Historical Challenges

- Always deployed
- Across 5 oceans
- All Resources are precious commodities
- Capital investment - long service life Force
Challenges of Today: Fiscal & Logistical

- Always deployed
- Across 5 oceans
- All Resources are precious commodities
- Capital investment - long service life Force

And...

- Fighting two wars
- Majority of 2020 Battle Force exists today
  - Older ships / more frequent maintenance
- Cost to own & operate our Fleet growing faster than inflation
- Limited Budget; likely decrease
USS INDEPENDENCE (LCS-2) Video

Source: General Dynamics
Total Ownership Cost Philosophy

“I tell my leaders if we’re going to talk about a program or policy we’re going to start with the discussion of total ownership costs before we get on to anything else. That’s absolutely key.”

Chief of Naval Operations,
Admiral Gary Roughead
3 May 2010
“Total Ownership Cost includes all costs associated with research, development, procurement, operation, logistical support and disposal of an individual weapon system including the total supporting infrastructure that plans, manages and executes that weapon system program over its full life.”

Source: VCNO, ASN(RDA), and Assistant Commander of the Marine Corps (ACMC) jointly signed letter dated 29 July 2009.
Design decisions by Milestone A “lock in” & dictate 70% or more of all life-cycle costs

Costs “locked in” as a function of design

Critical that System Support be Considered Early and Continuously
Life Cycle Costs

- O&S accounts for 70-80% of system’s entire cost
- Consider system support early in design process
Affording the Fleet We Have

• Cost reduction = reducing the Navy’s Total Obligational Authority
  —Reduce the cost to own & operate the Navy
• Cost Avoidance ≠ Cost Reduction
  —Avoidance means more capacity
  —Avoidance means more throughput
  —Avoidance serves to reduce workload backlogs

Cost Avoidance does not result in cash to reduce cost to own and operate the Navy
Total Ownership Cost (TOC)

• TOC Reduction not a budget drill
  – Impact cost over long haul
• Cost to own & operate Navy currently exceeds projected future budgets
• TOC must be consideration in meeting all warfighter capability gaps
• Real Cost Savings required to reduce the TOC

Honest, Objective Assessment of Navy’s Portfolio Required
Challenge: F-35 Integration

- JSF Integration Challenges onboard CVN-68 class carriers:
  - Jet Blast Deflector (JBD)
  - Spare Engines & UNREP
  - Shuttle Connecting Crewmen
  - STOVL (F35B) & Amphibs

Design for Integration
Design for Affordability: Flex Lab
Flexible Infrastructure for CVN-78

- Re-configurable space supports changing missions/lifecycle refreshes
- Facilitates training prior to install
- Maximizes development time

Flexible Concepts/Systems include:
- Deck Mounting System & Raised Decking
- HVAC
- Overhead Mounting System
- Bulkhead Mounting System
- Power Distribution
- Lighting Arrangements

Design for Affordability: ROVR 3D

- >2 million man hours saved on CVN-78
- 3D shows system interrelations
- Facilitates maintenance
- Just-in-time technology

Source: “Making the world’s most cutting-edge aircraft carrier,” Terdiman for www.news.cnet.com, June 28, 2010
Design for Affordability: VA Class

- Two contractors: Inherent Modularity
- Modular construction benefits
- Design/build engineering teams
- 3D electronic drawings

Modular construction at Northrop Grumman Newport News’ Virginia Class facility.
(Credit: Northrop Grumman Shipbuilding.)

# POM12 Affordability Process

## Process Overview

1. **Monitor Existing and Capture Additional Parking Lot Initiatives**
   - (Recently Completed)
   - Load into PBIS

2. **Capture ROI Performance Against Projections**
   - (Continuous Annual Process)

## Affordability Initiatives

- **Category 1**: In Progress
- **Category 2**: Proposed: Ready
- **Category 3**: Proposed Not Ready
- **Category 4**: Ideas Not Screened

## Initiatives Repository

- Affordability Initiatives will be monitored and adjustments made as necessary.

## Performance Reporting

- Performance Reporting
- Monitor Existing and Capture Additional Parking Lot Initiatives
- Monitor Performance and Make Adjustments
- Monthly Affordability CFT Meetings
So, What Can I Do?

- Current operations provide insight and lessons learned on performance:
  - *How are we incorporating lessons learned into future designs?*
  - *Experience: USS Freedom fuel consumption at high-end speeds*

- Software: Agile and responsive refresh approach required
  - *DDG-51 Class & Aegis: Multiple software flights*
  - *Periodicity/Combat System Component Mix*

- Open Architecture / Modularity
  - *Modular design and design disclosure*
  - *Reusable application software*
  - *Interoperable joint war fighting applications and secure information exchange*
  - *Life cycle affordability*
  - *Improved competition and collaboration*

Innovative Methods Required to Design in Affordability
Way Ahead

• Think well past current budgets... create and exploit every opportunity to reduce cost

• Design in flexibility... utilize common architecture and easily refreshed systems

• Leverage lessons learned

We Won’t Get There Without Innovation!
Questions

Considering Total Ownership Costs up front will prevent costs from taking off.
Backup
Design for Affordability: Flex Lab
Flexible Infrastructure for CVN-78

Deck to Deck Stanchion & Flex Seating

Deck Track System & Deck Tiles/ Rail Covers

Innovative Methods Required to Design in Affordability

Process to Capture and Prioritize Affordability Initiatives

Institutionalize Process to Continuously Identify and Pursue Cost Reduction Opportunities