NDIA Science and Engineering Technology Conference

NAVSEA
NAVAL SEA SYSTEMS COMMAND

NAVSEA Technology Needs

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NAVSEA Organization (made simple)

NAVSEA Commander VADM McCoy
Vice Cdr Executive Director Staff

Program Executive Offices
(PEOs)

-Ships

-Submarines

-Aircraft Carriers

-Integrated Warfare Systems

-Littoral and Mine Warfare >>>
to Littoral Combat Ship (soon)

Headquarters Directorates

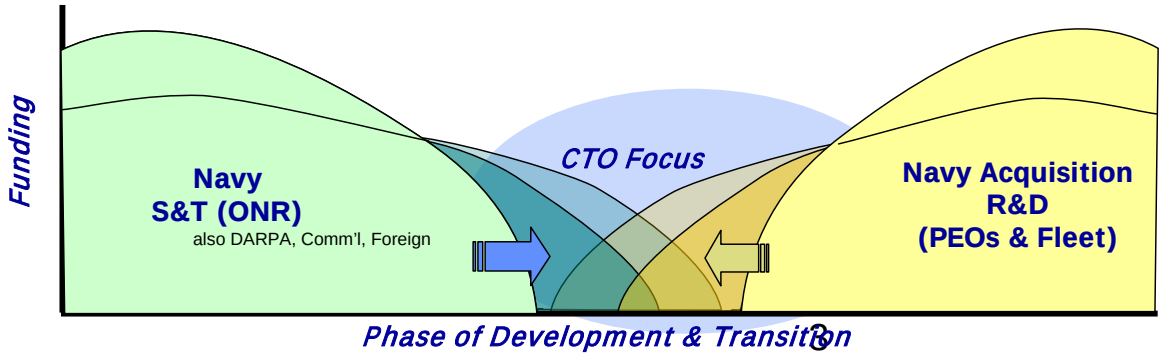
-Most notably for this venue
SEA 04 (with naval shipyards, supships)
SEA 05 (Naval Systems Engineering)
with a dozen tech groups of which
one is 05T (Technology ie R&D)

Naval Labs
- NSWC (surface)
- NUWC (undersea)

Fuller & official org chart at http://www.navsea.navy.mil/Organization/HQ.aspx

SEA 05 Technology Office (SEA 05T)

- Serve as Primary SEA 05 R&D and Technology Transition Staff
- Focus on transitioning technology from S&T to the Acquisition Programs and Fleet
- Manage assigned R&D Programs
- Develop a workforce that can effectively lead and transition technology into the fleet
- Partner with S&T Community, Industry, Acquisition Community, and the Fleet to produce technology development strategies and transition technology into the fleet

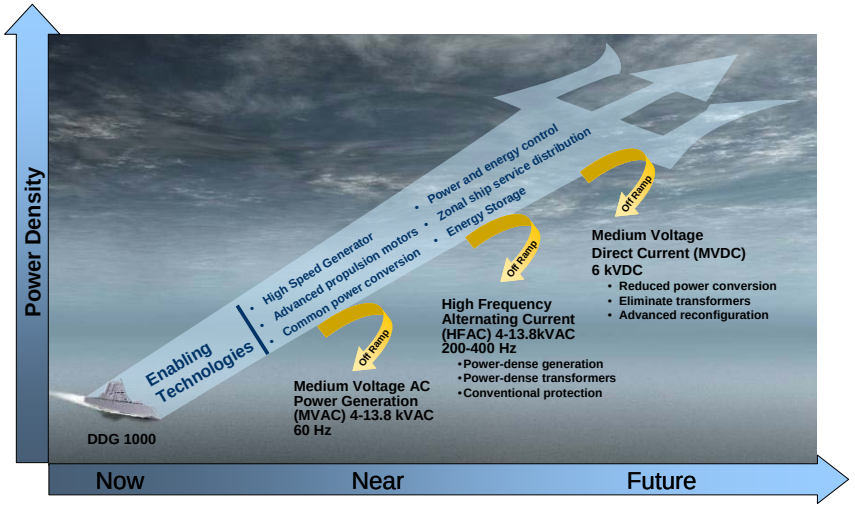


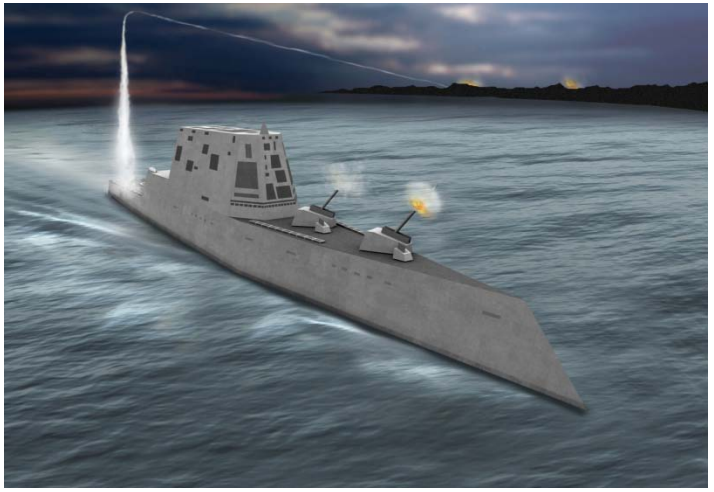
Naval Technology Needs for Today's Fleet

- Technologies promoting the ability to affordably modernize to meet evolving threats
  - Open Architecture
  - Modularity
  - Increased Distributed System Capacity (electrical power, chill water, etc.)
  - Ability to interface with new aircraft (MV-22, JSF, etc.)
  - Ability to interface with off-board unmanned systems.
- Technologies that improve material condition of ships
  - Corrosion Control
  - Reliability improvements
- Technologies that reduce the Total Ownership Cost of Today's Fleet
  - Energy Efficiency
  - Reduced Manning
  - Improved training methods
- Analytical Methods to enable calculating Return on Investment of Open Architecture and Modularity
  - "Real Options"

Naval Technology Needs for the Future Fleet

- Architecture driven Product Lines
  - Next Generation Integrated Power Systems
  - HVAC 21st Century
  - Open Architecture Combat Systems
- Affordable incorporation of evolving technologies
  - Railguns and Directed Energy Weapons
  - Unmanned Vehicles and Autonomy
  - New Aircraft (shipboard integration of…)
- Improved Design methods and tools
  - Ship Design Process Modeling
  - Properly Pricing Risk
  - Properly Valuing Flexibility
  - Design, Costing & Analysis Tools
- Total Ownership Cost Reduction Technologies
- Mission Effectiveness Technologies
- Improved Technology Transition Model





Need affordable robustness in a changing world

Generalities…what about specifics?

- The transition opportunities are in the acquisition shops (PEOs).
- FOR SHIPS: Look at annual 30 year Shipbuilding Plan.
  - one on-line source: http://www.militarytimes.com/static/projects/pages/2011shipbuilding.pdf
- Backup from the first of class ‘award date’ to early design.
- Have a new capability/technology ‘ready for transition’ as design concepts are being developed, competed, selected.

Fiscal Year	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Aircraft Carrier			1					1					1					1					1					1		
Large Surface Combatant	2	1	2	1	2	1	2	1	2	1	2	1	2	1	1	2	2	1	2	1	2	2	2	2	2	2	2	2	2	2
Small Surface Combatant	2	3	4	4	4	3	3	3	3	2	2	2	2	2	1	2	1	2	1	2	1	2	1	2	2	2	2	2	2	2
Attack Submarines	2	2	2	2	2	2	2	1	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	1	2	1
Ballistic Missile Submarines									1			1		1	1	1	1	1	1	1	1	1	1							
Amphibious Warfare Ships	1	1				1	1		1		2		1		2		1		2		1		2		1		1	1	1	
Combat Logistics Force							1		1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1		1	
Support Vessels	2	1	3	2	4	2	3	3	3	4	2	3	3	2	1			1		2	1	1	2	2	2	2	2	2	2	2
Total New Construction Plan	9	8	12	9	12	9	12	9	13	9	11	10	11	8	8	7	7	8	8	8	8	8	11	8	10	7	10	9	10	7

- Less centralized data for warfare systems, HM&E & logistics systems, boats/craft/unmannedvehicles.

30yr Ship-Building Plan	Near Term Technology For Today's Fleet	Far Term Technology For The Future Fleet
SHIPs: DDG51 DDG(X) LHD(X) LSD(X) T-AO T-ARS(X) T-AGOS(X) AS(X) SSC LCS LCS(X) ***POC: Glen Sturtevant*** ***Glen.Sturtevant@navy.mil***	**Pacing Evolving Threats:** Open Architecture Modularity Distributed Systems UV Interfaces **Operating Cost Reduction:** Energy Efficiency Automation Improved Crew Training **Lifecycle Cost Reduction:** Low Maintenance Materials Remote CBM Reduce/Eliminate Corrosion Software Reconfigurability	**Architecture Driven Product Lines:** NGIPS HVAC 21st Century Open Architecture **Disruptive Technology:** Directed Energy Weapons EM Railgun UVs **New Design & Analysis Tools:** Ship Design Process Modeling Pricing Risk Quantifying/Valuing Flexibility CREATE
SUBs: SSBN(X) *Ohio Replacement* SSN - Virginia ***POC: Regan Campbell*** ***Regan.Campbell@navy.mil***	**Lifecycle Cost Reduction*:** *additional to ones listed above In Water Repairable Systems	**Disruptive Technology:** Large Diameter Tube Payloads
CARRIERs: CVN21 ***POC: Eric Pitt*** ***Eric.Pitt@navy.mil***	**Pacing Evolving Threats*:** *additional to ones listed above New Aircraft Interfaces	**Disruptive Technology*:** *additional to ones listed above New Aircraft

Capable, Affordable, Sustainable Fleet of 313

Summary

- Technology & Innovation for Ships, Boats, Unmanned Vehicles & the systems that integrate into them….for warfighting mission payoff.
- Affordable (crisis of cost).
- Transitionable (crisis of productization).
- Utilize existing in new configurations (to be affordable & transitionable)

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NAVSEA 05 - Naval Systems Engineering Directorate

SEA 05C - Cost Engineering & Industrial Analysis
SEA 05D - Surface Ship Design & Systems Engineering
SEA 05H - Integrated Warfare Systems Engineering
SEA 05L - Littoral and Mine Warfare Design & Systems Engineering
SEA 05P - Ship Integrity & Performance Engineering
SEA 05S – Command Standards
SEA 05T - Technology
SEA 05U - Submarine/Submersible Design & Systems Engineering
SEA 05V - Aircraft Carrier Design & Systems Engineering
SEA 05X – University Affiliated Research Center
SEA 05Z - Marine Engineering

SEA 04 – Logistics, Maintenance, and Independent Operations
SEA 07 – Undersea Warfare
SEA 08 – Nuclear Propulsion
SEA 21 – Surface Warfare

PEO Carriers

POC: Eric Pitt
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PEO Integrated Warfare Systems

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PEO Littoral & Mine Warfare

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PEO Ships

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PEO Subs

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