# SPAWAR Systems Center Pacific Command Overview

17 JULY 2012

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Commanding Officer
SPAWAR Systems Center Pacific



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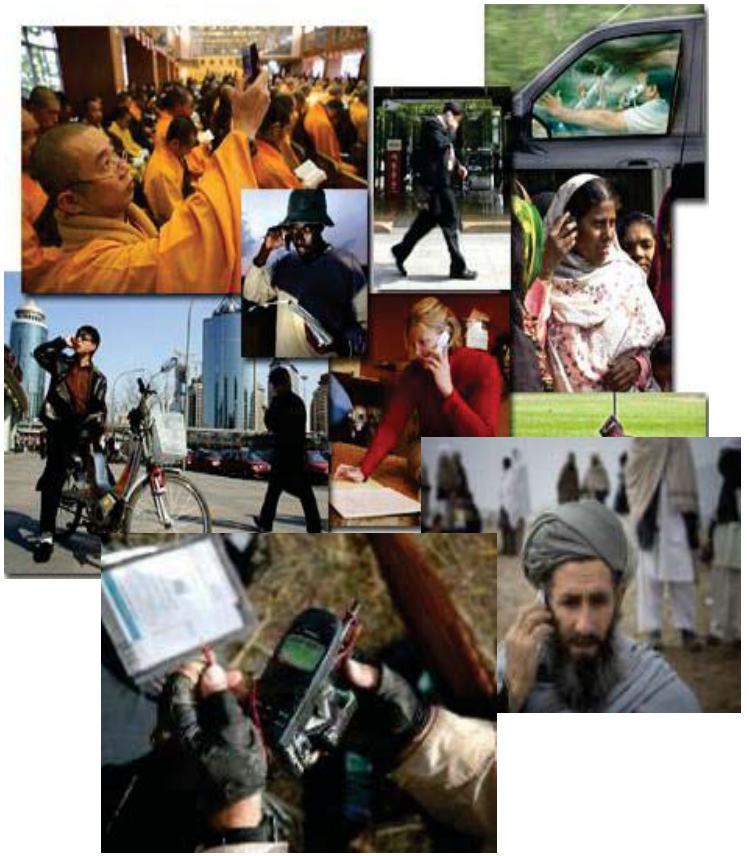
# Strategic Environment

- Drawdown from two major wars – Iraq and Afghanistan
- Reduced federal budget
- National elections
- Ubiquitous use of and requirement for Information Technologies
- Focus on Information Dominance





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# Defense Strategic Guidance

## Joint Force of the Future

- *Smaller*, but flexible, agile and ready… *leaner, lower cost… greater efficiencies*
- *Technologically superior*
- *Networked* across services and with our allies
- *Rebalanced* global posture
  - Emphasis on Pacific and the Middle East
- … *preserve industrial base*

Source: "Sustaining U.S. Global Leadership: Priorities for 21st Century Defense"



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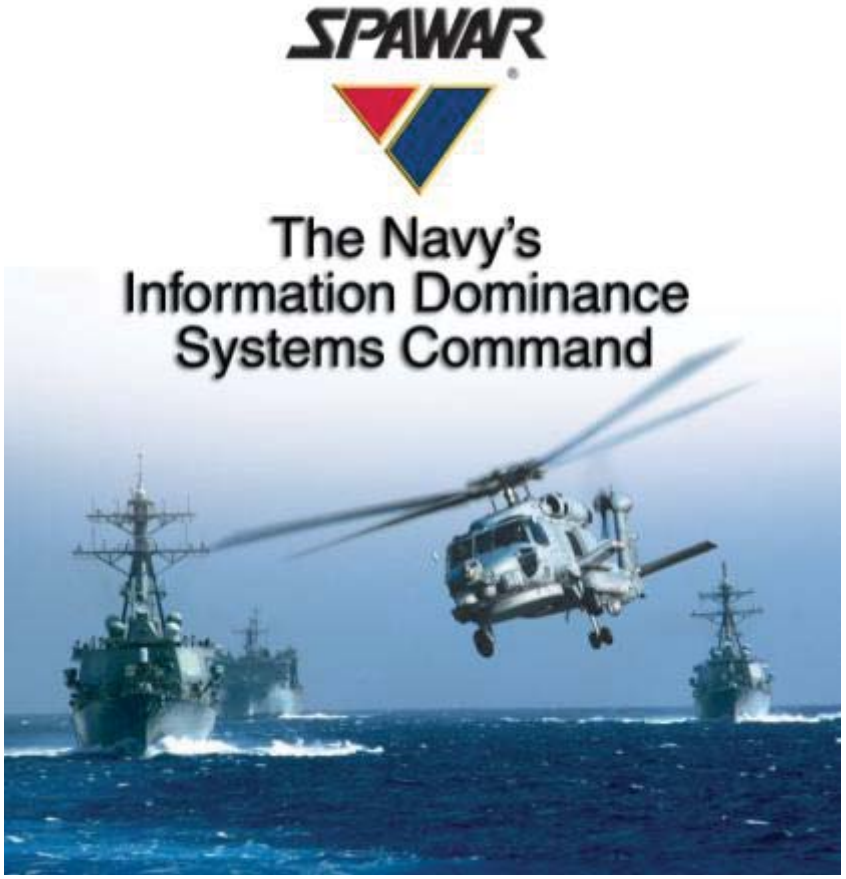
# CNO - Information Dominance

*"Information dominance is the ability to **seize and control the information domain "high ground"** when, where and however required for decisive advantage across the range of Navy missions."*




*Every platform a sensor, every sensor on the network*



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# Where SPAWAR Works




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# Our Vision and Mission

*Enable information dominance for our Naval, Joint, National and Coalition warfighters through research, development, delivery and support of integrated capabilities*

***SSC Pacific will be the Nation's pre-eminent Technical Leader for Integrated C4ISR Solutions for Warfighter Information Dominance***



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# SPAWAR System Center Pacific - “On Point”




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# Need for “Speed To Capability”

Iridium SPIRNET chat

*Aircrews aboard E2-C “Hawkeye” aircraft from VAW-113 USS RONALD REAGAN (CVN 76) using* ***new network to expand and expedite information flow*** *to first responders on the ground in Japan*



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# Need for greater rigor

*2008*

*2012*



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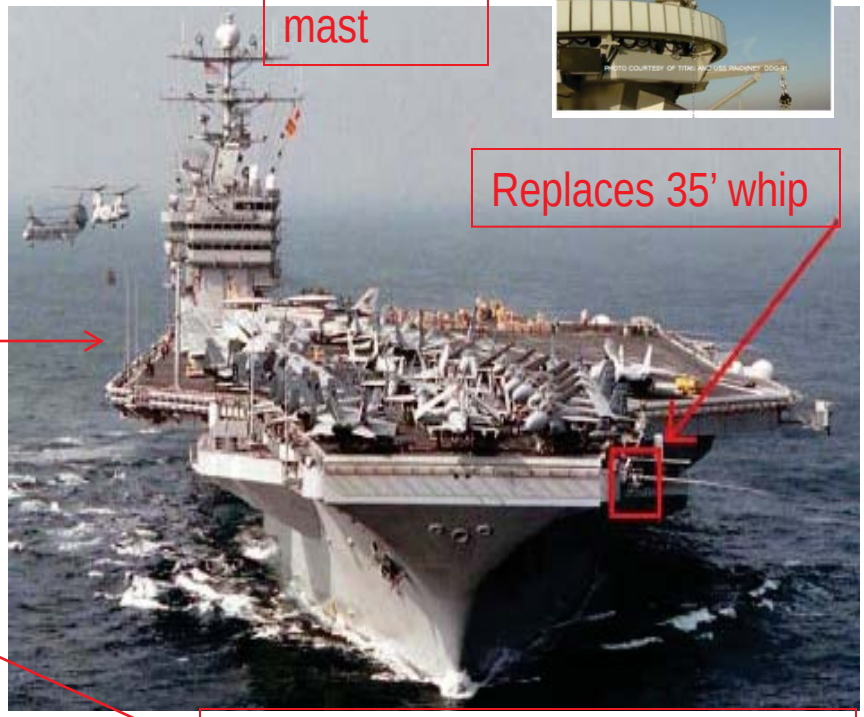
# Need to reduce complexity

## Mast Clamp Current Probe (MCCP)

- Replacing whip antennas aboard DDGs and CVNs
- Millions saved through…
  - Reduced procurement costs
  - Avoided maintenance costs



MCCP Rx on DDG 91 stub mast

Replaces 35' whip

MCCP 2-30 MHz receive installed on forward running light pole



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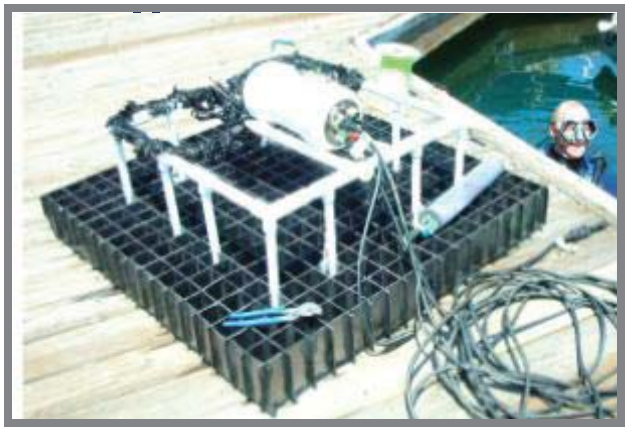
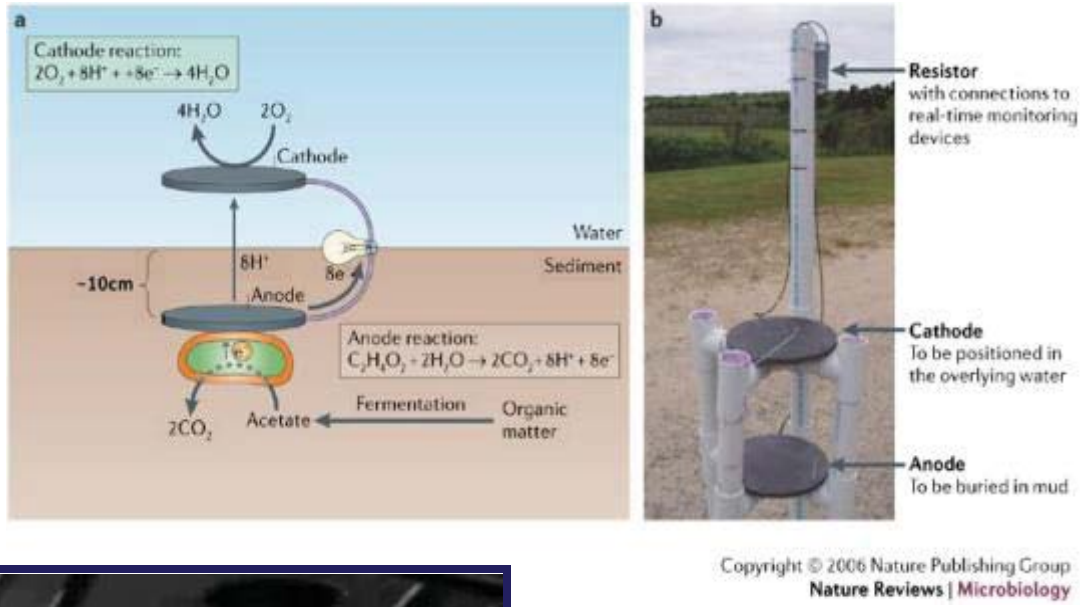
# Need for renewable, perpetual energy

## Microbial Fuel



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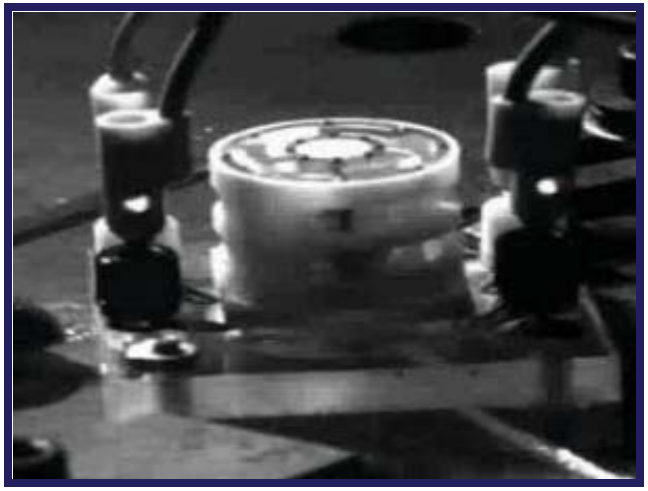

## Energy Harvester



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# Unmanned Systems



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# Expertise Across All Domains - Air, Land, and Sea

### *Unmanned Aerial Vehicles*

*Command and Control*
*UGV/UAV Collaborative Behaviors*

### *Unmanned Ground Vehicles*

*Autonomy, Perception, Sensors*

### *Unmanned Surface Vehicles*

*Autonomous Navigation*

### *Unattended Sensors*

*Automated Surveillance*

### *Command and Control*


*Multi-robot Operator Control Software*

### *Unattended Munitions*

*Security Response*



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# Multi-robot Operator Control Unit (MOCU)

## Operational Effect

- Modular, scalable, and flexible user interface
- Accommodates a wide range of vehicles and sensors in varying mission domains
- Extensible for new sensors, payloads & next generation vehicles





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# Unmanned Maritime Vehicle (UMV) Lab




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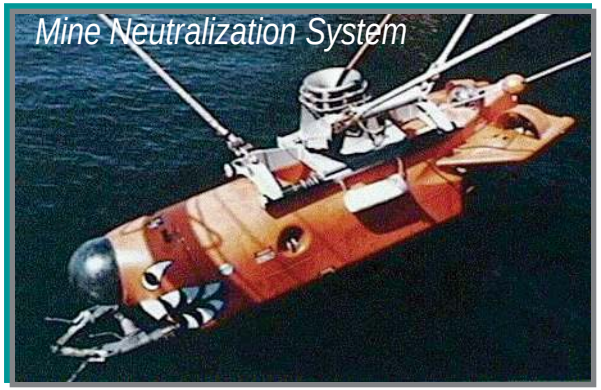
# Mission areas

- Very Shallow Water (VSW) Mine Counter Measures Operations
  - Littoral, Ports and Harbors
  - Ship Hull Inspections
- Persistent Ocean Surveillance
- Meteorology & Oceanography (METOC)
- Mine Countermeasures (MCM)
- Measurement And Signatures Intelligence (MASINT)





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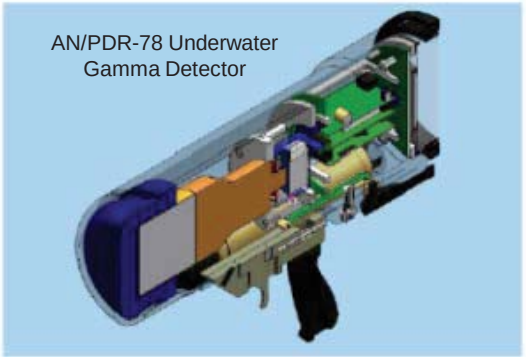
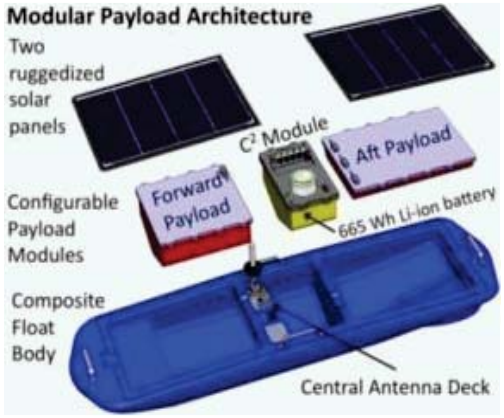
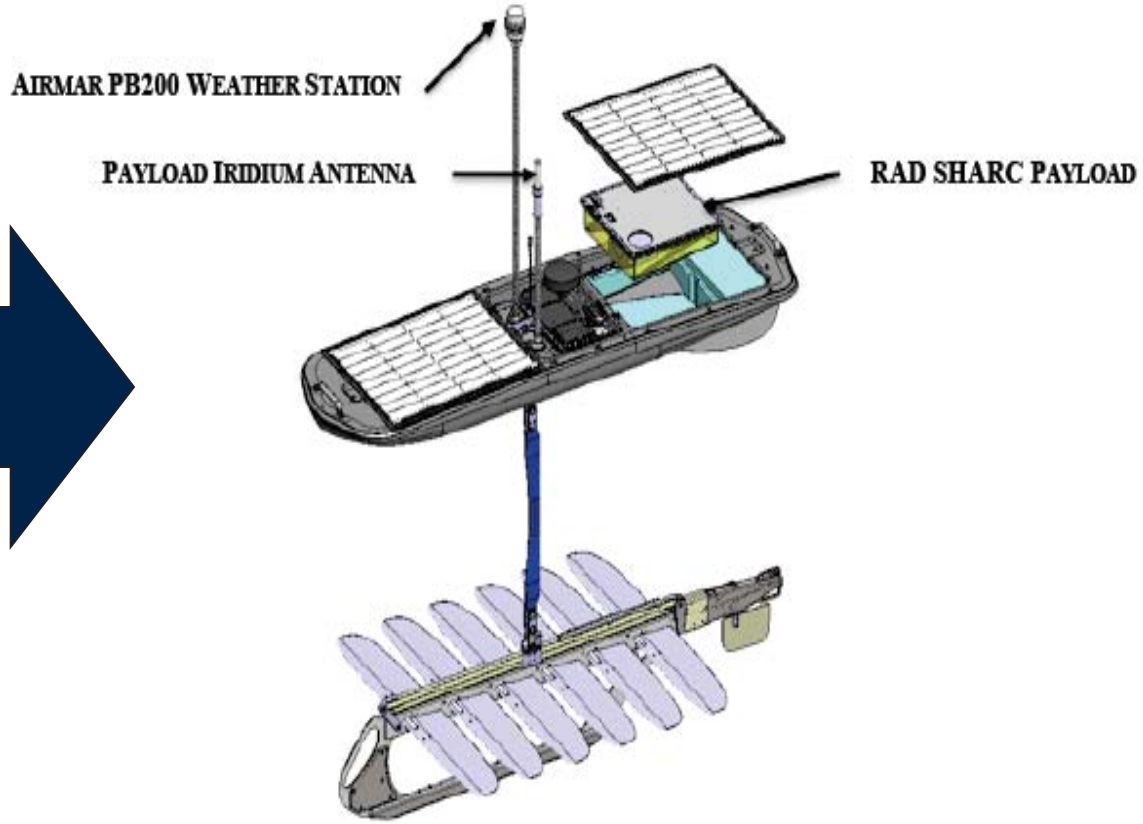
# RAD SHARC



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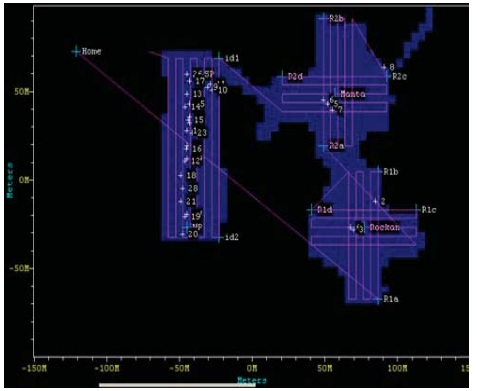
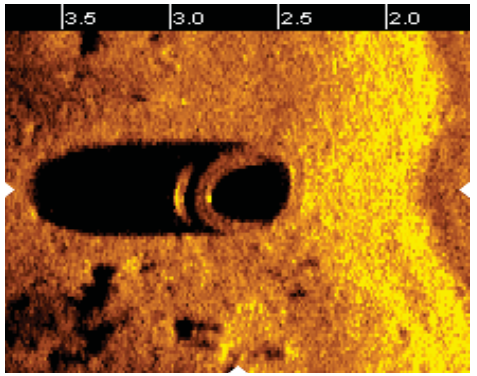
# Fleet Support - Mine Warfare

Reconnaissance, mine hunting and underwater Improvised Explosive Devices (IEDs) in Very Shallow Water (VSW) zone and confined waterways.





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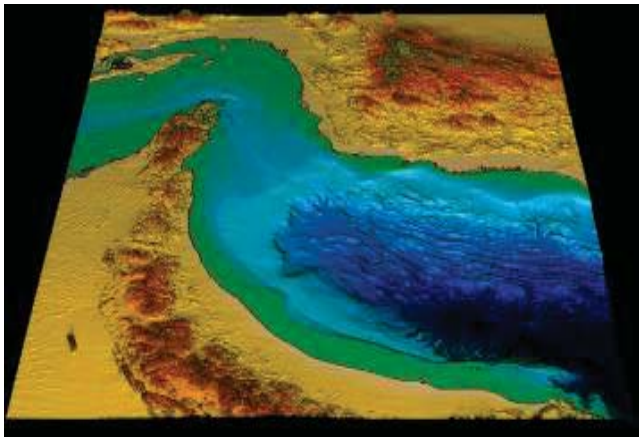
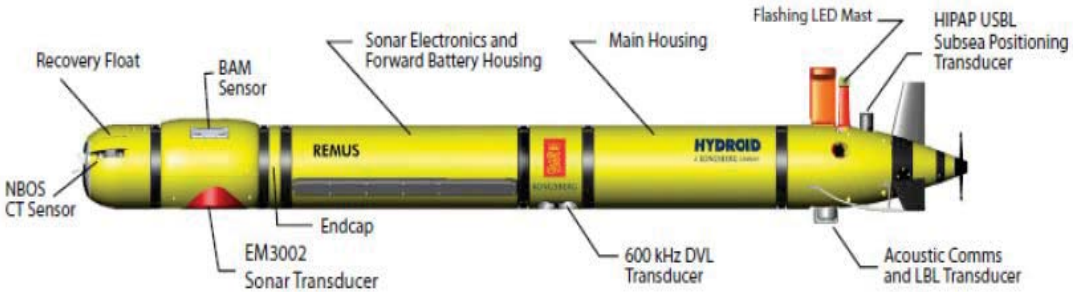
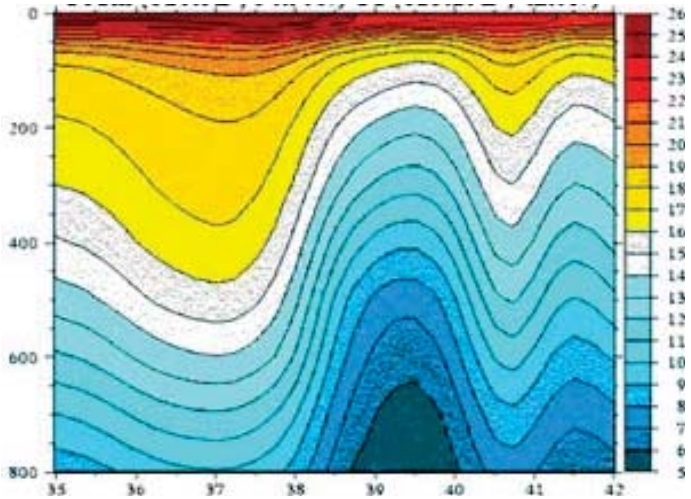
# Littoral Battlespace Sensor Fusion and Integration

- **Persistent Intelligence** Preparation of the Environment (IPE)
- **Battlespace Awareness** (BA)
  - Anti-submarine warfare (ASW)
  - Mine warfare (MIW) operations



Bottom mapping



Acoustic Propagation



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# Autonomous, persistent monitoring

- "Gliders" collect water column data used primarily to predict the performance of active and passive acoustic systems and visibility data for use in Naval Operations.
  - Conductivity, Temperature, Depth and Optical Transmissivity
  - Data is reported in near-real time




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# Replicating the “perfect,” autonomous, underwater system!

*“Doing what men or machines can’t … since 1970”*



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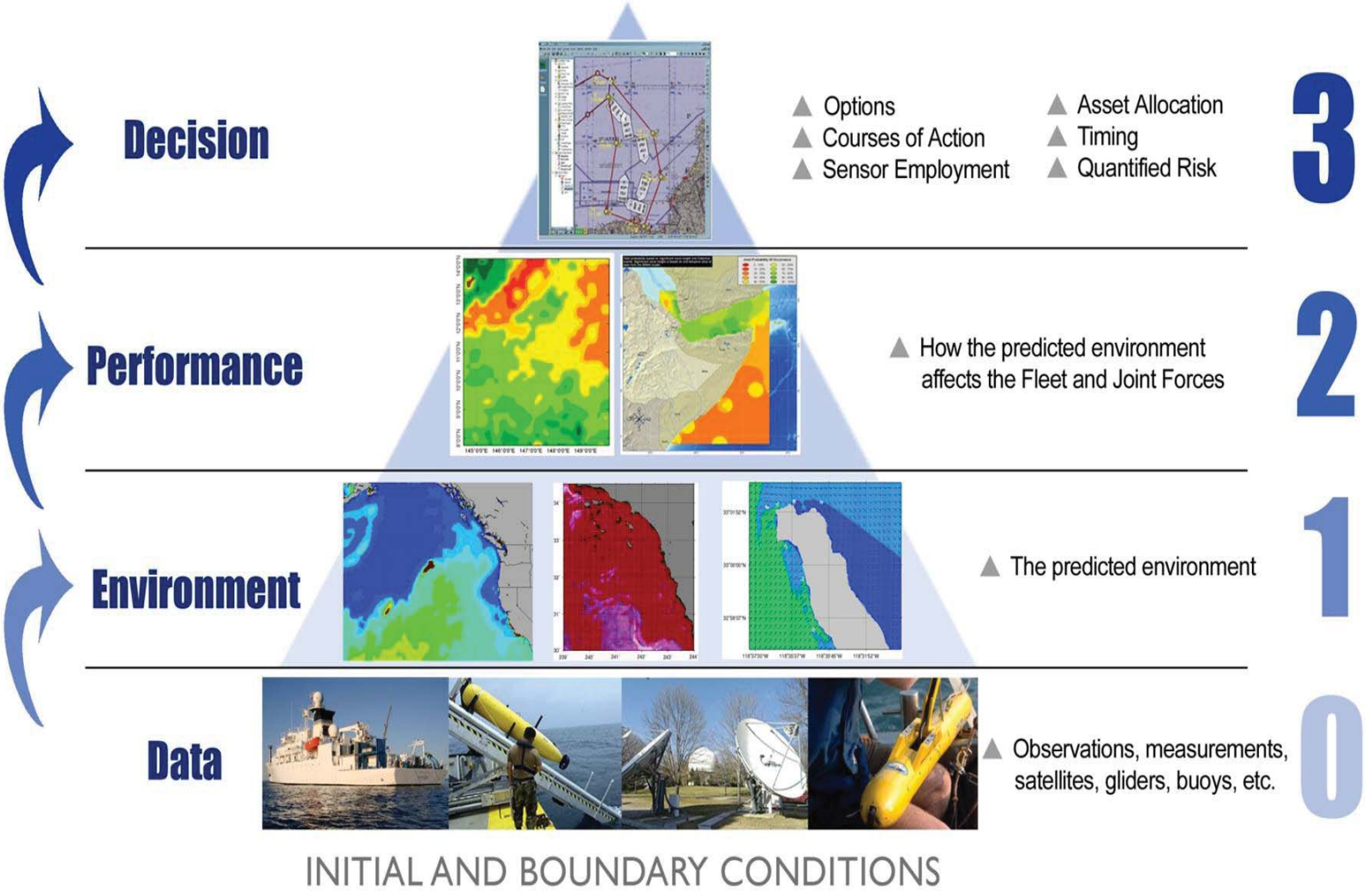
# Battlespace On Demand… Linking Data to Decisions



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# Pushing UUV Evolution and Development 2012 and Beyond

- *Standardized Sensor Interface and Comms protocols*
  - Developed integration standards
    - Provide sensor manufacturers guidance in design for underwater vehicle applications
- Higher level autonomy
  - Behavior-based control
  - Use of real-time sensor data




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# RoboSub Competition




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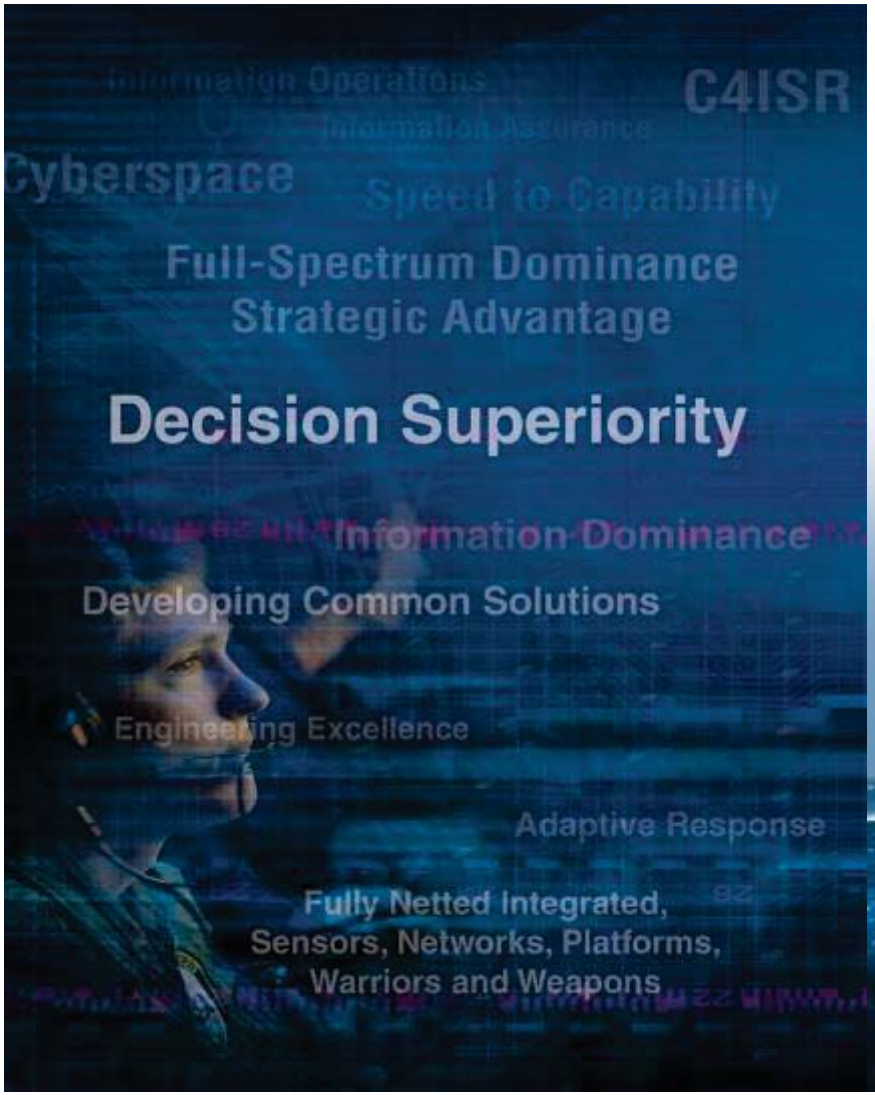


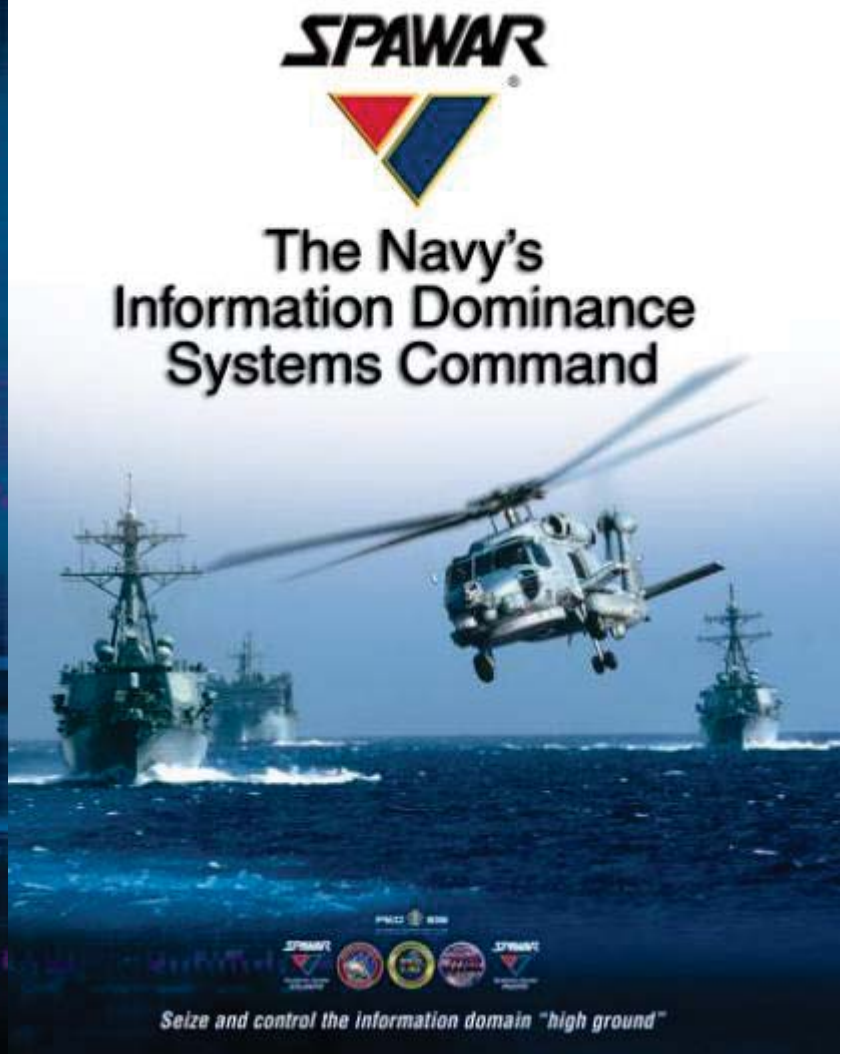




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