

Air Attachée'
Surveillance and Tracking Seminar:
Global Surveillance and Tracking
Emerging Technologies --
Defense, Customs & Coastal
Monitoring

Dr Steven Kimmel

NDIA C4ISR Division Chair

Leesburg, Va
April 28, 2010

National Defense Industrial Association

- **Non-profit, educational association**
- **Work with industry, government and all military Services**
- **1,6475 corporate members**
- **Over 76,300 individual members (22,200 Gov't)**
- **52 Chapters**
- **32 Divisions**

Divisions -- Technology

- **Space**
- **Missile Defense**
- **Armaments**
- **Science & Engineering Tech**
- **Munitions Technology**
- **Chemical Biological Defense**
- **Bombs & Warheads**
- **Robotics**
- **Combat Vehicles**
- **Ballistics**
- **Tactical Wheeled Vehicles**
- **C4ISR**
- **Systems Engineering**
- **Technical Information**
- **Test & Evaluation**
- **Homeland Security**
- **Manufacturing**

Divisions -- Warfare

- **Expeditionary Warfare**
- **Undersea Warfare**
- **Strike, Land Attack & Air Defense**
- **Air Targets, UAVs & System Ranges**
- **Combat Survivability**
- **Special Operations/Low Intensity Conflict**

Divisions -- Policy

- Environment & Energy
- International
- Health Affairs
- Logistics
- STEM Workforce
- Legislative Information
- Procurement
- Government Policy
- Small Business

Industrial Committees

Committee

Sponsor

Ammunition Producers

CG, JMC / PEO Ammo

Test & Evaluation

Dir, Test & Eval, OSD

Small Arms Producers

Vacant

**Chem-Bio Defense Acquisition
Initiative Forum**

JPEO, Chem-Bio

Program Management

AT&L (A&T)

Biometrics

Dir, DoD BTF

Agenda

- Opening Remarks
 - C4ISR Solution Needs (Technology Drivers)
 - Expanding C4ISR Landscape
- Global Surveillance and Tracking Strategic Assessment
- C2 Systems and Soldier Communication
- ISR for Defense, Customs and Coastal Monitoring
- Key Applications-Military Intelligence
- C4ISR TrendsClosing Remarks

Opening Remarks: C4ISR Solution Needs

- Systems critical to both conventional and irregular warfare requirements are good bets for stable growth (e.g., C4ISR, unmanned systems, mobility)
- Platforms require embedded C4ISR
- Focus of requirements shifting from new large platforms to C4ISR upgrades of older platforms = modernization and quick reaction capability solutions
- Commercial C4ISR technology changes faster than DoD acquisition cycles...Acquisition Reform will address
- Tech savvy adversaries adapt commercial C4ISR—counter-Disruptive Technology critical to operational success

C4ISR Expanding Landscape

- Army is re-establishing itself in the EW business – “we’re taking that role back from the Navy”
- EW activities can often affect friendly forces in the area as well as those of the enemy
- Army EW to be embedded in brigade combat team, with employment affecting tens of square miles
- Looking for an integrated, multi-functional single box that performs all EW functions, including communications while jamming
- Mobility, terrain and force distribution forging reinvigorated EW + ISR + C2 + spectrum discipline management (J2, J3, and J6 relationships)

Strategic Assessment

- Missile in-flight retargeting....avoid fratricide and misdirected weapons
- Upgraded network-enabled data links...real-time target updates
- Network Centric Operations
- Enhanced Situational Awareness...sensory collection, processing and dissemination
- Proliferation of ISR platform...resource management
- Size, weight and power reduction
- Operational collaboration across multiple weapon systems

C2 Systems and “Soldier” Communication

- Secure Communication...across remote locations and distant terrains
- C2 Gateways....live, virtual, constructive and gaming simulations to share tactical awareness using C2 protocols as gateways and bridges
- Novel sensor networking systems for information sharing
- Remote satellite sensor market estimated to be \$16 Billion FY 2010-2019. Satellite data for –
 - Urban planning, natural resource exploitation, agriculture, mapping and navigation, transportation and scientific study of Earth’s climate
 - Environmental treaty monitoring, damage estimation for insurance claims, real estate appraisal and natural disaster assistance.
 - Unlike optical sensor satellites, Synthetic Aperture Radar can obtain images through cloud cover and night with 1 meter resolution

ISR Defense, Customs & Coastal Monitoring

- Advanced ISR capabilities dependent upon communication infrastructure
- ISR will intensify with increased emphasis upon network-centric warfare strategies and intelligent data links
- Major emphasis upon real-time information and seamless flow of information to enable quick response
- Secure wireless communication necessary for wide area surveillance, precision location, battle-space HD...tag, track, monitor
- Multicriteria decision making tools arising out of spectrum issues and bandwidth management
- Target planning via UAV, UUVs, UGVs integration

Key Applications—Military Intelligence

- Intel fusion
 - Imagery and Signals intelligence
 - Measures and Signature Intelligence
 - Human Intelligence
- Key Applications
 - Border security
 - Situational Awareness
 - Weather monitoring
 - Tracking and monitoring
 - Tagging
 - Space systems
 - Threat management

Trends in C4ISR

- Increased focus on communication, command and control with SOA information systems emphasis
- Network integration with coalition response system(s)
- Electronic countermeasure techniques to manage threat caused by unauthorized spectrum users
- Tactical common data links as avenue for increased situational awareness
- Military communication drivers are network centric warfare and COTS technology
- C4ISR technology challenges---Interoperability, bandwidth availability, multilevel security and scalability

C4ISR Trends Closing Remarks

C4ISR Application	Trends
Command and Control	<ul style="list-style-type: none"> • Satellite programs expected to receive the highest funding—imagery needs drives remote sensing market • Vehicle applications the fastest growing segments
Tactical Communications	<ul style="list-style-type: none"> • Need more bandwidth at the tactical end • Need more commercial satellite compatible • Increasing demand for wireless systems • Need for better spectrum management
Intelligence	<ul style="list-style-type: none"> • Codeword programs likely to receive the highest amount of funding • Ability to quickly integrate tactical reports, geospatial metadata, social network are fast growing segments
Surveillance and Reconnaissance	<ul style="list-style-type: none"> • Direct relevance to counter insurgency and counter terror operations are of utmost importance • Unmanned vehicles are experiencing robust growth

