• Imperative for Change

• Flexible Ships Features

• Key Enablers
Rapidly Evolving Threats and Missions

Accelerating Pace of Technological Change

Increasing Costs

Fiscal Environment and Readiness
Imperative for Change

• Ships are costly to build and sustain
  - Current cost estimating methods result in minimal displacement ship designs
  - Warfighting capabilities are derived from inherently complex systems
  - Ship density is directly proportional to ship design, construction and sustainment costs

• Payloads (capabilities) are strongly coupled to platforms (ships)

• Legacy ship designs have limited allowance margins for modernization

• Closed and inflexible architectures result in lengthy and costly upgrades to ships

• Ships need to stay combat relevant over their entire service life or become irrelevant
FEATURES
- Payloads de-coupled from platforms
- Standard interfaces
- Rapid re-configuration
- Planned access routes
- Allowance margins for modernization

BENEFITS
- Separates payload development from platform production
- Affordable alternate business model to lengthy and costly ship production work
- Increased competition and innovation
- Cross-platform commonality
- Rapid prototyping of payloads enables rapid acquisition of new capabilities
- Modular open systems enable Acquisition Agility
- Efficient technology refresh and incremental upgrades
- Distributed Lethality enabler
- Paces the threat

DISTRIBUTION STATEMENT A: Approved for Public Release; Distribution is unlimited.
Laser Weapon System

Surface Ship Torpedo System

Enterprise Air Surveillance Radar

SeaRAM
- Royal Danish Navy StanFlex

- LCS ICD

- NATO Modularity Specialist Team Document

*Navy prescribe & manage interfaces but allow for industry innovation and technology advances*
Rapid Re-Configuration

Flexible Infrastructure

Standard Modular Compartments
• Aegis Ashore
• Aegis Combat System
• **Rapid Removal Routes**

• **Soft Patches**

• **Bolted Equipment Removal Plates**
Allowance Margins for Modernization

- Space

- Weight

- Distributed Systems
  - Electric Power
  - Cooling
  - Networks
• Provide warfighting requirements that drive flexible, common and open architectures

• Invest in technology advancements that support flexibility

• Navy prescribe and manage common interfaces

• Conduct risk-reduction prototyping & experimentation

• Establish a business model that supports flexible ships

• Ensure strong central leadership and a powerful coalition

• Roadmap plans and future opportunities
Summary

• Imperative for Change

• Flexible Ships Features

• Key Enablers
Glen Sturtevant
Director for Science and Technology

http://www.navsea.navy.mil/Home/Team-Ships/
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