

US Navy Intelligence, Surveillance, and Reconnaissance Perspective



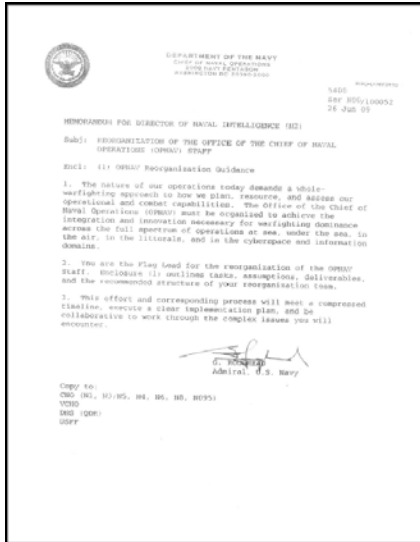
National Defense Industrial Association Naval Energy Forum

Rear Admiral Matt Klunder

14 October 2011

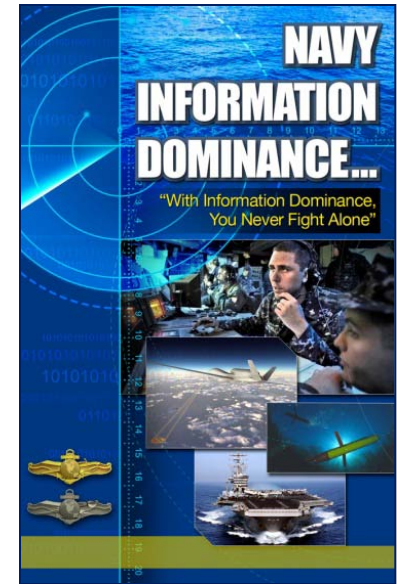


N2N6 – Who Are We?



Direction

1. Consolidate N2 and N6 and other information capabilities within the OPNAV staff.
2. Establish Fleet Cyber Command.
3. Create an Information Dominance Corps.



Elevating Information to a “Main Battery” Status



CNO's Sailing Directions

- We will **innovate to use new technologies** and operating concepts to sharpen our warfighting advantage against evolving threats.
- The **reach and effectiveness** of our ships and aircraft will be greatly expanded through new and updated weapons, **unmanned systems, sensors, and increased power.**
- Unmanned systems in the air and water will **employ greater autonomy and be fully integrated** with their manned counterparts.

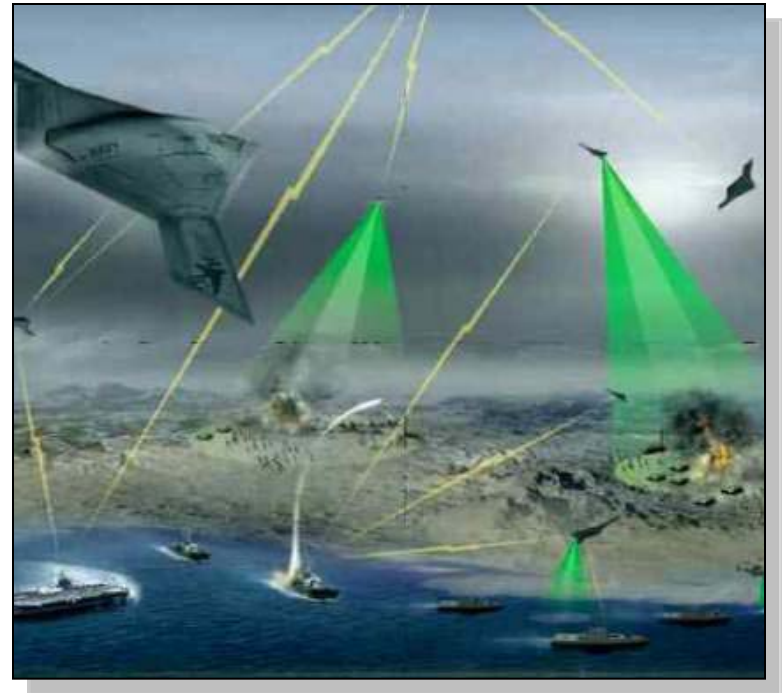


Steady Course and Speed!



Energy Opportunities

- Unmanned and Distributed Netted Sensors
- Long-Endurance Energy Sources
- Network Automation
- Vehicle/Sensor Smart
Autonomy





Why Go Unmanned and Distributed?

- Endurance:
 - Persistent ISR unfettered by crew & platform limitations
- Far Forward:
 - Expanded Area of Operations beyond those inaccessible or hazardous to manned platforms
- Complementary:
 - Augments manned platforms to fill capacity gaps & reduce costs.



Greater Flexibility Enhances Capacity & Capability



Long-Endurance Energy Sources

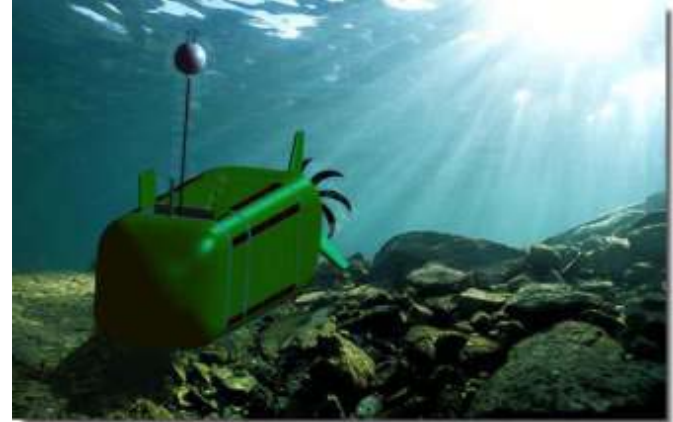
- Advanced Battery Solutions: Chemistry/Monitoring/Certification
- Two Recent BAAs for UUVs: 21" UUV FNC and LDUUV INP
 - 21" UUV Future Naval Capability: High and Low Temp Fuel Cells and Hybrids
 - Large Displacement UUV Innovative Naval Prototype
- Biofuels: Successfully demonstrated on FIRE SCOUT UAV
- “Exotics” - Wave / Ocean Energy Harvesting, Solar, Wind, Solid Oxides





A Role for Autonomy

- Network Automation (TCPED)
 - Energy-efficient processors, also reduced heat loading
 - Reduced Manning (with consequent savings)
- Vehicle “AI”
 - Improved autonomy reduces data volume transmitted
 - Assess on-board energy budget for mission optimization

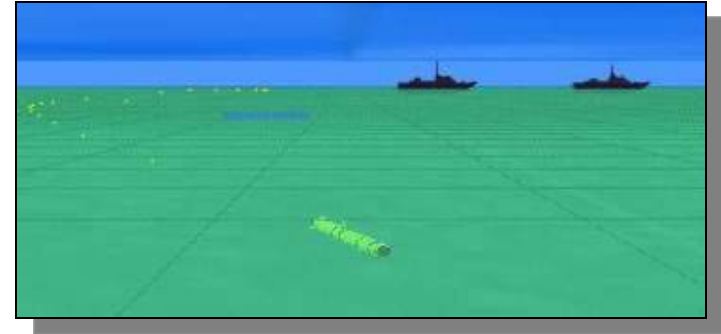


Total System Energy Budget Counts!



Cross-Domain Challenges

- Energy & Propulsion
- Autonomy
- Operational Integration across all Domains
- Data formats & standards
- Reliability



Common Solutions for Multi-domain Missions



Questions?