



Building Operational Flexibility

ASNE Combat Systems Symposium

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Report Documentation Page

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“What you really want coming down the assembly line is something that can turn out and be a Swiss Army knife, not a stiletto.”

*-Chairman of the Joint Chiefs of Staff, Gen. Martin Dempsey
December 2011*

"..armies do not prepare for the last war, they frequently prepare for the wrong one."

-General Rupert Smith, "The Utility of Force", 2005

“The transition from a paradigm in crisis to a new one from which a new tradition of normal science can emerge is far from a cumulative process, one achieved by an articulation or extension of the old paradigm. Rather it is a reconstruction of the field from new fundamentals, a reconstruction that changes some of the field's most elementary theoretical generalizations as well as many of its paradigm methods and applications. During the transition period there will be a large but never complete overlap between the problems that can be solved by the old and by the new paradigm. But there will also be a decisive difference in the modes of solution. When the transition is complete, the profession will have changed its view of the field, its methods, and its goals.”

- Thomas S. Kuhn, "The Structure of Scientific Revolutions", 1962

Stiletto ships - IJNS Yamato



Program Executive Office, Ships

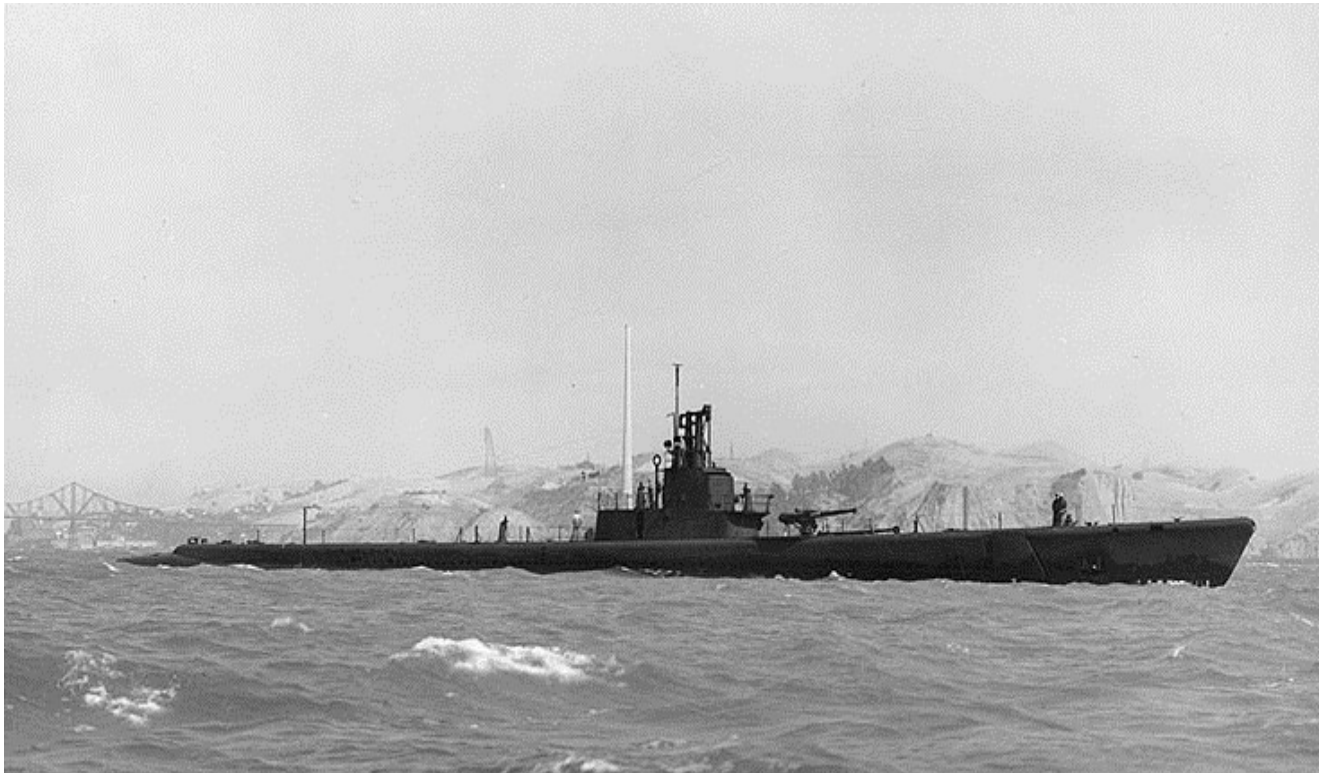


Keel Laid: 4 November 1937
Commissioned: 16 December 1941
Sunk: 7 April 1945 north of Okinawa

Multipurpose ships - USS Wahoo (SS 238)



Program Executive Office, Ships



Keel Laid: 28 June 1941

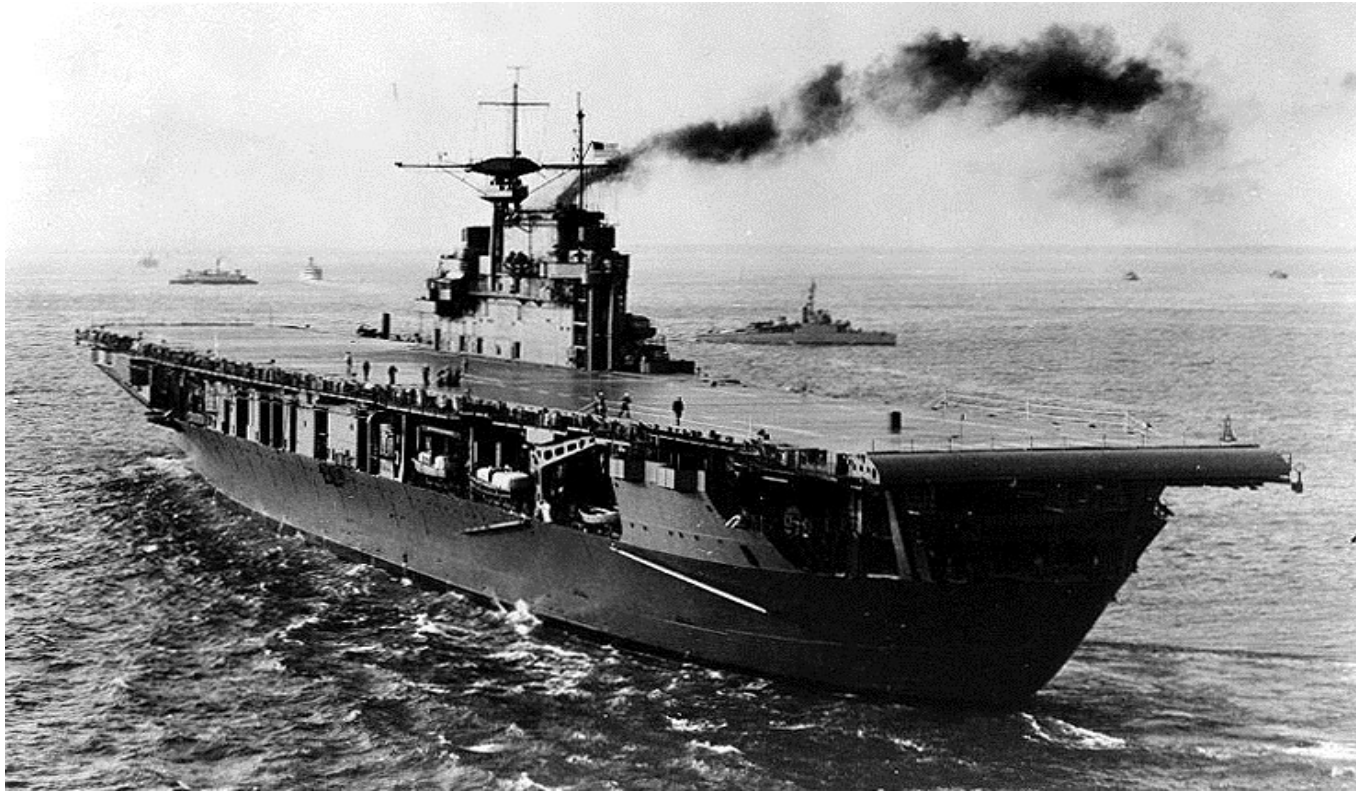
Commissioned: 15 May 1942

Sunk: 11 October 1943 by Japanese aircraft in La Pérouse Strait

Modular Ships - USS Hornet



Program Executive Office, Ships



Keel Laid: 25 September 1939

Commissioned: 20 October 1941

Sunk: 27 October 1942 in the Battle of the Santa Cruz Islands

Secretary Danzig “Driving in the Dark”



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Ten Propositions About Prediction and National Security

Humanity is Compelled to Predict and Will Fail – The First Five Propositions

- 1. The Propensity to Make Predictions – and to Act on the Basis of Predictions – Is Inherently Human**
- 2. Requirements for Prediction Will Consistently Exceed the Ability to Predict**
- 3. The Propensity for Prediction is Especially Deeply Embedded in the U.S. Department of Defense**
- 4. The Unpredictability of Long-term National Security Challenges Will Always Confound the Irresistible Forces That Drive Prediction**
- 5. Planning Across a Range of Scenarios Is Good Practice but Will Not Prevent Predictive Failure**

How to Prepare for Predictive Failure – The Last Five Propositions

- 6. Accelerate Tempo – and Delay Some Decisions**
- 7. Increase the Agility of Production Processes**
- 8. Prioritize Equipment That Is Most Adaptable**
- 9. Built More for the Short Term**
- 10. Nurture Diversity; Create Competition**



Proceedings: “Navy 2025: Forward Warfighters”

- The structure and characteristics of the Fleet are changing, but the overall purpose remains the same
- Maintaining war-fighting edge and addressing fiscal constraints will require significant changes in developing the force
- Shift from a focus on platforms to focus on what the platform carries
 - Aircraft carriers, amphibious ships and the littoral combat ships are inherently reconfigurable, with sensors and weapons systems that can evolve over time
 - As we apply the same modular approach across portfolio, weapons sensors, unmanned systems and electronic warfare systems will become increasingly important
- Paradigm shift driven by operational considerations (near enemy territory,) the need to maintain pace with evolving A2/AD technology, and decrease in number and size of weapons in today’s conflicts
- The unmanned combat air system will be fully integrated in missions. Unmanned underwater vehicles (UUVs) will expand mission capabilities and sustain undersea dominance
- Integrate electronic warfare (EW) and cyber operations into offensive/defensive tactics by seamlessly managing sensors, attacks, defense, and communications. Treat EW and cyber environments as “maneuver spaces” on par with surface, undersea, or air

Combat System Development vs. Ship Design and Construction

Attribute	Combat Systems	Ship Design & Construction
Timeline	Short	Long
Expertise required	Electronics, software	HM&E, Hardware
Configuration	Volatile	Stable
Effect on <i>Design</i> Ship Service Life	Little influence	Strong driver
Effect on <i>Actual</i> Ship Service Life	Strong driver – can't cost effectively update	Moderate driver – Ships decommissioned early

Affordability will become increasingly important

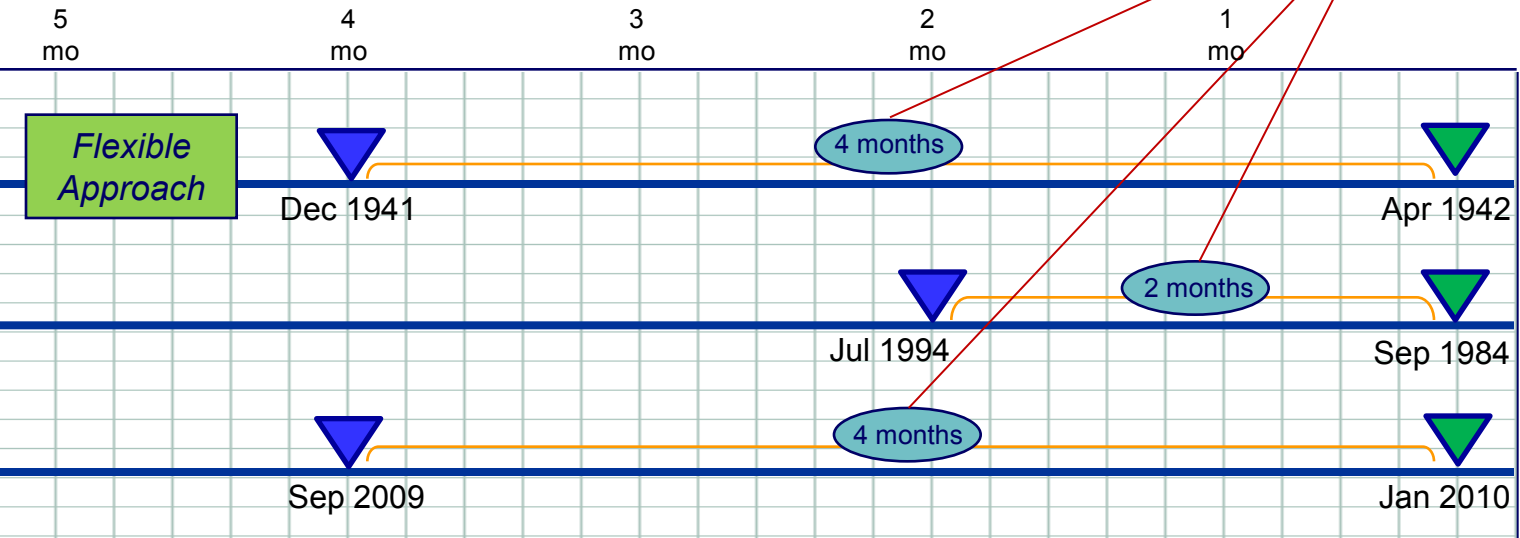
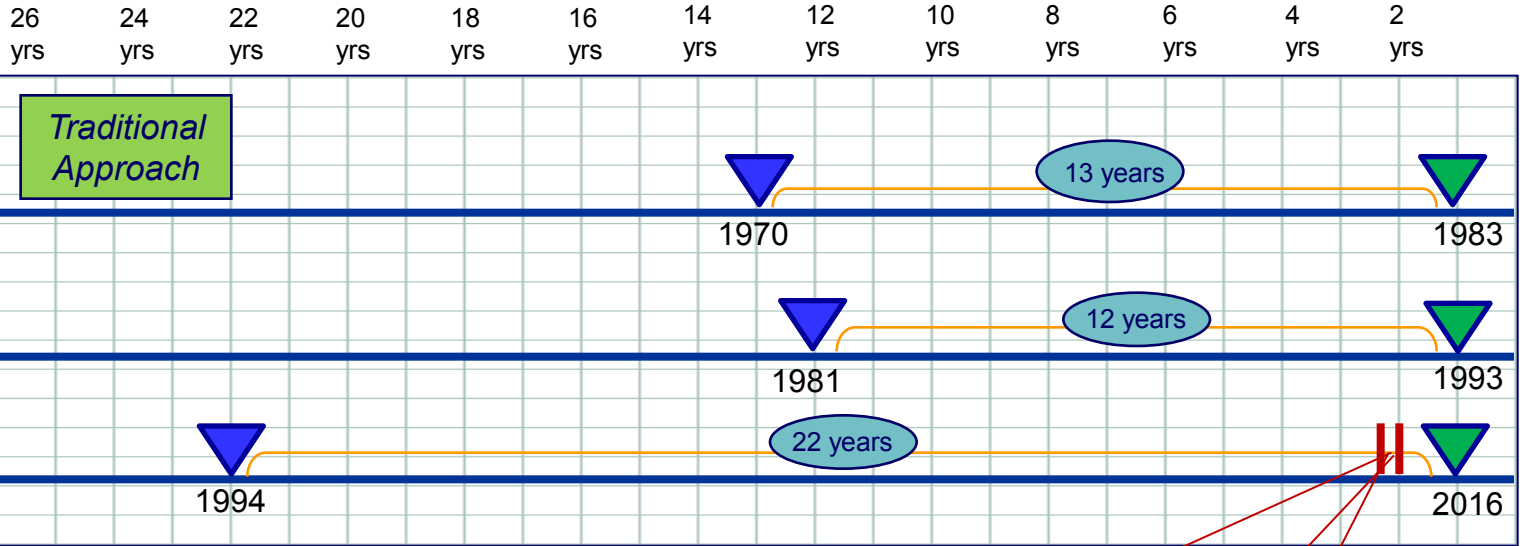
Modular adaptable ship technologies enable ships to affordably remain operationally relevant over their service life.

Modular adaptable ship technologies are not yet an institutional part of our design and modernization processes.

Operational Flexibility



Program Executive Office, Ships



▼ = Requirement ▼ = Fielding

“The winds and the waves are always on the side of the ablest navigators.”

- Edward Gibbon, (1737-1794)

PEO Ships Shipbuilding Successes Today



Program Executive Office, Ships

Ship Construction Awards

- In FY11 32 Navy ships procured, including exercising existing options or contracting for options for future year ships (20 LCS, 2 DDG 1000, 4 DDG 51 Flight II restarts, 3 MLP, 1 LPD, and 2 JHSV).
 - Nov awards of AGOR brings total to 34
- Contract value (options exercised or contracted) \$14.5B.

Under Contract & Building	To Go (FY 12/13)
5 DDG 51	9 DDG 51 MYP
3 DDG 1000	---
2 Deckhouses	1 Deckhouse
4 LPD 17	1 LPD
1 LHA	1 LHA
2 T-AKE	
10 JHSV	----
----	2 SSC
1 T-AGS	
3 MLP	1 AFSB
2 AGOR	---
33	15

6 Ships Delivered

- T-AKE 11 (WASHINGTON CHAMBERS), 23 Feb
- DDG 110 (WILLIAM P LAWRENCE), 23 Feb
- DDG 111 (SPRUANCE), 15 Apr
- T-AKE 12 (WILLIAM McLEAN), 29 Sep
- LPD 22 (SAN DIEGO), 19 Dec
- T-AGM 25 (HOWARD O. LORENZEN), 10 Jan

Upcoming Deliveries

- T-AKE 13 (MEDGAR EVERS)
- T-AKE 14 (CESAR CHAVEZ)
- LPD 23 (ANCHORAGE)
- LPD 24 (ARLINGTON)
- DDG 112 (MICHAEL MURPHY)
- JHSV 1 (SPEARHEAD)

FMS Update

- 75 FMS Boat deliveries at a total value of approx \$145M

Boats and Craft Deliveries

- Nine Delivery Orders for a total of \$33.4M and 69 boats

Multipurpose Ships - DDG 51 Class



Program Executive Office, Ships

• Program Capability

- Multi-mission guided-missile destroyer designed to operate independently or as units of strike groups
- Responds to open ocean conflicts as well as coastal warfare scenarios
- Equipped with the AEGIS Combat System, the world's foremost integrated naval weapon system

• Program Status

- 61 have been constructed and delivered; final ship (DDG 112) of initial 62-ship procurement to deliver this year
- Program restart going well to date, maximizing competitive procurements
- Four ships under contract: DDG 113/114 at Ingalls; DDG 115/116 at Bath Iron Works
 - ACB 12 (BMD Capable)
- Nine-ship MYP request (DDG 117-DDG 125)
 - MYP assumes DDG 51 Flight IIA configuration
 - Flight III to be introduced on FY16 ship via ECP



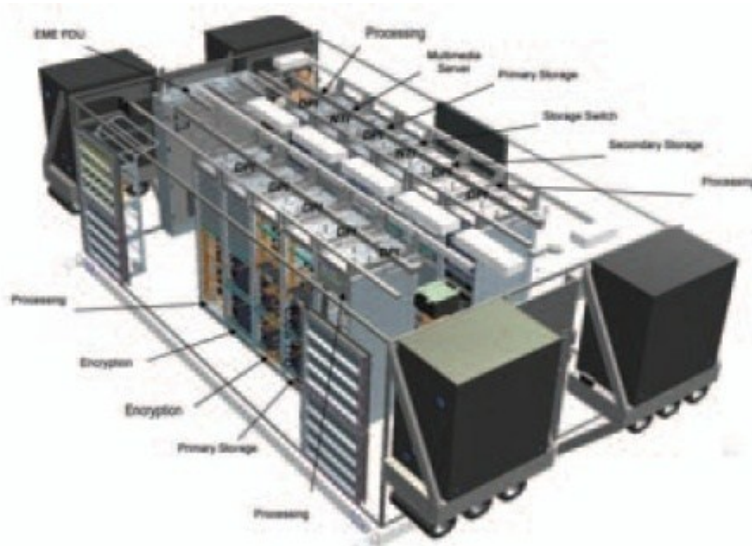
Multipurpose ships - DDG 1000



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• Modular Adaptable Ship Technologies

- Aircraft and Boats
- Electronic Modular Enclosures



ELECTRONIC MODULE ENCLOSURES

	Length	Width	Height
Mini	18 ft	7 ft	7.45 ft
Small	25 ft	11.8 ft	7.45 ft
Medium	30 ft	11.8 ft	7.45 ft
Large	35 ft	11.8 ft	7.45 ft

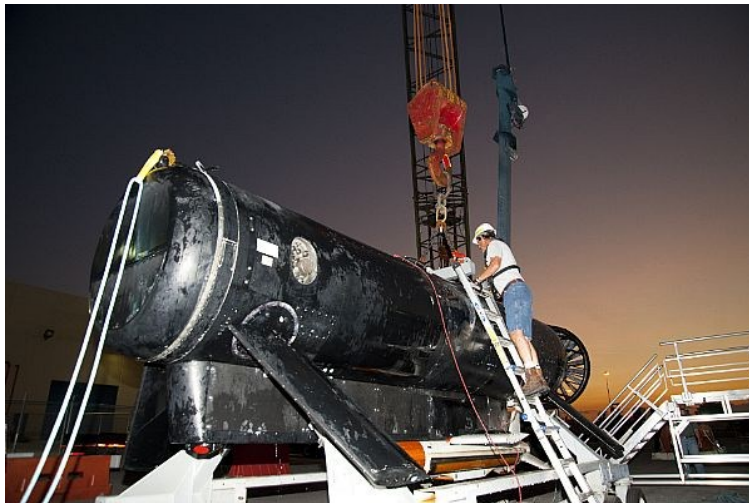
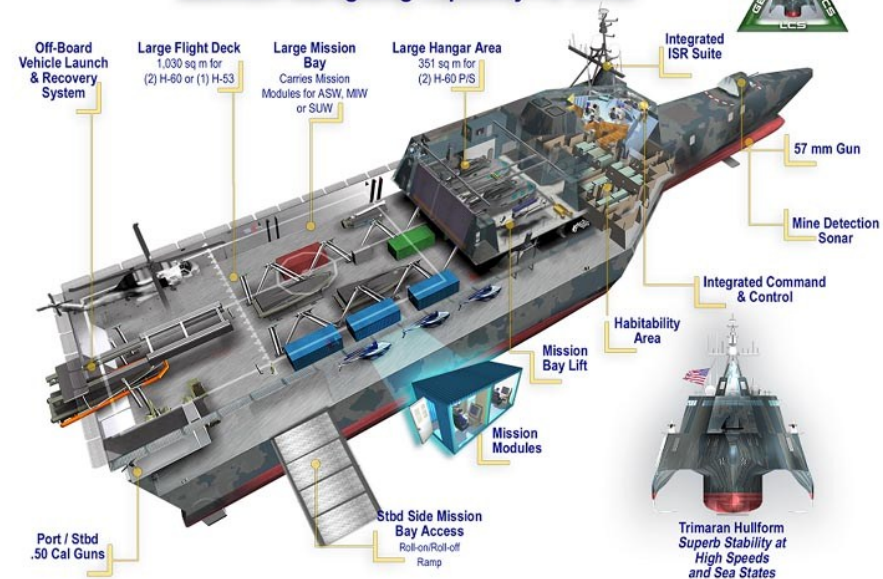
• Modular Adaptable Ship Technologies:

- Mission Bay
- Weapon Modules
- Aircraft, boats, UUV, UAV, USV

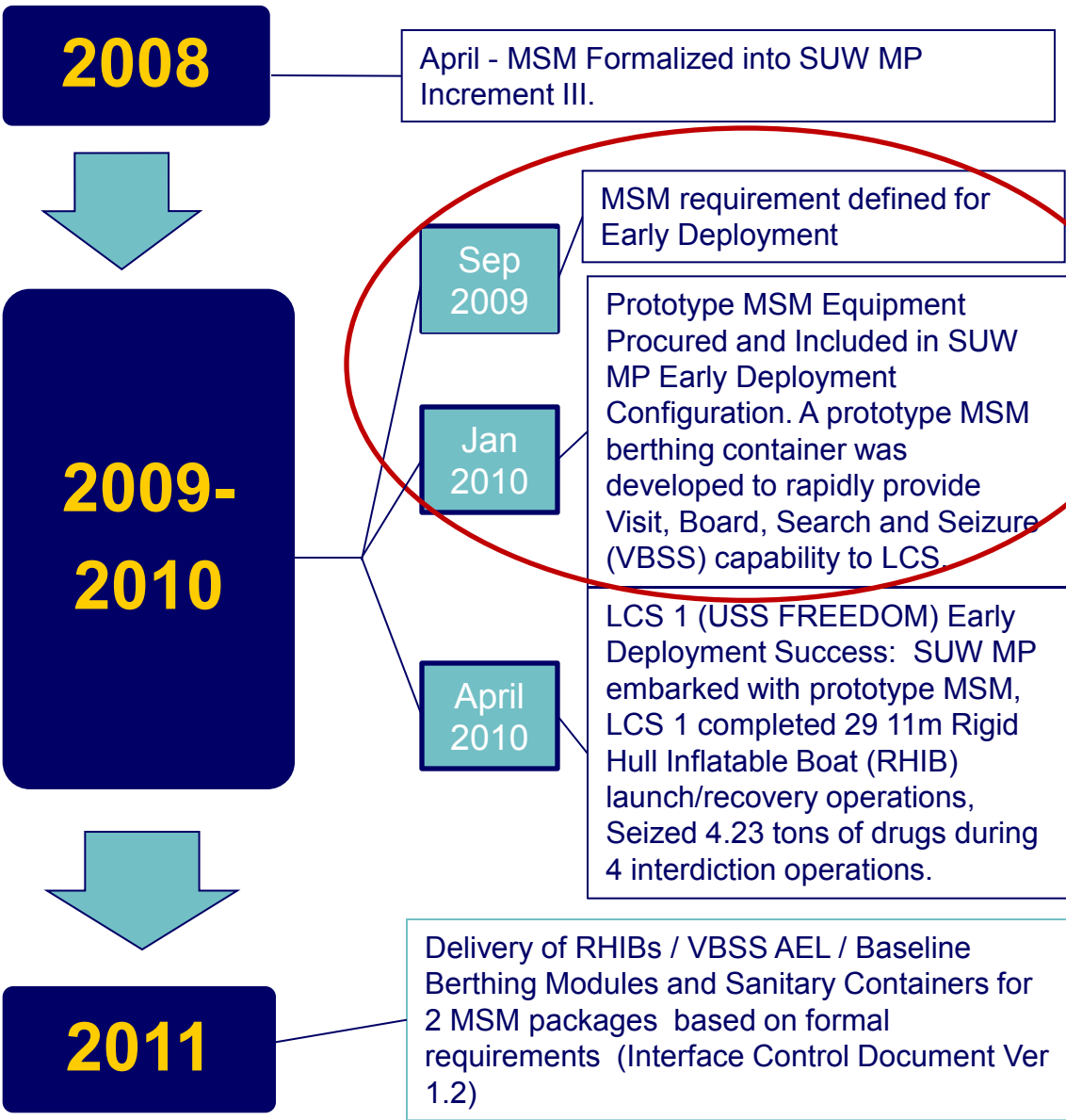


GENERAL DYNAMICS
Littoral Combat Ship

Maximum Warfighting Capability Per Dollar



LCS Maritime Superiority Module (MSM)

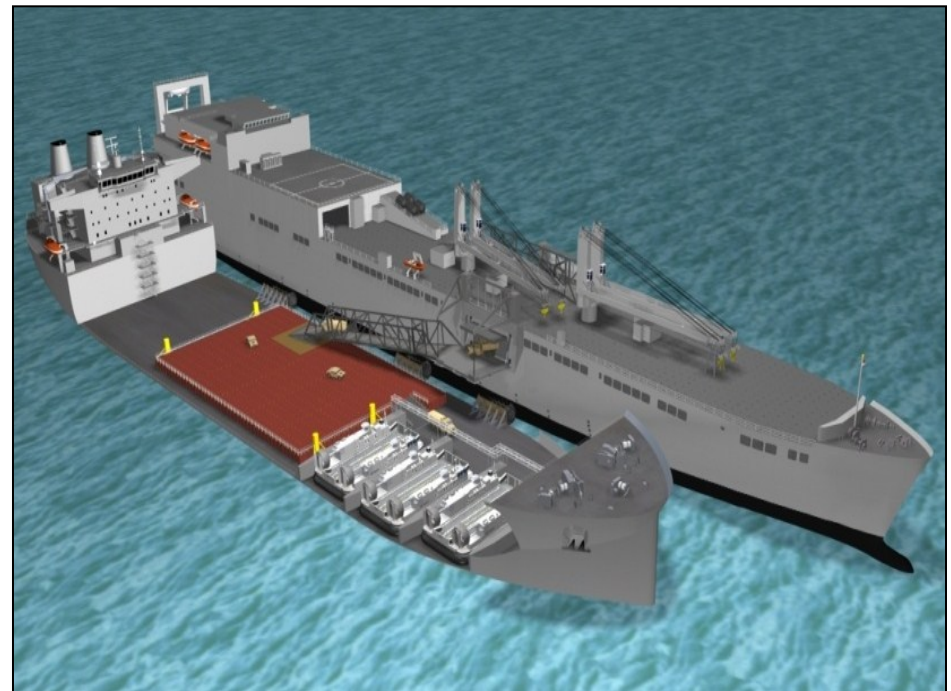


All MSM equipment was delivered to LCS 1 within 4 months of requirement definition.

- **Early Deployment Equipment**
 - Visit, Board, Search & Seizure (VBSS) Boarding Equipment for two teams
 - 2 x 11m RHIBs with cradles
 - One 12-man 20 ft prototype berthing container
 - One prototype shower container
 - 1 x 10' VBSS Equipment Storage Container

• Cost Control Initiatives

- Performed requirements versus cost trade-offs to achieve 80% of original MLP capability at 40% of the cost
- Concurrent design/production engineering approach ensured a high degree of design and production planning maturity prior to start fab to minimize cost & schedule risk
- Government-led contract for deck interface
 - Refine and translate the requirements into the design and specifications
 - Competing the contract
- Core Capability Set will provide inherent modularity and flexibility
- MLP can support /execute variety of missions including humanitarian support and sustainment of traditional military missions
 - CCS is only one of many possible configurations for an MLP mission set, allowing future capabilities to be added to support a rang of military operations.



• Program Status

- MLP 1 Keel laying 19 Jan 2012

• Program Capability

- JHSV leverages extensive commercial investments in high speed vessels to keep costs low by using commercial standards.
- JHSV will be a high-speed (35 knots), shallow draft surface vessel able to rapidly transport medium payloads of cargo (600 short tons), and personnel over intra-theater distances (1,200 nautical mile range at 35 knots) to austere ports.
- JHSV will be allocated via Global Force Management (GFM) for Theater Security Cooperation (TSC), Service unique missions, intra-theater sealift, and special missions.



• Program Status

- Detail design and construction contract for ten ships:
- USNS Spearhead (JHSV 1) Christened Sep 17, 2011
- JHSV 2 started production in Sep 2010
- JHSV 3 started production in Sep 2011
- Contract for JHSV 4 and JHSV 5 awarded Oct 2010
- Contract for JHSV 6 and JHSV 7 awarded Jun 2011
- Contract for JHSV 8 and JHSV 9 awarded Feb 2012



USS MAKIN ISLAND (LHD 8)



Program Executive Office, Ships

• Cost Reduction Initiatives

- Hybrid gas turbine/diesel-electric propulsion; saved \$2.5M in fuel costs during transit to homeport
- Over the course of the ship's lifecycle, the Navy expects to see a savings of more than \$250M
- Highlights SECNAV's commitment to energy efficiency
- Propulsion system will also be used in future ship construction



• Program Status

- LHD 8 delivered in April 2009 and Commissioned in October 2009
- LHD 8 successfully completed FCT late October 2010
- USS MAKIN Island currently deployed supporting Maritime security operations in 5th Fleet AoR



• Program Capability

- LHA 6 (USS AMERICA) is designed for expanded aviation capabilities
 - Expanded aviation capabilities (12 MV-22s, 4 CH-53's, 4 AH-1s, & 6 F-35Bs)
- LHA 6 will be a modified repeat of LHD 8 (USS MAKIN ISLAND), the last ship of the LHD class
 - Hybrid gas turbine/diesel-electric propulsion



• Program Status

- LHA 6 began construction December 2008
- LHA 6 keel laid July 17, 2009
- Launch planned for 2012



SAN ANTONIO (LPD 17) Class



Program Executive Office, Ships

• **Program Capability**

- Flight deck accommodates Marine Corps helicopters and MV-22 Osprey tilt-rotor aircraft
- Well deck can launch and recover air-cushioned landing craft and amphibious vehicles

• **Program Status**

- LPD 17-22 delivered
- LPD 23-26 under construction at HII Ingalls Shipyards



• Program Status

- Early design phase
- Lead ship funding is planned for outside the FYDP
- The Navy intends to competitively procure LSD(X)
- The LPD 17 hull form is one of several materiel solutions that will be explored as the Navy examines alternatives for LSD (X)
- Analysis of Alternatives is scheduled for April 2012 - January 2013
 - Production efficiency will be a factor considered when examining alternatives for the LSD (X)





Questions?