

The Classification of this Brief is:
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NORAD and USNORTHCOM J8 Science & Technology



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FY 19-23 Capabilities of Interest

Detect, Track & ID Air Targets

Arctic Capabilities

Threat Info Sharing

Engage Aerospace Targets

Maritime Surveillance –
Sub-Surface

Network Resiliency

Cybersecurity(Autonomous Mission Assurance)

Critical Time Management of GPS

CWMD Preparedness and
Response in the Domestic AOR

Operational Use of Social Media

Mine/Underwater IED
(UWIED) in Homeland

Maritime Non-Lethal
Engagement

Maritime Surveillance – Surface

Recovery of USG Personnel in
USNC AOR

Air & Missile

Maritime

Land

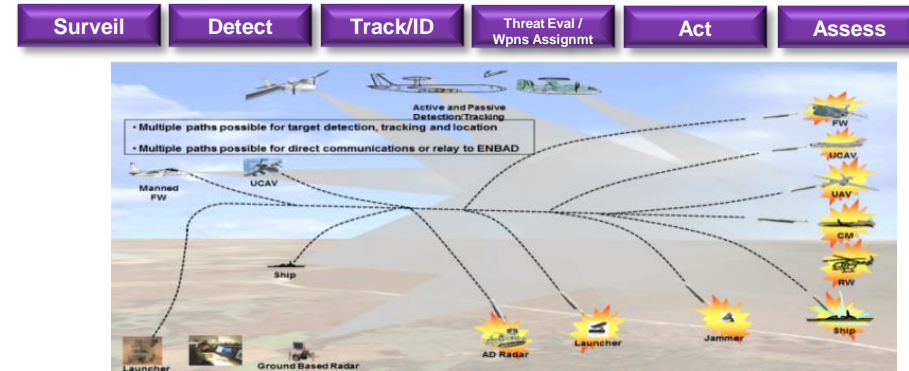
Cross Cutting



Air & Missile Domain Issues

- **Track & Assess ICBMs**
 - Long range radar detection
 - Positive ID & discrimination
 - Communication resiliency
- **Detect, Track, & ID Air Targets**
 - Detection at range
 - Tracking, & ID
 - Low, slow, small RCS exploitation
 - Sensor Fusion
- **Engage Air Targets**
 - Develop Low cost per shot technologies
 - Improved Point defense capabilities (Kinetic & Non-kinetic)
 - Sensor fusion
 - Improved EW & SIGINT
 - Next generation weapon defense
- **Counter-UAS**

Joint Engagement Sequence (JES)



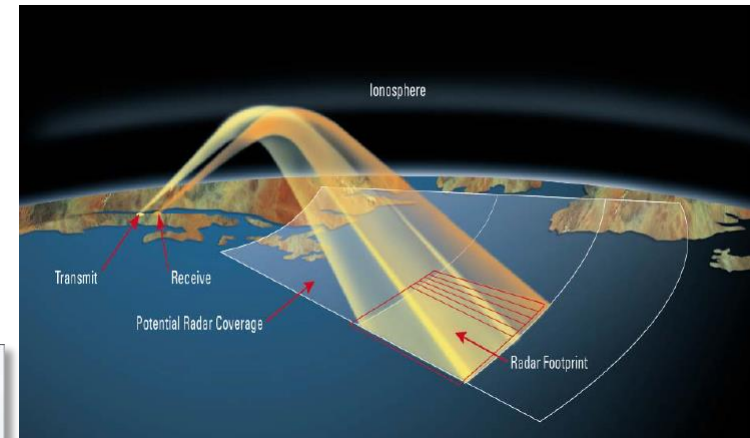
Integrated Air and Missile Defense



AFRL Multi-Spectrum Denial System



High Energy Laser Mobile Demonstrator HEL-MD



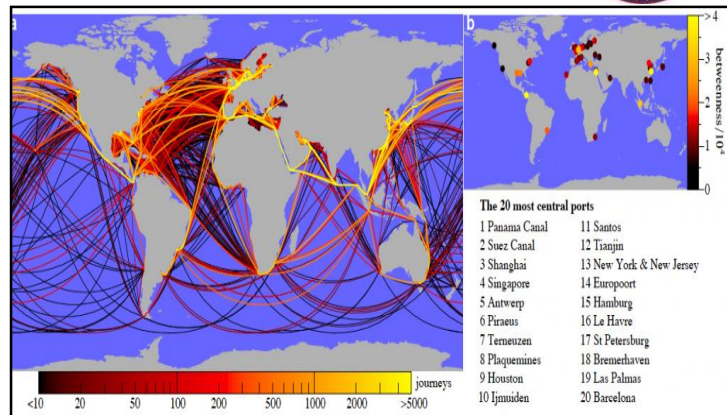
Over the Horizon Radar



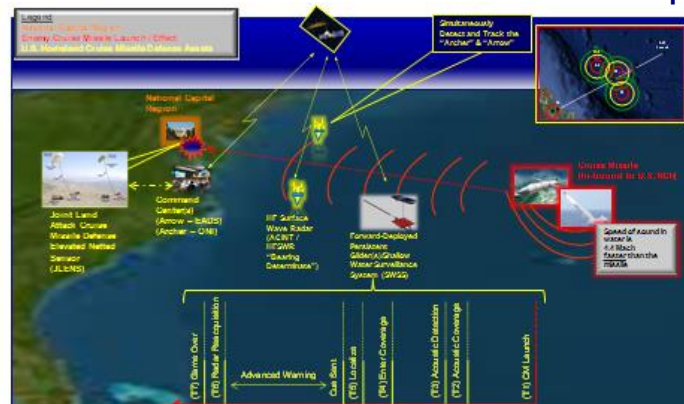
Maritime Domain Issues



- **Maritime Surveillance – Sub surface**
 - Improve acoustic detection algorithms
- **Maritime Surveillance – Surface**
 - Low cost deployable sensors in austere environments
 - USG sensor integration to include space exploitation
- **Maritime Data Fusion & Dissemination**
 - User defined COP
 - USG sensor integration & dissemination
- **Maritime Non-Lethal Engagement**
 - Use of alternative technologies
 - disable ships
 - Non-lethal engagement surface & air
- **Mine/Underwater IED (UWIED) in Homeland**
 - Improved port mapping & protection
 - Low collateral damage removal of UIEDs
 - Automatic change detection for Ports



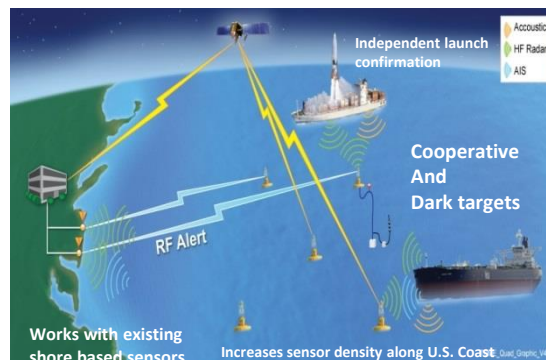
Sea lanes and ports



Cruise Missile Launch Alert Warning System



Divers disarming an undersea mine



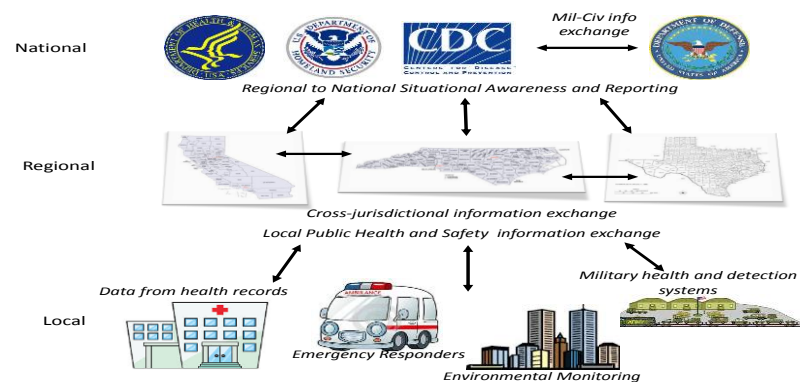
Maritime Awareness



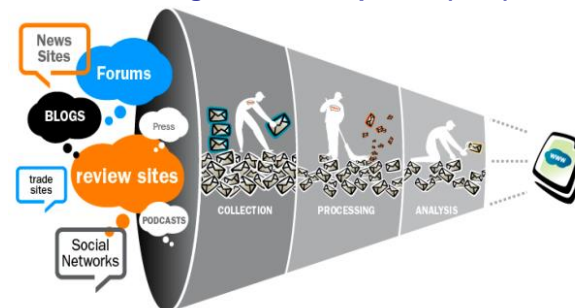
Land Domain Issues



- **FPCON & Threat Info Coordination**
 - USG info sharing & dissemination
- **CBRN Preparedness & Response**
 - Mass decontamination
 - CBRN detection, response
 - Advanced Bio-surveillance
- **Operational Use of Social Media**
 - Tech to remove US PII & ID problem areas
- **Installation & Security Architecture**
 - Continuous identity screening
 - Interoperability with interagency partners
- **Integrated Emergency Disaster & Response**
 - USG interoperability for response
- **Recovery of USG Personnel**
 - Detection, alerts & tracking in austere circumstances



Homeland Integrated Bio-surveillance and Response Information Demonstration (HIBRID)/Integrated Early Warning for BIO Response (IEW)



Leveraging Social Media to Enhance Decision Making



Installation Security Architecture

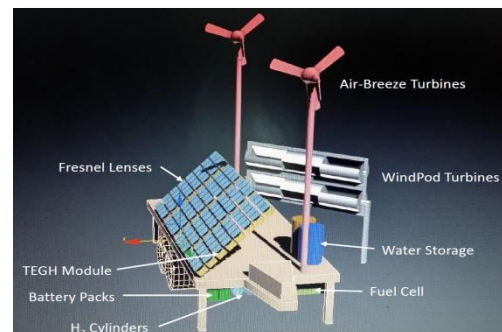


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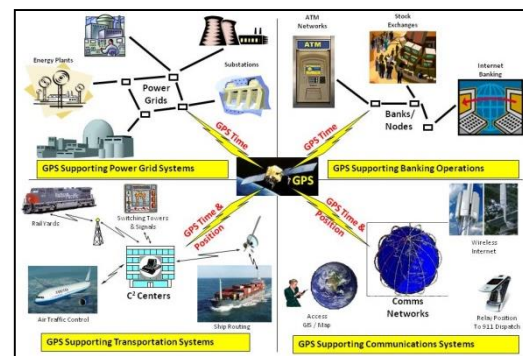


Cross Cutting Domain Issues

- **Network Resiliency**
 - Assured Communications
- **Critical Time Management Relative to GPS**
 - Persistent & accurate timing signals
 - Redundancy from trusted sources
- **Electric Energy Security**
 - Ensured power where needed
 - Secured SCADA
- **Arctic Communication Capability**
 - 24hr persistent communications above 65° north
- **Arctic Surface Transportation**
 - Ice hardening of ships
 - Arctic hardening of ground vehicles



Renewable Energy Storage and Access Trailer



GPS Interdependency



MV Explorer SAR Trapped in Ice

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Questions

