



ASW Overview

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21st Century Operating Environment

- Global commercial, industrial, information base provides potential adversaries with niche capabilities
 - Impede or defeat the capabilities or the will of the US
- Potential adversaries will adapt as our capabilities evolve
- Asymmetric approaches that attack US vulnerabilities will become more appealing
- Tactical actions can have strategic consequences
- US Joint Force must dominate across full spectrum of conflict:
 - Non-provocative peacetime operations
 - Decisive wartime actions regardless of operating environment and location

Sea Power 21 is Navy's Operational Vision for the 21st Century



SEA POWER 21...

Navy Transformational Roadmap

Sea Shield

- Projecting Global Defensive Assurance
- Protect our national interests with layered global defensive power based on control of the seas, forward presence, and networked intelligence

Sea Trial

Rapid concept and technology development, experimentation

Sea Warrior

Develop skilled, motivated, optimally employed naval professionals

Sea Enterprise

Improve organizational alignment, refine requirements, and reinvest savings to buy the platforms and systems needed

FORCEnet

- The "glue" that binds Sea Strike, Sea Shield, and Sea Basing into a networked, distributed combat force

Sea Strike

- Projecting Precise and Persistent Offensive Power
- Information superiority and flexible strike options will result in time-sensitive targeting with far greater speed and accuracy

Sea Basing

- Projecting Joint Operational Independence
- The afloat positioned foundation from which offensive and defensive fires are projected - making Sea Strike and Sea Shield realities

June 2000

Boundary representation is not necessarily authoritative.

602703A1 (R00352) 6-00

Scale 1:134,000,000

Robinson Projection
standard parallels 38°N and 38°S



Recent ASW Events

- Sea Power 21
 - Virtual OPNAV reorganization
 - Basis for warfighting analysis and investment strategy
 - Sea Shield Pillar
 - ASW Warfighting “Gaps” identified
- Task Force ASW
 - Developed ASW Constructs
 - Recommended Increased Fleet Training
 - Overseeing CNO-directed ASW Experimentation
- Stand-up of Fleet ASW Command – April 2004
- ASW CONOPs development



CNO Top Level ASW Objectives

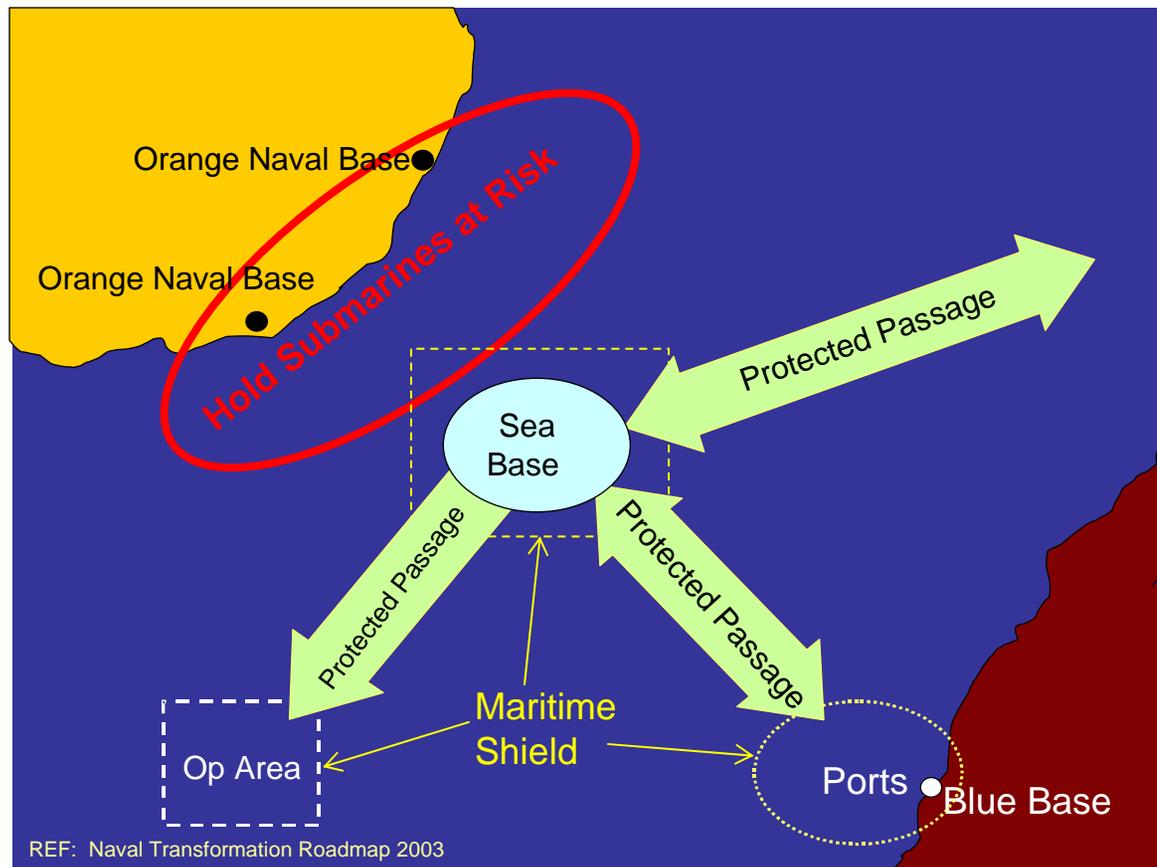
- Focus on changing the ASW warfighting calculus
 - Move away from platform-intensive CONOPs
 - Reduce the detect to engage timeline
 - Plan for:
 - Distributed, netted force capabilities
 - Capability-based vice force structure
 - “Sensor-rich” vice platform-intensive
 - Advanced weapons with precise localization sensors
- Accelerate Fleet capability

Navy will fundamentally change the conduct and execution of ASW



Future ASW Warfighting Vision

Sea Power 21 Sea Shield ASW Constructs



Render threat submarines and their weapons irrelevant



Hold At Risk

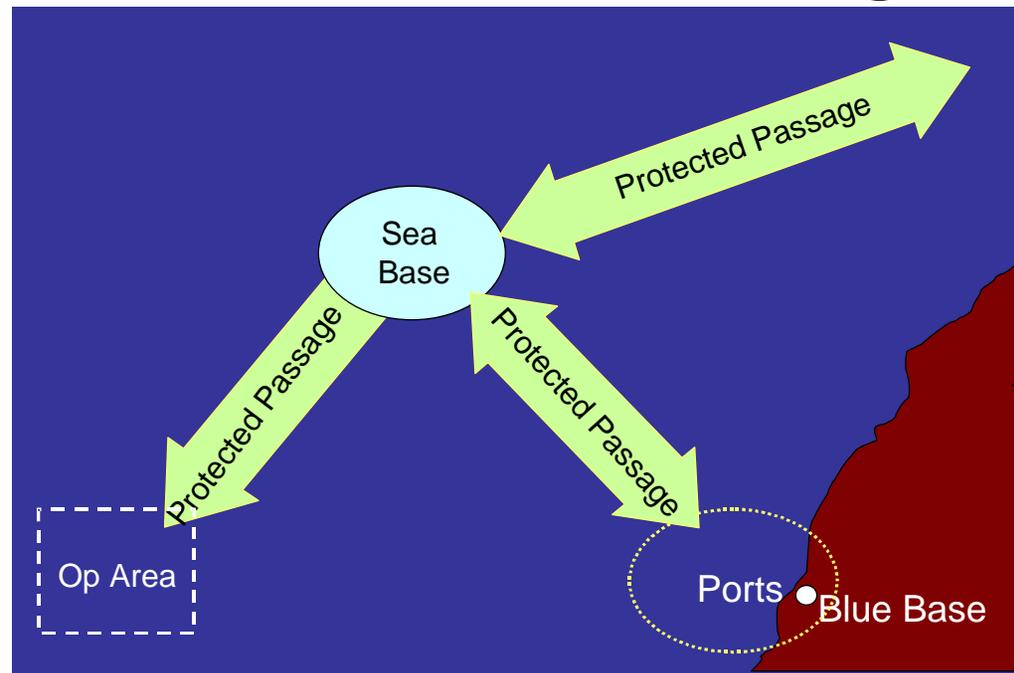


- Conduct of operations against enemy submarines that denies them an effective offensive capability
- Maintain capability to engage all submarines when ordered throughout the theater
 - At time and place of Joint Commander's choosing
- Includes far-forward areas
 - Assume no air superiority
 - Covertⁿess* required
 - Op Areas primarily on continental shelf (Shallow water)

***Covertⁿess (ASW definition): Conduct operation without counter-detection**



Protected Passage

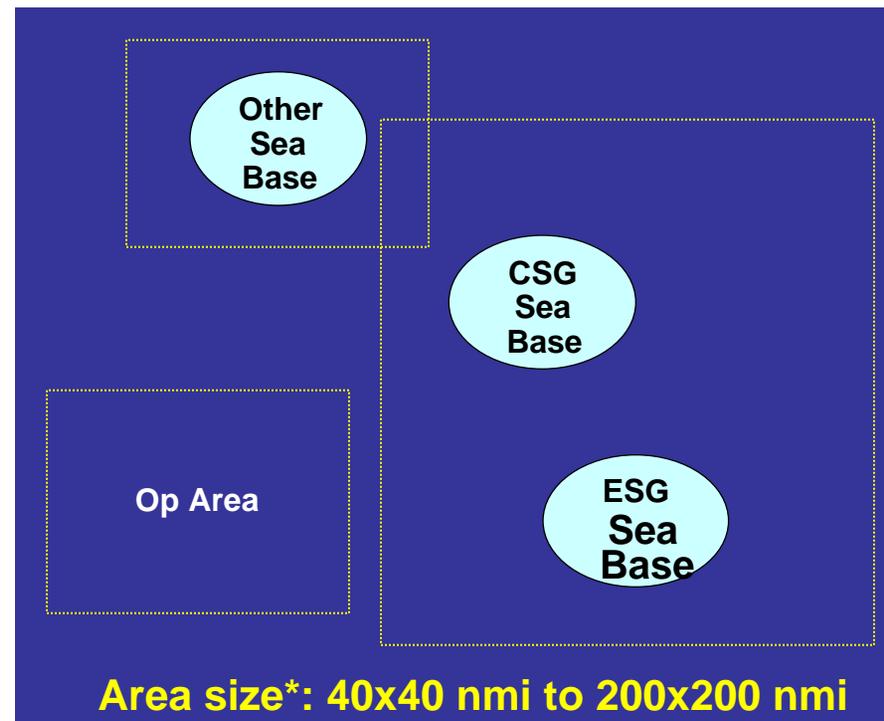


- Effective protection from submarine threats to US Joint, Allied, and Coalition forces transiting to and from contested areas
 - Includes maritime commerce along SLOCs
- Shallow & deep water, up-slope and down-slope, choke points



Maritime Shield

- Clearance of threat submarines from sea base areas
- Protection of sea base areas, op areas from submarine penetration & attack
- Primary focus is Deep water

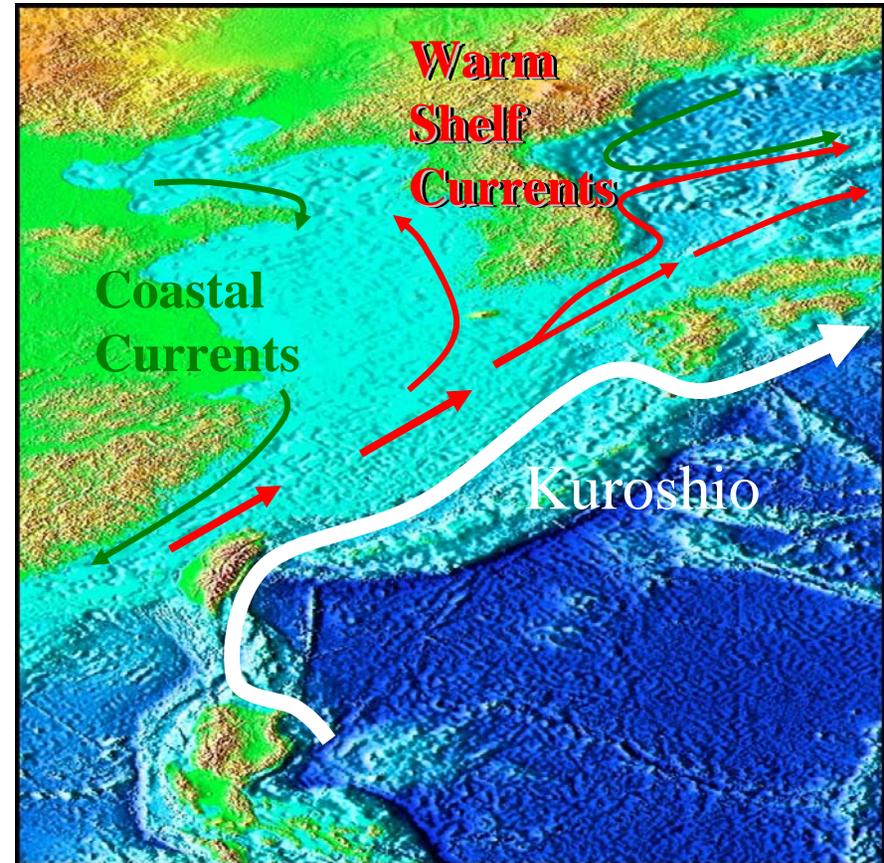


* ASW CONOPs goals



Oceanographic/Seabed Environment

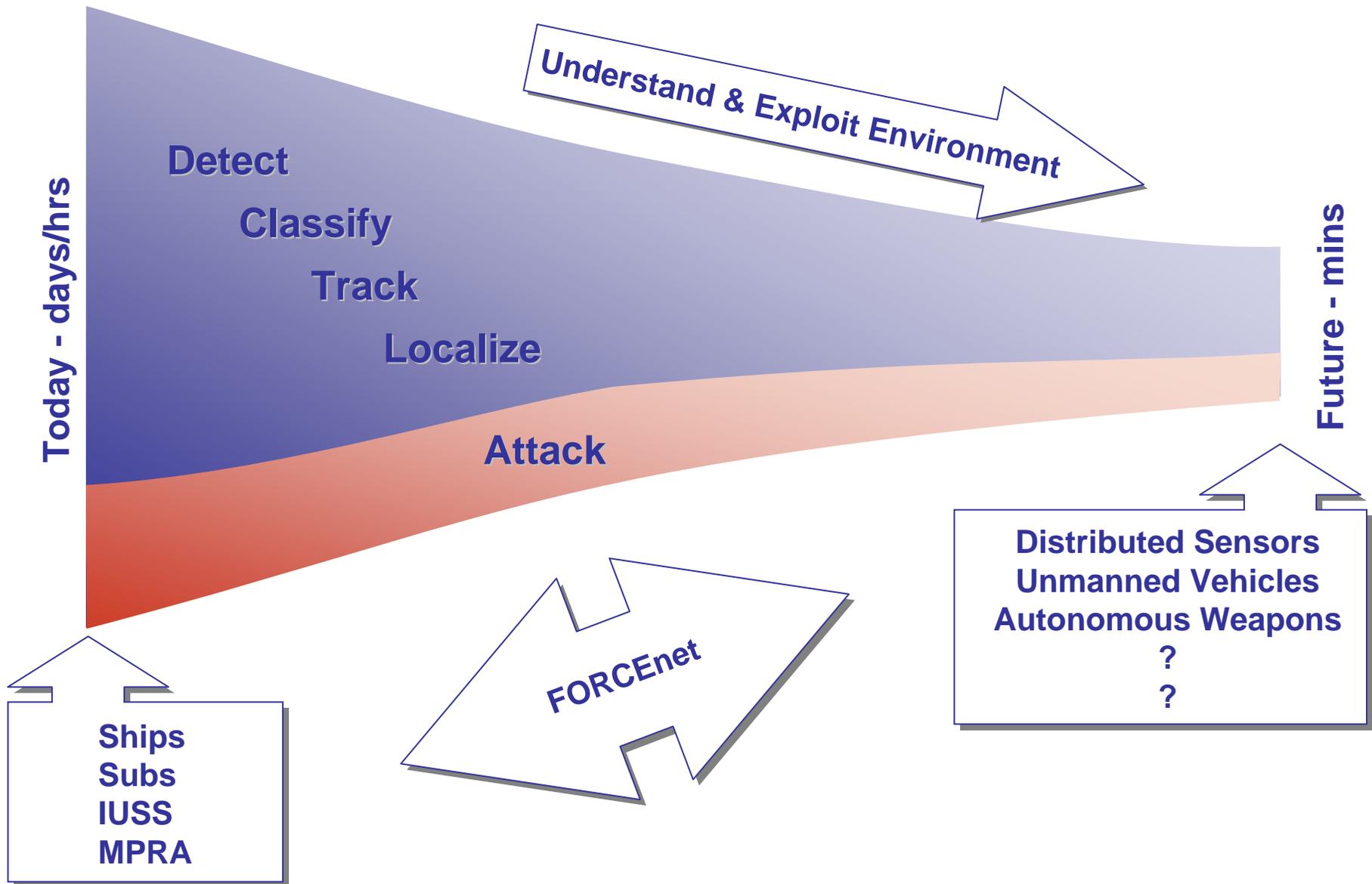
- ONR Research is being conducted in many different WestPac areas
- Oceanographic and geophysical variability occurs on a wide variety of space and time scales
 - Significant impact to Naval Operations
 - Navigation
 - Platform stability
 - Detection performance
 - Sensor deployment & persistence
- Different sub-regions of WestPac have different dominant oceanographic processes and bottom types
 - Cross-shelf zonation of fronts and internal waves
 - River plumes near coast
 - Kuroshio current near shelfbreak
 - Bottom topography / acoustics



General Circulation
WestPac Region

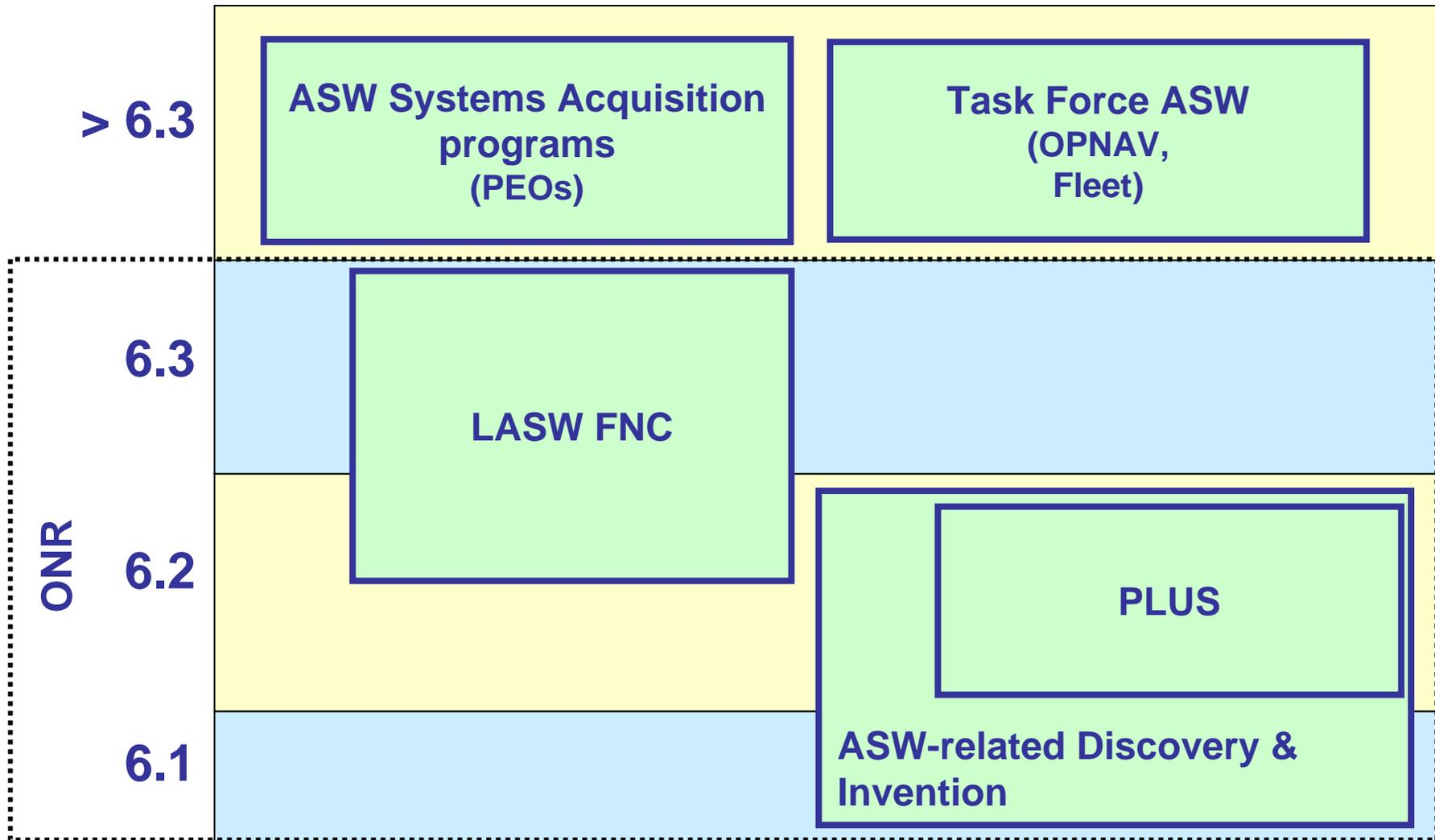


Changing the ASW Calculus: *Reduce the Detect-to-Engage Timeline*





ASW Program Relationships





Summary

- ASW is a top Navy priority
 - Renewed emphasis on
 - Fleet capability
 - Training
 - Experimentation
 - Technology development
 - Must change the calculus
- New ASW CONOPs sets ambitious goals and broad constructs
 - We won't solve the entire spectrum of ASW challenges, but...
- PLUS will provide innovative concepts and technologies to contribute to Navy's new ASW vision



References

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 - ASIAEX program
 - East China Sea: <http://www.apl.washington.edu/programs/ASIAEX/index.html>
 - South China Sea: <http://www.oal.whoj.edu/ASIAEX01/index.html>
- Acoustical Society of America (ASA): <http://asa.aip.org/>
 - ASA Underwater Acoustics: <http://www.apl.washington.edu/projects/ASA-UATC/index.php>
 - ASA Acoustical Oceanography: <http://www.oce.uri.edu/ao/AOWEBPAGE>



BACKUP



ASW Warfighting “Gaps” OPNAV N70 MCP Analysis

- Rapid Submarine Cueing, Detection, Localization, and Neutralization in Shallow and Deep Water
 - Provide improved submarine cueing/wide area search and wide area classification rates in shallow and deep water, including cluttered littorals and areas with poor acoustic conditions. Capability must include ability to transition rapidly from localization to submarine neutralization/engagement.
- Platform Defense against Undersea Threats, Including Ship Self-Defense Against Multi-Salvo Torpedo Attacks
 - Provide a capability to prevent any of the torpedoes in up to four-torpedo salvos fired at high value units from hitting the units.



Sea Power 21

Projecting Decisive Joint Capabilities

By Admiral Vern Clark, U.S. Navy

Proceedings, October 2002

- ***Sea Strike*** - Projecting Precise and Persistent Offensive Power
- ***Sea Shield*** - Projecting Global Defensive Assurance
- ***Sea Basing*** - Projecting Joint Operational Independence



Sea Strike - Projecting Precise and Persistent Offensive Power

Sea Strike Impact

- Amplified, effects-based striking power
- Increased precision attack and information operations
- Enhanced warfighting contribution of Marines and Special Forces
- "24 / 7" offensive operations
- Seamless integration with joint strike packages

Sea Strike Capabilities

- Persistent intelligence, surveillance, and reconnaissance
- Time-sensitive strike
- Electronic warfare / information operations
- Ship-to-objective maneuver
- Covert strike

Future Sea Strike Technologies

- Autonomous, organic, long-dwell sensors
- Integrated national, theater, and force sensors
- Knowledge-enhancement systems
- Unmanned combat vehicles
- Hypersonic missiles
- Electro-magnetic rail guns
- Hyper-spectral imaging

Sea Strike: Action Steps

- Accelerate information dominance via FORCEnet
- Develop, acquire, and integrate systems to increase combat reach, stealth, and lethality
- Distribute offensive striking capability throughout the entire force
- Deploy sea-based, long-dwell, manned and unmanned sensors
- Develop information operations as a major warfare area
- Synergize with Marine Corps transformation efforts
- Partner with the other services to accelerate Navy transformation



Sea Shield - Projecting Global Defensive Assurance

Sea Shield Impact

- Projected defense for joint forces and allies ashore
- Sustained access for maritime trade, coalition building, and military operations
- Extended homeland defense via forward presence and networked intelligence
- Enhanced international stability, security, and engagement

Sea Shield Capabilities

- Homeland defense
- Sea / littoral superiority
- Theater air missile defense
- Force entry enabling

Future Sea Shield Technologies

- Interagency intelligence and communications reach-back systems
- Organic mine countermeasures
- Multi-sensor cargo inspection equipment
- Advanced hull forms and modular mission payloads
- Directed-energy weapons
- Autonomous unmanned vehicles
- Common undersea picture
- Single integrated air picture
- Distributed weapons coordination
- Theater missile defense

Sea Shield: Action Steps

- Expand combat reach
- Deploy theater missile defense as soon as possible
- Create common operational pictures for air, surface, and subsurface forces
- Accelerate the development of sea-based unmanned vehicles to operate in every environment
- Invest in self-defense capabilities to ensure sea superiority



Sea Basing - Projecting Joint Operational Independence

Sea Basing Impact

- Pre-positioned warfighting capabilities for immediate employment
- Enhanced joint support from a fully netted, dispersed naval force
- Strengthened international coalition building
- Increased joint force security and operational agility
- Minimized operational reliance on shore infrastructure

Sea Basing Capabilities

- Enhanced afloat positioning of joint assets
- Offensive and defensive power projection
- Command and control
- Integrated joint logistics
- Accelerated deployment and employment timelines

Future Sea Basing Technologies

- Enhanced sea-based joint command and control
- Heavy equipment transfer capabilities
- Intra-theater high-speed sealift
- Improved vertical delivery methods
- Integrated joint logistics
- Rotational crewing infrastructure
- International data-sharing networks

Sea Basing: Action Steps

- Exploit the advantages of sea-based forces wherever possible
- Develop technologies to enhance on-station time and minimize maintenance requirements
- Experiment with innovative employment concepts and platforms
- Challenge every assumption that results in shore basing of Navy capabilities



FORCEnet: Enabling 21st Century Warfare

- FORCEnet is the "glue" that binds together Sea Strike, Sea Shield, and Sea Basing.
- It is the operational construct and architectural framework for naval warfare in the information age, integrating warriors, sensors, command and control, platforms, and weapons into a networked, distributed combat force.
- FORCEnet will provide the architecture to increase substantially combat capabilities through aligned and integrated systems, functions, and missions.
- It will transform situational awareness, accelerate speed of decision, and allow us to greatly distribute combat power.
- FORCEnet will harness information for knowledge-based combat operations and increase force survivability.
- It will also provide real-time enhanced collaborative planning among joint and coalition partners.

FORCEnet Impact

- Connected warriors, sensors, networks, command and control, platforms, and weapons
- Accelerated speed and accuracy of decision
- Integrated knowledge to dominate the battlespace

FORCEnet Capabilities

- Expeditionary, multi-tiered, sensor and weapons grids
- Distributed, collaborative command and control
- Dynamic, multi-path and survivable networks
- Adaptive / automated decision aids
- Human-centric integration