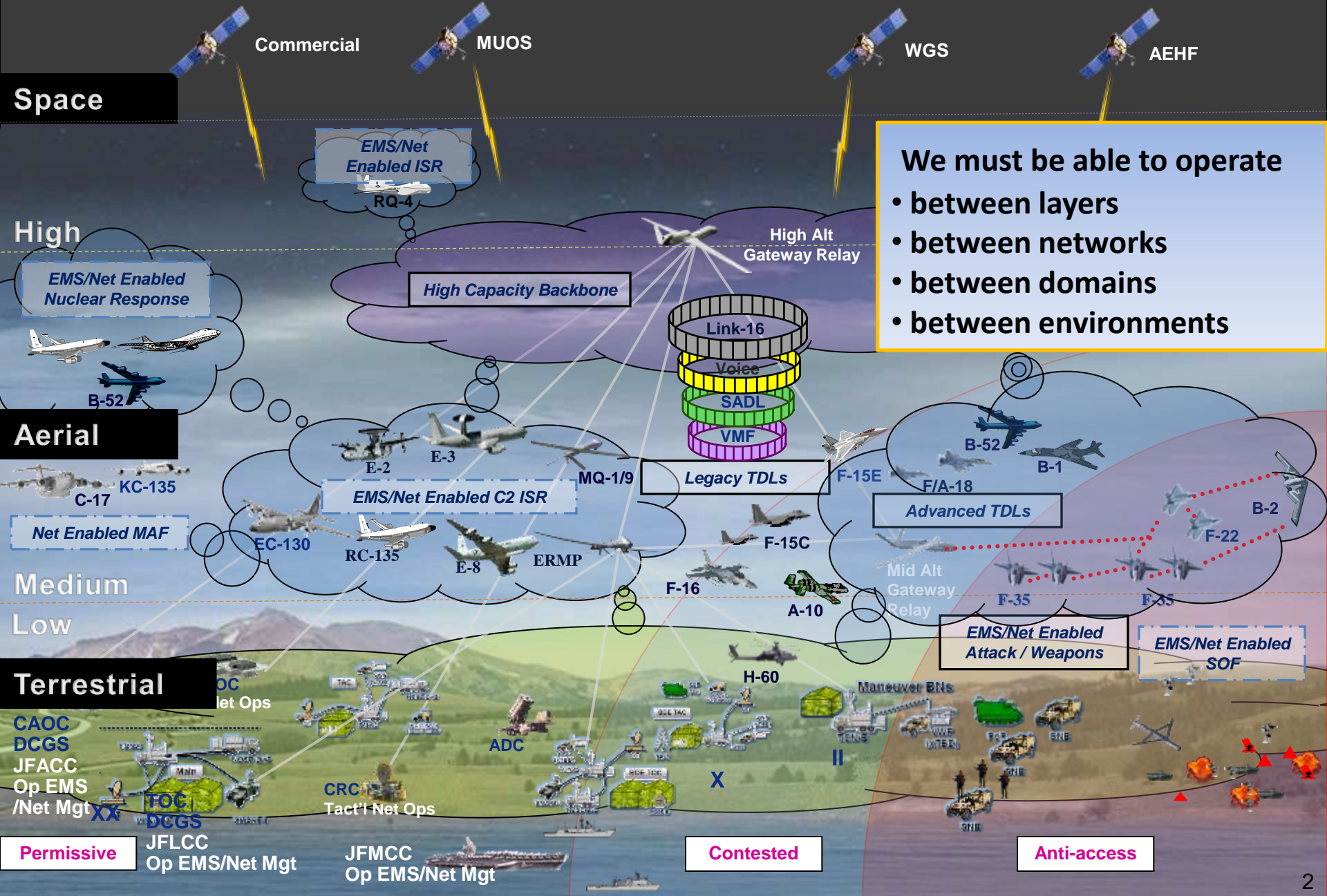


DoD CIO Spectrum Policy & Programs
DoD Chief Information Officer
14 May 2015



SUPPORT THE WARFIGHTER

Mission Success Depends on Spectrum



Warfighter Spectrum Demands

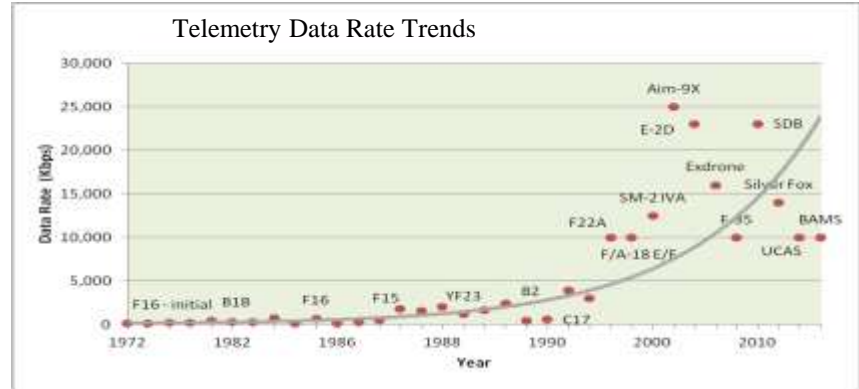


Increasing number of devices and communication links required for the battlefield (e.g., UASs)

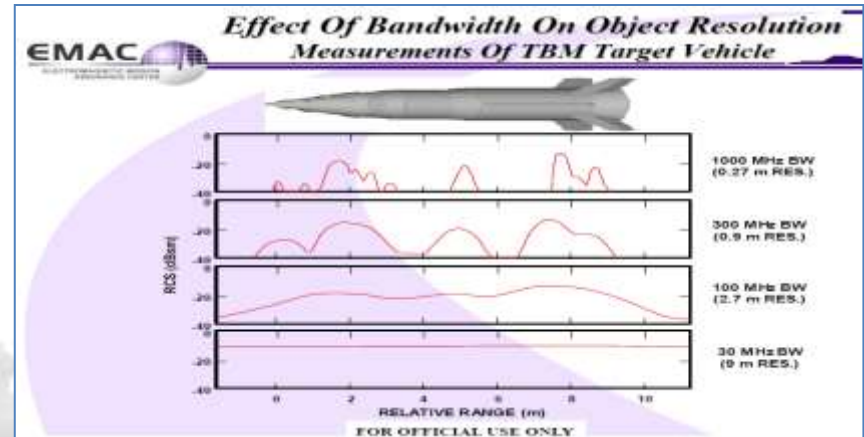


DoD's inventory of UASs stood at 167 in 2002today it numbers over 10,000 and climbing

Increasing data rates for testing (e.g., telemetry)



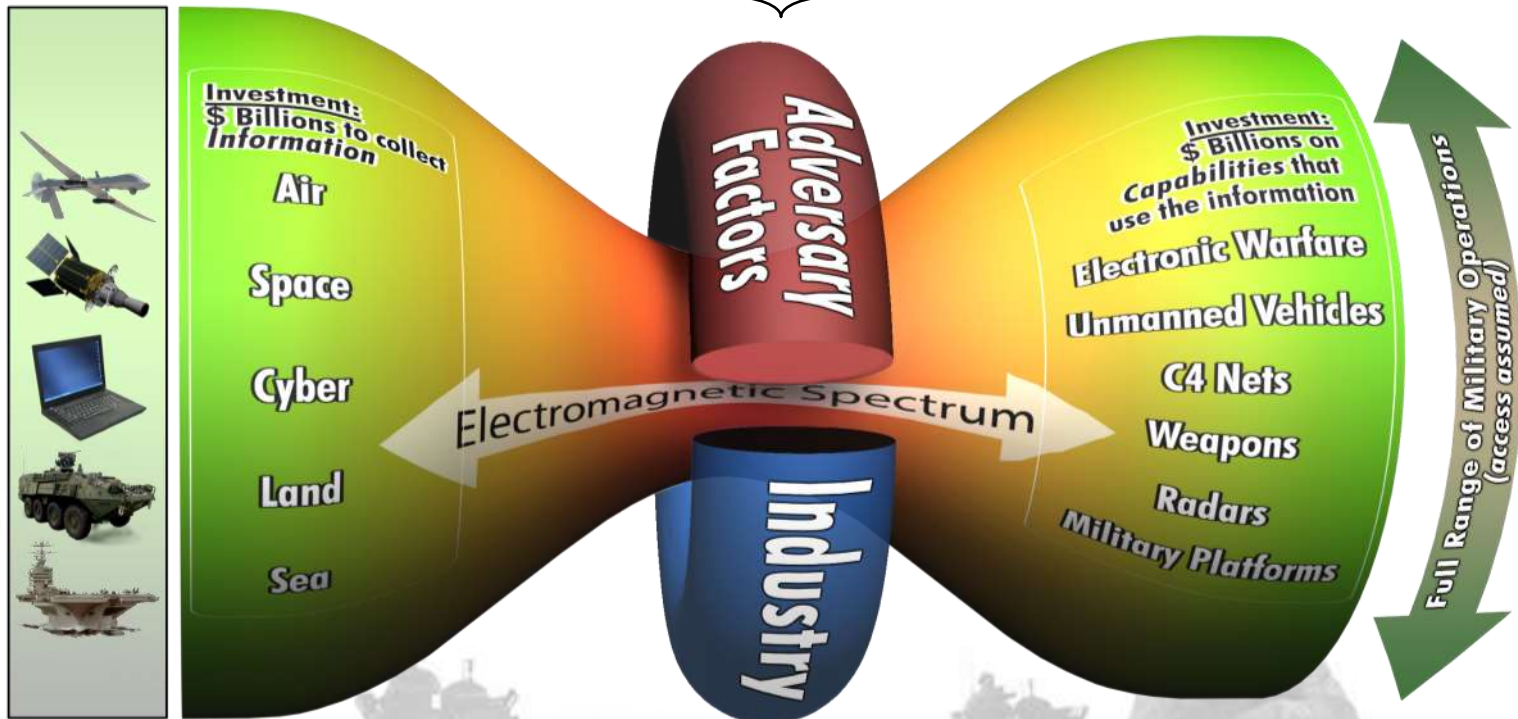
Changing threat – radars need more spectrum to detect smaller/stealthier targets at longer ranges



DoD Spectrum Needs are Also Growing Exponentially!

Why This Matters: DoD Operational Implications

- Directed Energy (EMP, HPM, laser)
- GPS jammers
- Digital RF Memory
- MMW
- Advanced C2 nets
- Weaponized COTS
- Proliferation



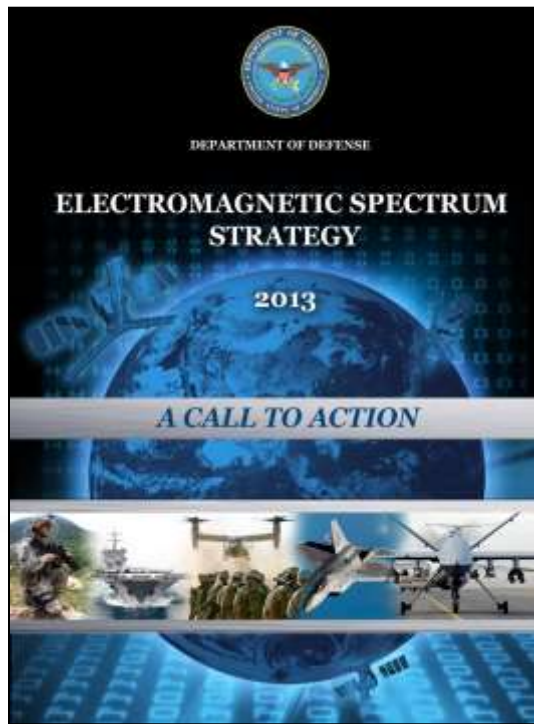
- Broadband technologies
- IEEE Standards
- Speed/Throughput/ Streaming Content
- Economic Growth
- Jobs Creation

Spectrum Sharing Key to Global Operational Flexibility and Effectiveness

- **Efforts to improve spectrum access have to benefit both federal and non-federal users; focus on operational effectiveness**
- **Spectrum sharing is key to assured spectrum access, including federal access to non-federal bands**
- **Spectrum policy/regulatory frameworks must evolve to balance and enable sharing technology advances**
- **The frameworks must support new agile capabilities for a more contested/congested operational environment**

Vision for Change: Spectrum Strategy

EMS Strategy's Vision: "Spectrum Access When and Where Needed to Achieve Mission Success"



- **“Call to action,” 3 Goals:**
 - Expedite development of spectrum dependent systems with increased efficiency, flexibility and adaptability
 - Increase agility of DoD operations
 - Sharpen responsiveness to ongoing spectrum regulatory and policy changes

Focus on Cultural and Technology Transformation: from reactive to proactive; evolve governance, accountability and oversight; collaboration and partnerships; embrace and exploit technology evolution

Partnerships - National Spectrum Consortium

- **Purpose:** Promote collaboration among government, industry and academia
- **Mission:** Execute R&D, prototyping, and piloting initiatives using innovative contracting methodologies that leverage both governmental and consortia technological, financial, and human resources to coordinate and broaden the access to, and maximize the military and commercial value of the existing EMS
- **Major activities:**
 - Mature technologies that assist in improved EMS awareness, sharing, and use
 - T&E for optimal allocation of those technologies for public and private objectives
 - Validation of new technologies to increase trust among stakeholders
 - Policy development to ensure technologies don't outpace guidance for best use

DoD, Federal Gov't, Industry, Academia, & International

Trusted Engineering Up Front First

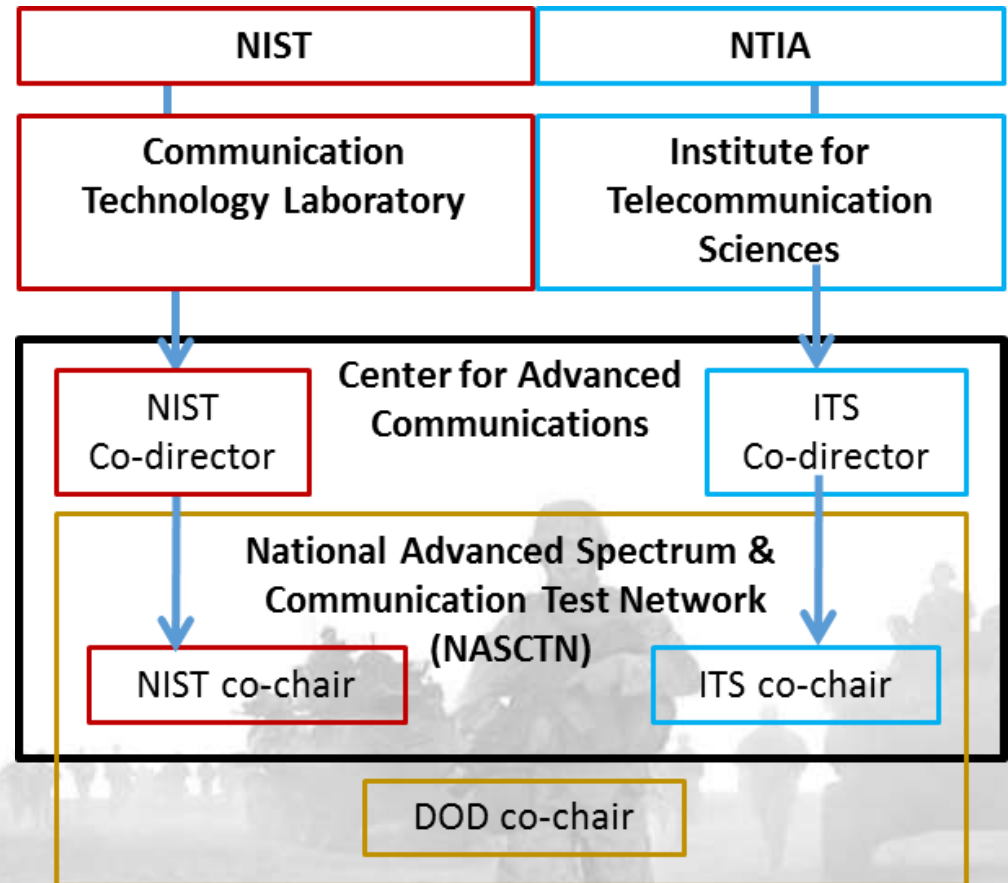
Center for Advanced Communications

&

National Advanced Spectrum and Communications Test Network

CAC Mission - To advance the fundamental understanding of spectrum and spectrum usage to promote spectrum sharing approaches and innovation

NASCTN - a network of government, academic and commercial capabilities able to coordinate the use of intellectual capacity, modeling and simulation, laboratory, and test ranges to meet national spectrum interests and challenges



DoD Vision: Model City Principles

- **A framework – not just a “city” – to support testing and development of advanced spectrum sharing technologies**
- **Needs a strong balanced and sustainable governance process that relies on the existing regulatory structures**
- **Enable equitable bi-directional sharing (i.e., including federal access to non-federal bands)**
- **Promote trust, greater operational flexibility, and Administration spectrum policy goals – Partnership is key**

DoD Committed to Finding and Implementing Viable Sharing Solutions

- **AWS-3 Auction**

- The 1695-1710 MHz and 1755-1780 MHz bands auctioned for commercial mobile broadband
- Sharing enabled through the DoD developed and maintained 1755-1780 MHz Portal
- A Record ~\$45 Billion in Auction Proceeds; DoD's innovative alternative proposal key, combining sharing, compression and relocation

- **3550-3650 MHz band**

- NTIA identified the band as a candidate for sharing during its 2010 Fast Track Study and FCC issued a NPRM in 2012 and a FNPRM on April 23, 2014 to reallocate the band for shared use utilizing a database to protect federal incumbent users
- FCC open proceeding for reallocation; DoD is actively collaborating with FCC and NTIA to establish appropriate sharing conditions that are efficient and effective

- **5350-5470 MHz and 5850-5925 MHz bands**

- PL 112-96 called for NTIA, in coordination with the affected federal agencies, to study the feasibility of sharing bands with unlicensed broadband devices
- DoD continues to collaborate with FCC, NTIA and industry on 5 GHz analyses and planned testing efforts within the established working groups and international forums to evaluate the viability of proposed mitigation techniques

EMS Superiority

Fielded Capabilities to Enable Assured Access and Unimpeded Maneuver

Innovation through Partnerships

N S C
a p o
t e n
i c s
o t o
n r r
a u t
l m i
u
m

Collaboration

Trusted Engineering

N
A
S
C
T
N

Trust

Proof of Concept

M
o
d
e
l
C
i
t
y

Partnerships

Rapid Transition to Operations

S
p
e
e
d
to
N
e
e
d



Solid Foundation consisting of Solid Strategy and Implementation Plan

Recap – Way Ahead

- **DoD is taking deliberate actions**
- **Implementing and executing a proactive vs reactive strategy**
- **Advocating spectrum sharing techniques, technologies and processes**
- **Building partnerships with all stakeholders**
- **Promoting Innovation**
- **Encouraging S&T/R&D Spectrum Technology Investment**
- **Advancing accountable and responsive governance**
- **Advancing revolutionary changes through evolutionary approaches**
- **Integrated methodologies are key to success**

DoD Spectrum Evolution Guiding Principles

