ACEIT User Conference
Lessons Learned from Naval Ship Cost Estimating

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PEO Ships Successes (2009)

5 Ships Started Fabrication

- FORT WORTH (LCS 3)
- ZUMWALT (DDG 1000)
- WASHINGTON CHAMBERS (T-AKE 11)
- WILLIAM MCLEAN (T-AKE 12)
- FORTITUDE (JHSV 1)

6 Keels Laid

- CHARLES DREW (T-AKE 10)
- FORT WORTH (LCS 3)
- AMERICA (LHA 6)
- SPRUANCE (DDG 111)
- SOMERSET (LPD 25)
- CORONADO (LCS 4)

4 Ships Christened

- WALLY SCHIRRA (T-AKE 8)
- GRAVELY (DDG 107)
- MATTHEW PERRY (T-AKE 9)
- JASON DUNHAM (DDG 109)

7 Ships Delivered

- CARL BRASHEAR (T-AKE 7)
- MAKIN ISLAND (LHD 8)
- WAYNE E. MEYER (DDG 108)
- DEWEY (DDG 105)
- NEW YORK (LPD 21)
- WALLY SCHIRRA (T-AKE 8)
- INDEPENDENCE (LCS 2)

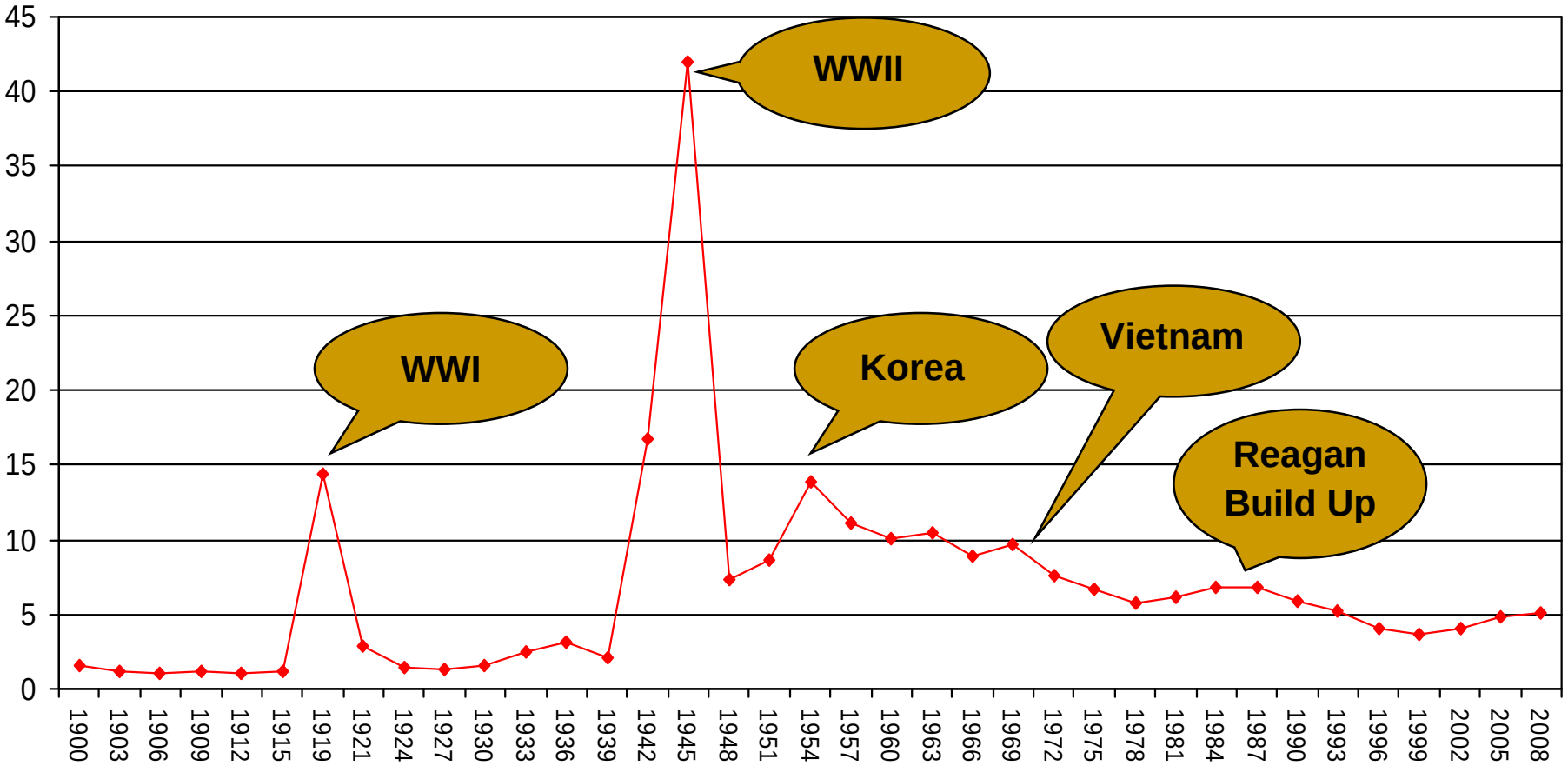
6 Ships Commissioned

- GREEN BAY (LPD 20)
- STOCKDALE (DDG 106)
- TRUXTUN (DDG 103)
- WAYNE E. MEYER (DDG 108)
- MAKIN ISLAND (LHD 8)
- NEW YORK (LPD 21)

89 FMS Deliveries

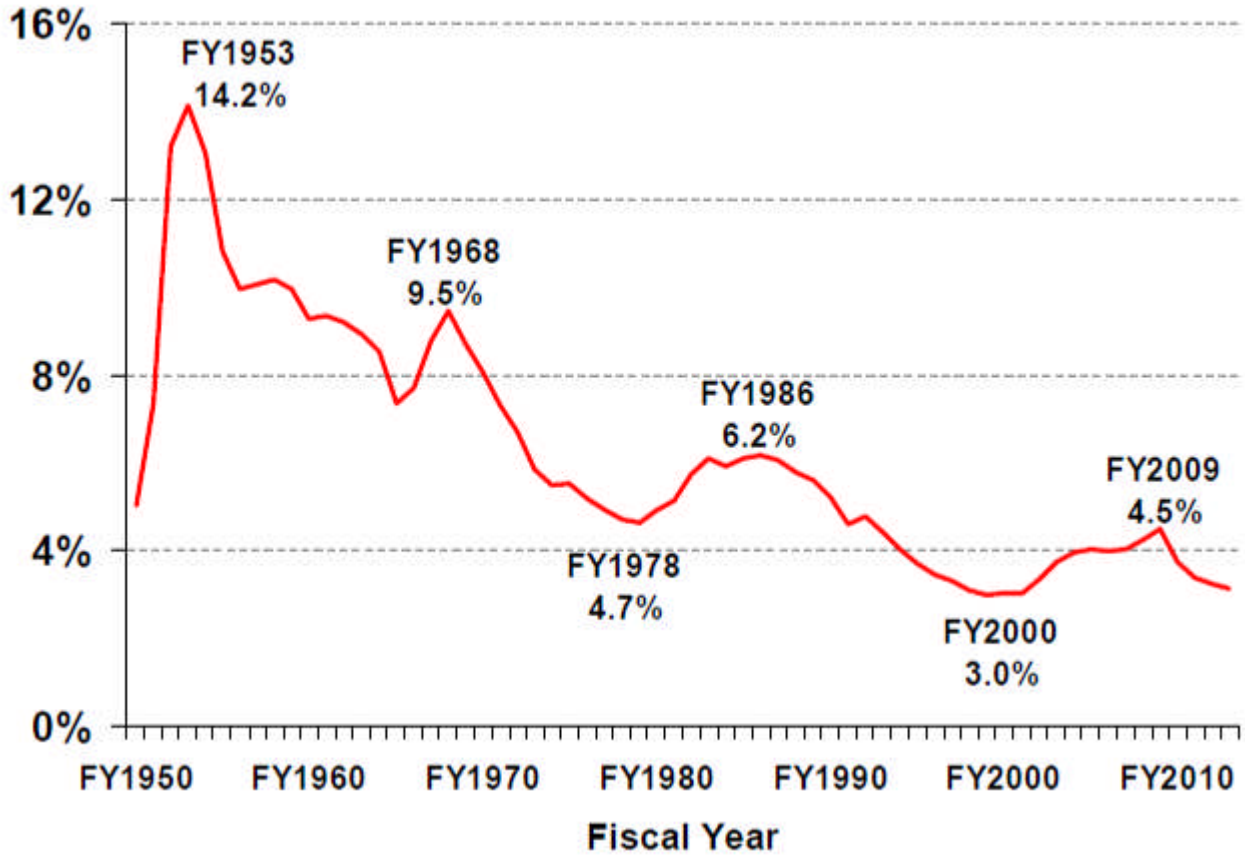
186 Small Boats and Craft Deliveries

National Defense as a Percentage of GDP



- Figures provided by OMB

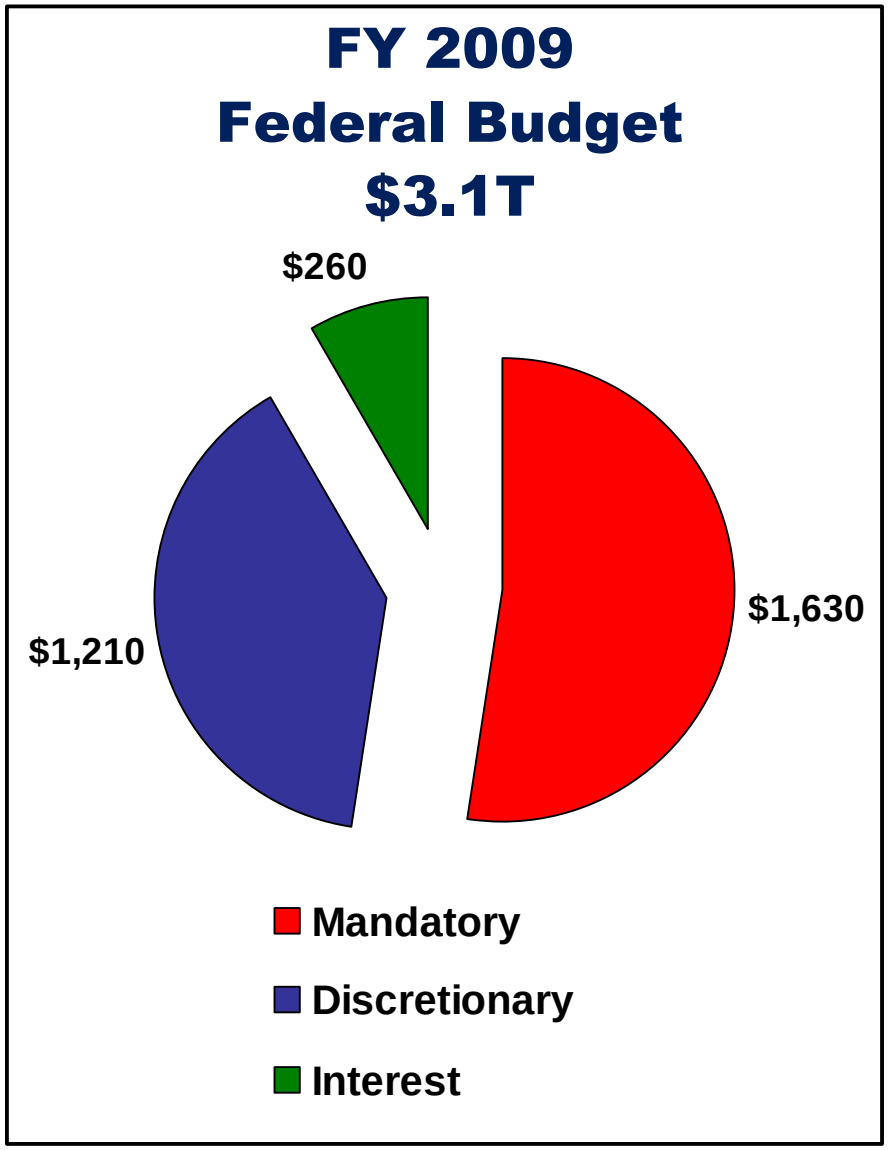
National Defense Outlays as a Percentage of GDP

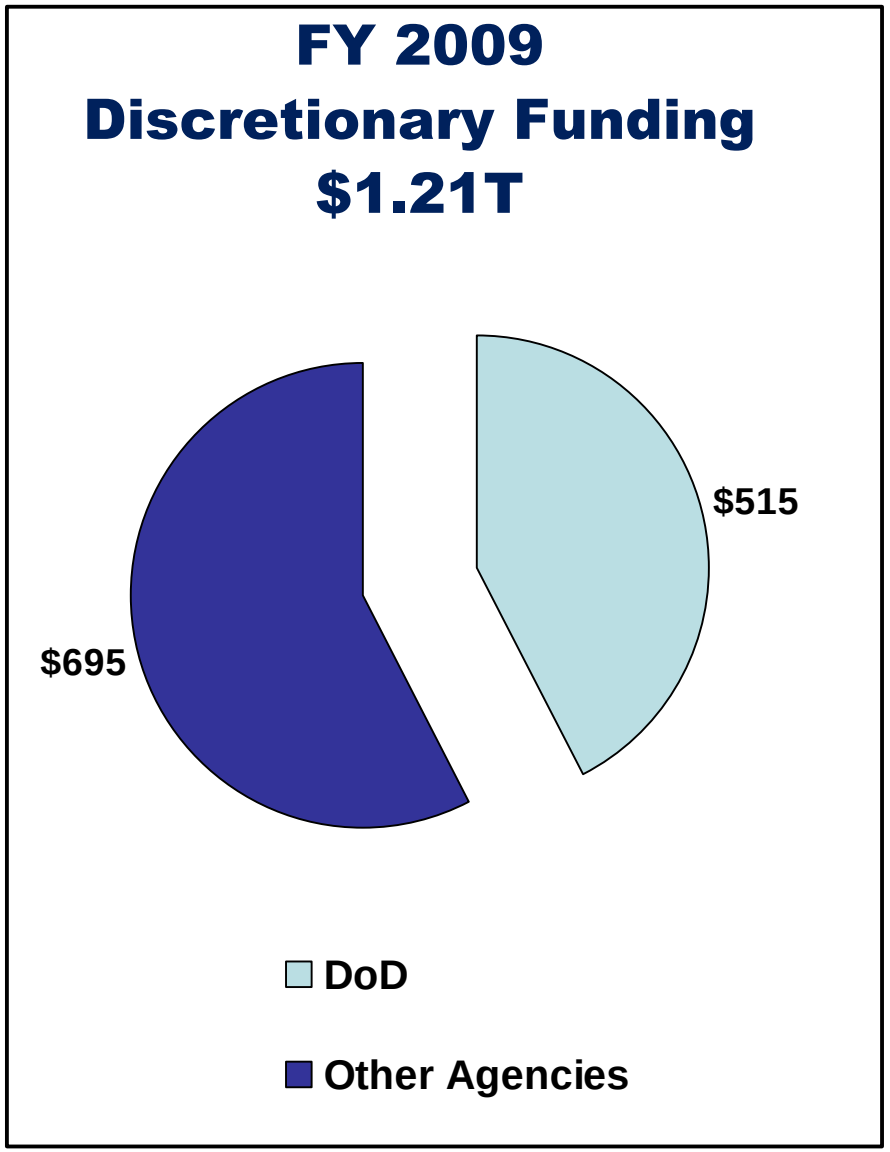


(1950-2013)

- Courtesy CRS

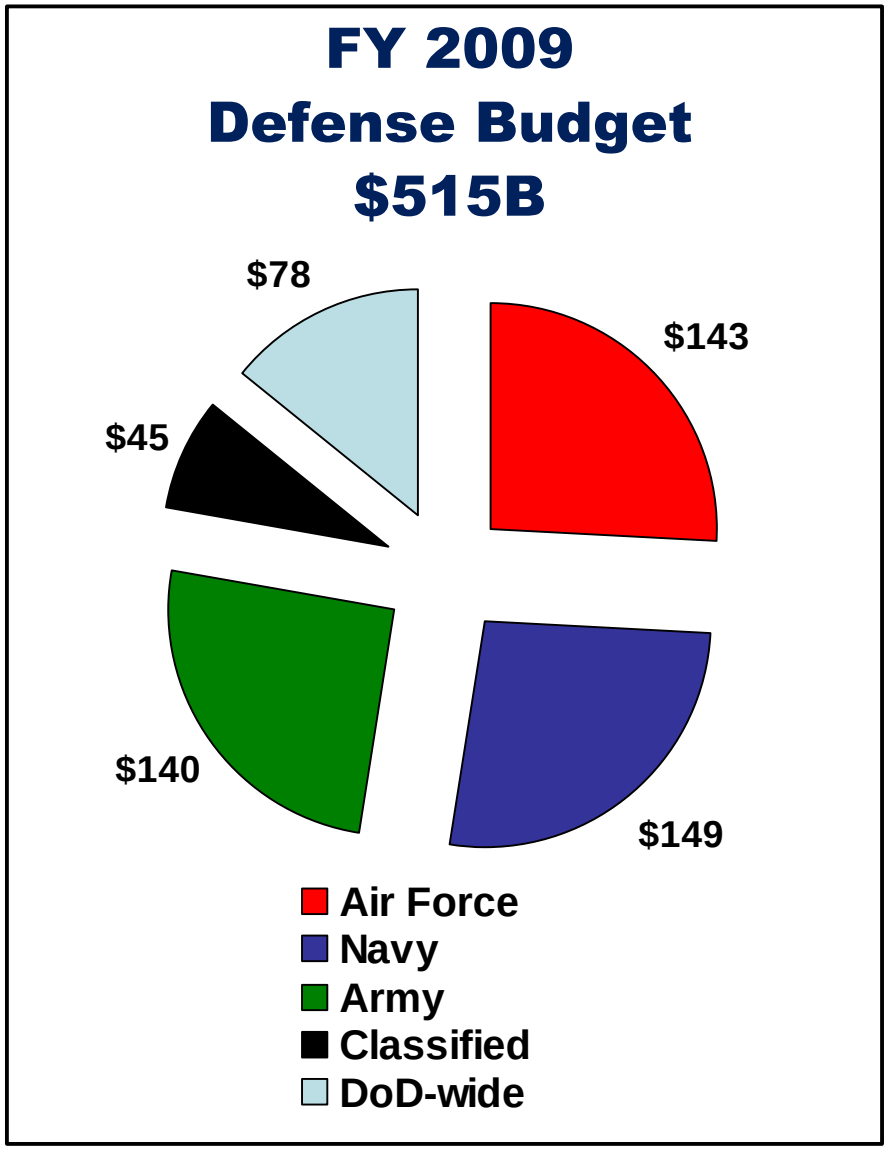
FY 2009 Federal Budget

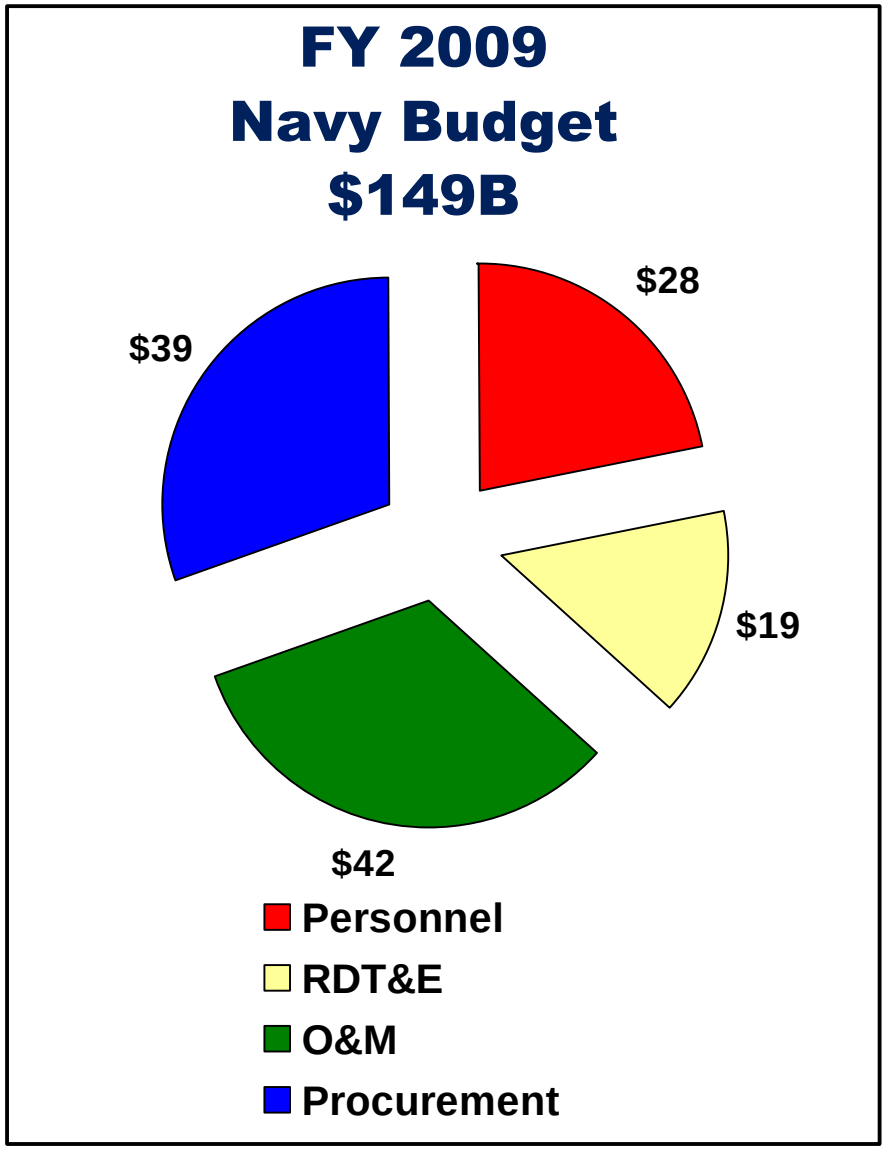




- Numbers rounded
- Represents PB09, not enacted
- Figures provided by OMB

FY 2009 Federal Budget continued





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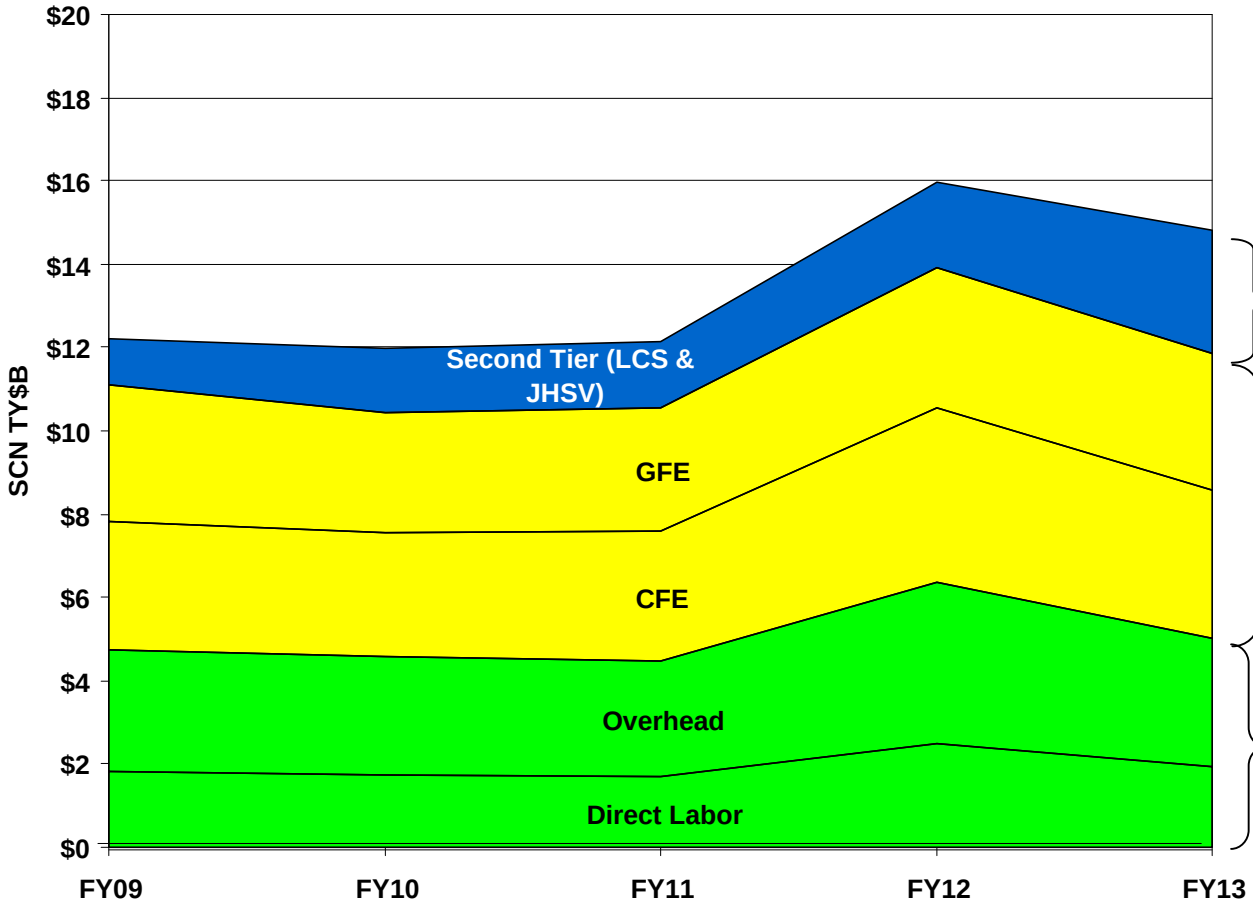
New Ship Construction Cost Breakout



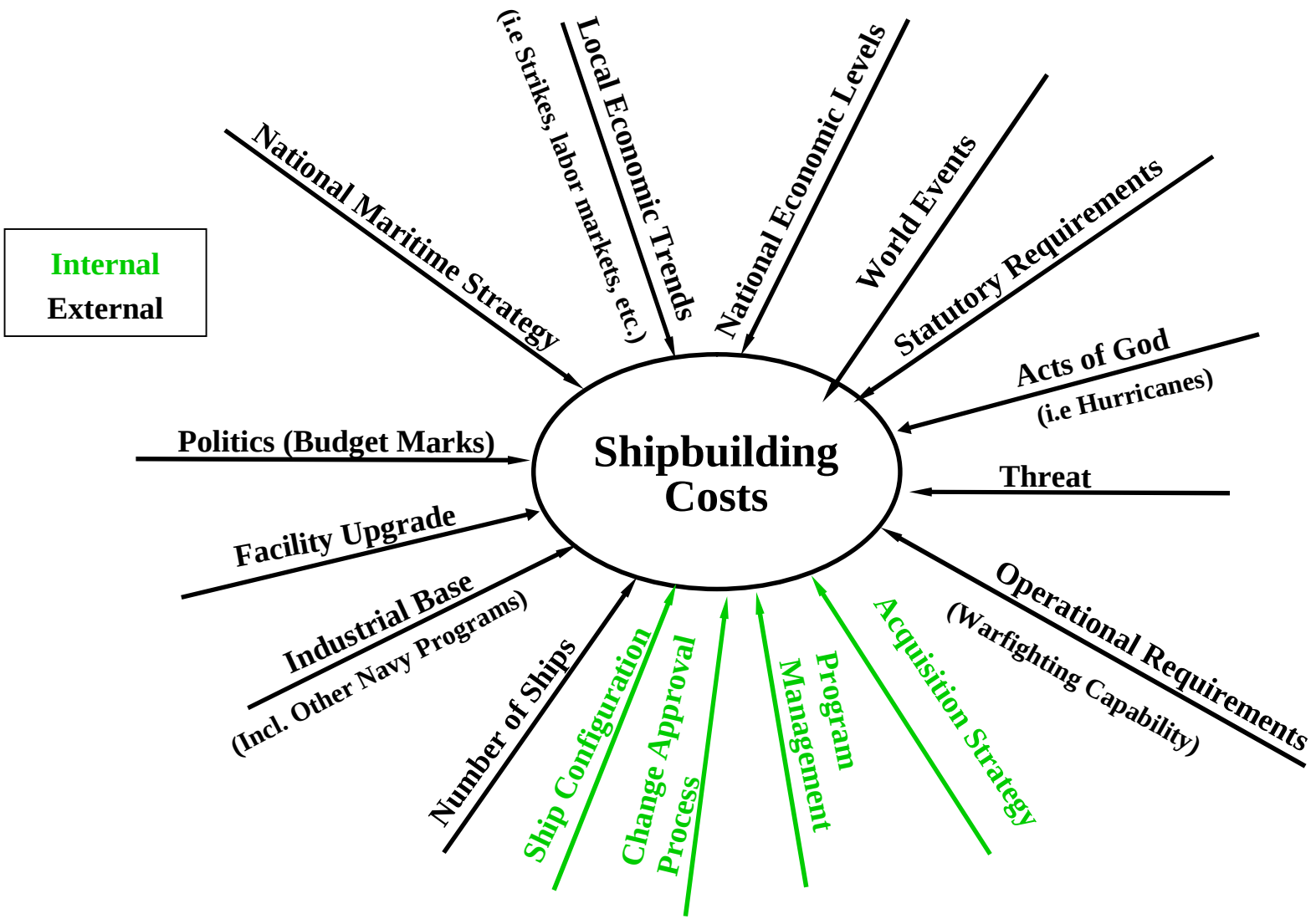
PB09 SCN/NDSF new construction, excluding CG(X)

Second Tier = 14% ($9B)
Already competitive

Material = 49% ($33B)
Opportunities exist to reduce cost

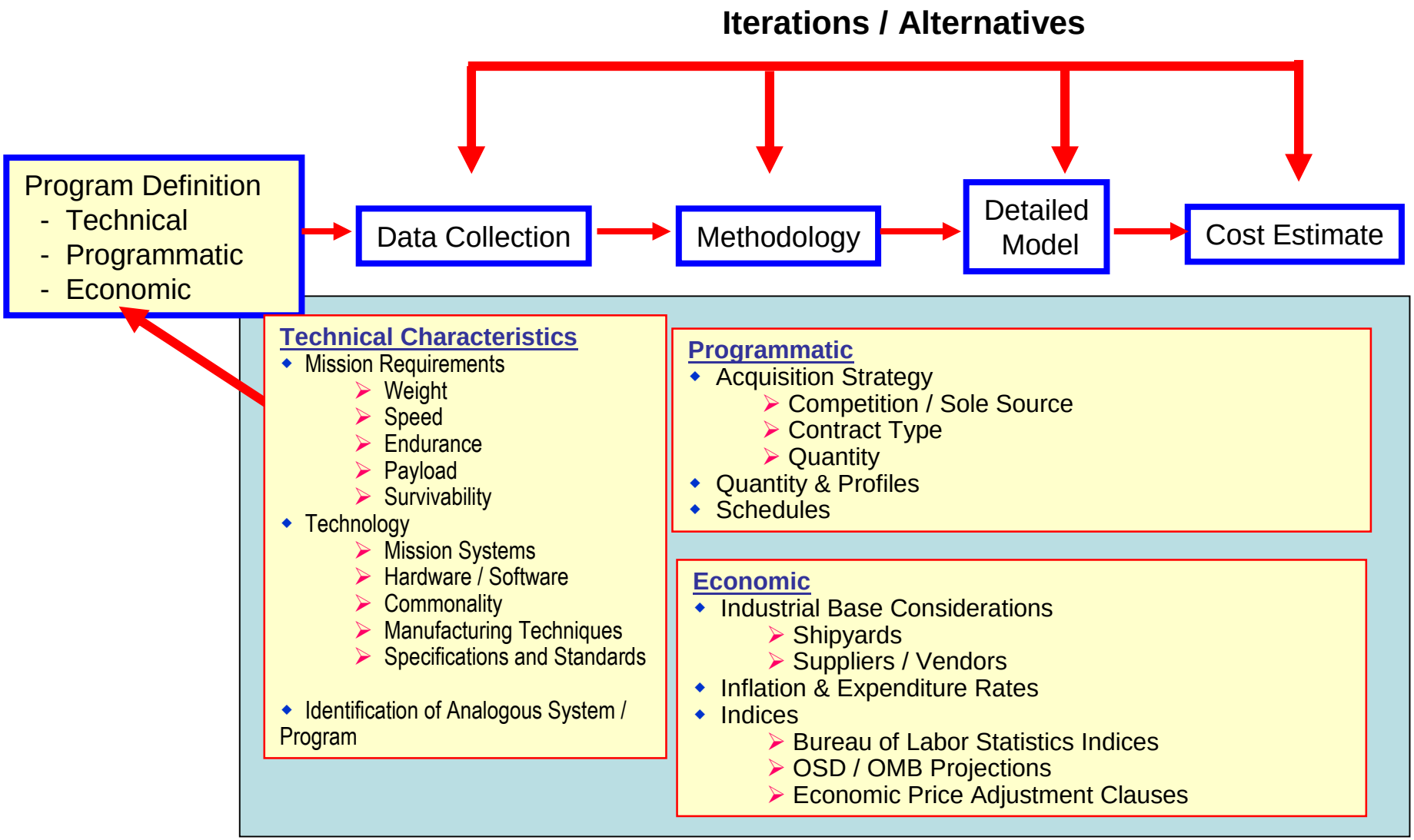
Labor = 37% ($25B)
Opportunities exist to reduce cost, but Congressional desire to maintain Big Six shipyards constrains opportunities

Programmatic Cost Drivers

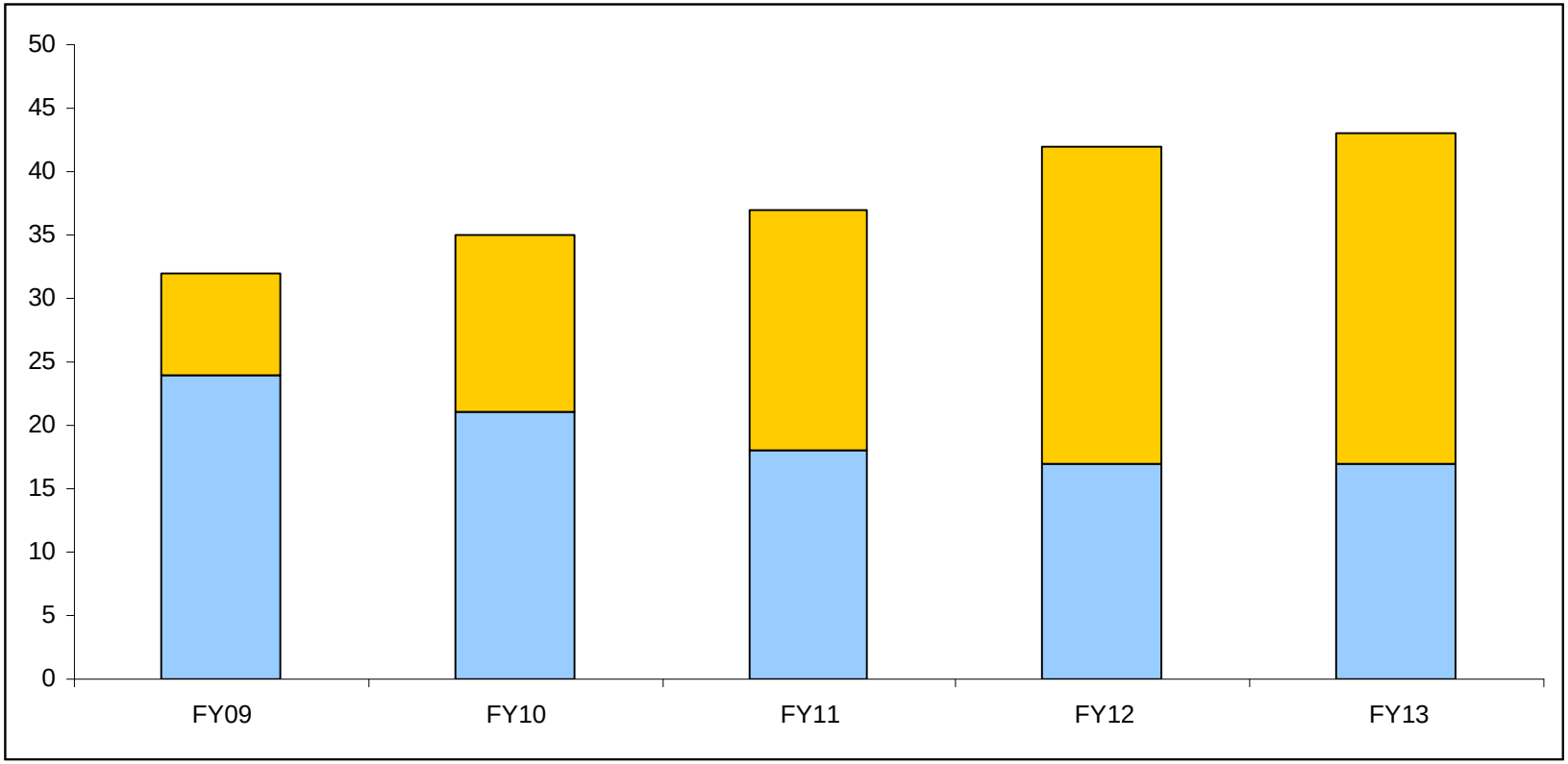


Most influences that impact costs are external vice internal

Cost Estimating Process



The Model is Changing

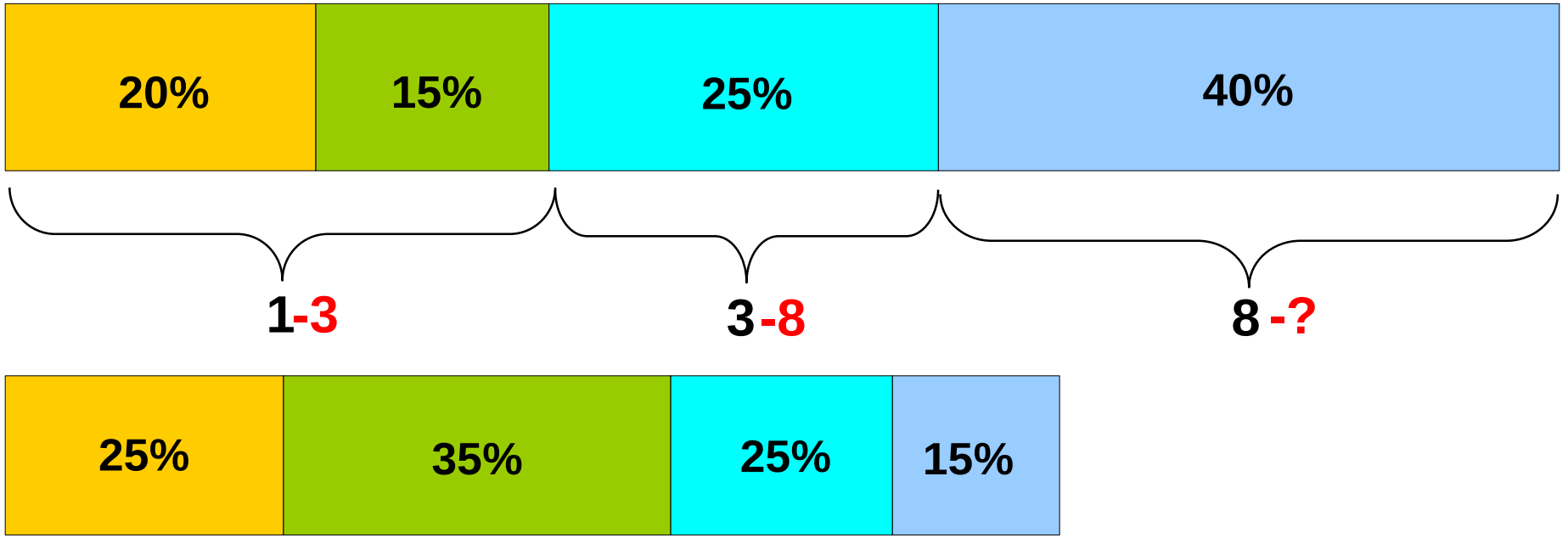


*Based on FY09 FYDP

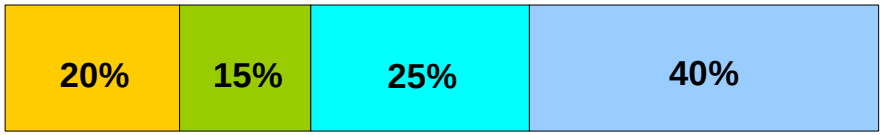
- Yearly procurement numbers include major U.S. warships
- Includes MSC and special mission ships (e.g., T-AKE, MLP, T-AGM)
- Includes Egyptian FMC
- Does not include the ~100 average per year procurement of small boats and craft for U.S. and foreign navies
- Does not include aircraft carriers or submarines

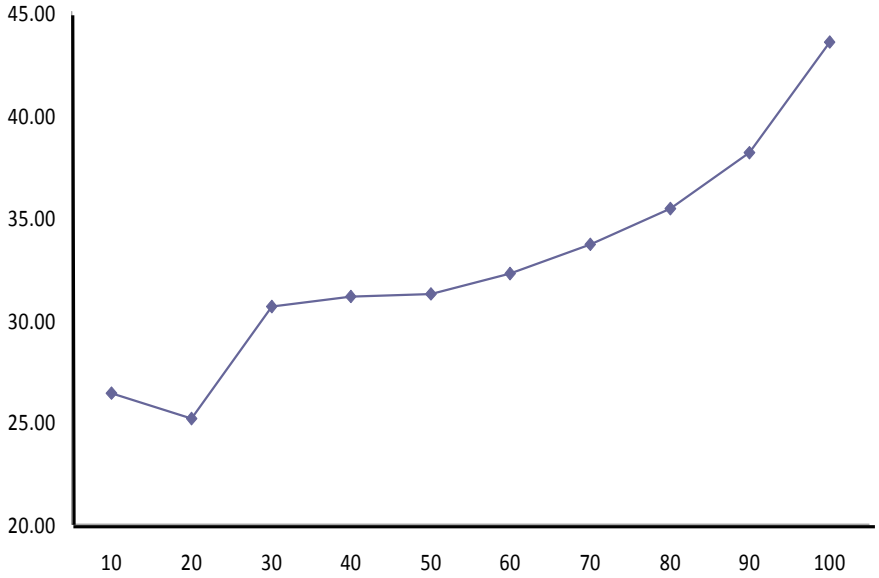
Mid-Tier Shipyards
Big 4 Shipyards

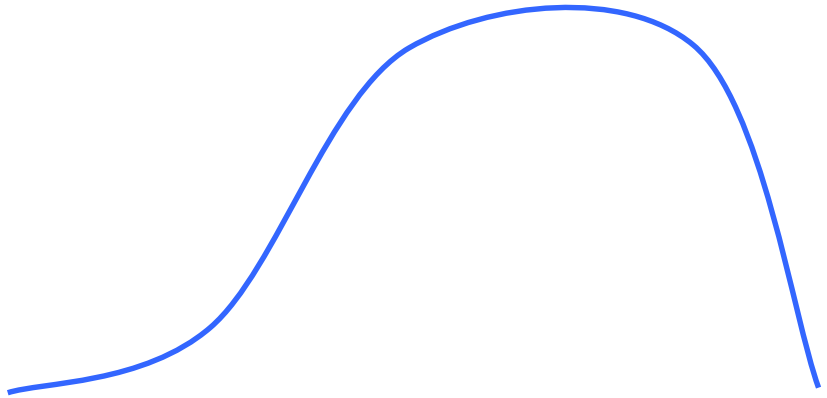
Work Allocation and Cycle Time

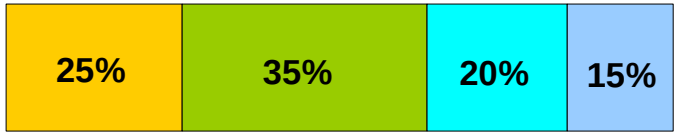


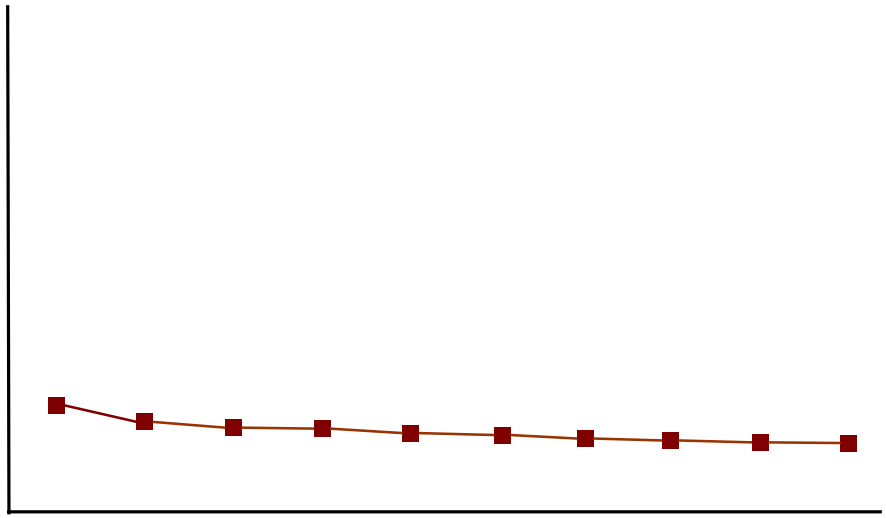
Total Actual Hours per One Percent Progress

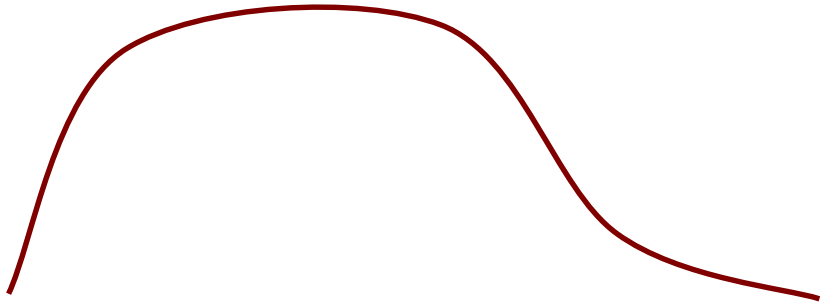






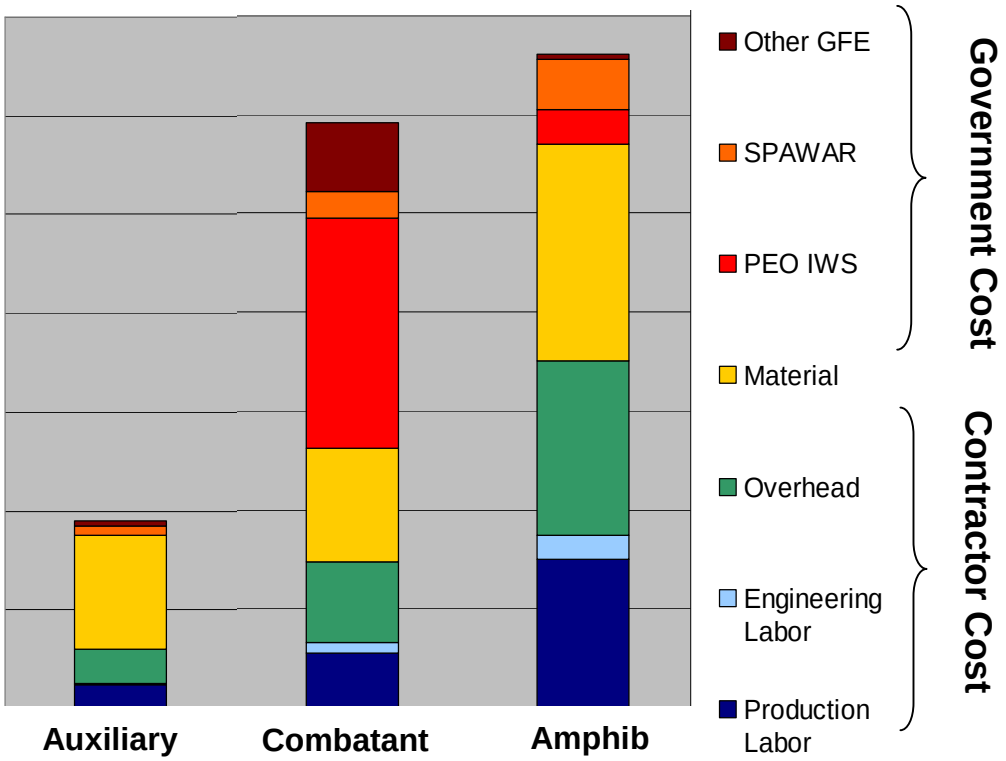






Multiple Factors in Acquisition Cost

Cost Components By Hull



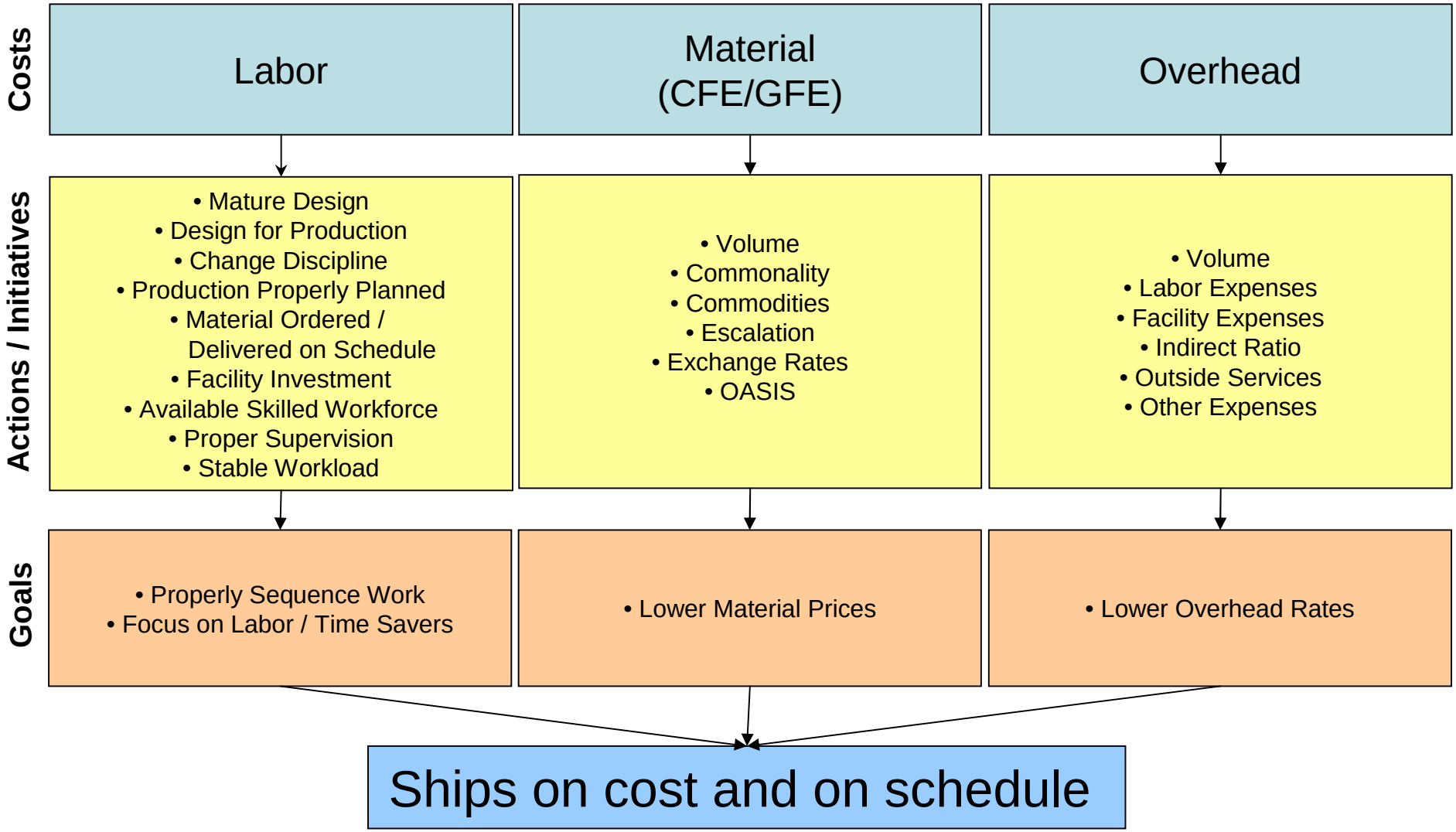
Labor
- Pipe
- Electrical
- Workforce stability
- 1st Time quality

Overhead
- Workload
- Governance

Material
- Commonality
- Class Standard
- Bulk Buys
- Commercial Standards

GFE
- Bulk Buys
- Requirements Discipline

Shipbuilding Credibility



Shipbuilding: Moving Forward

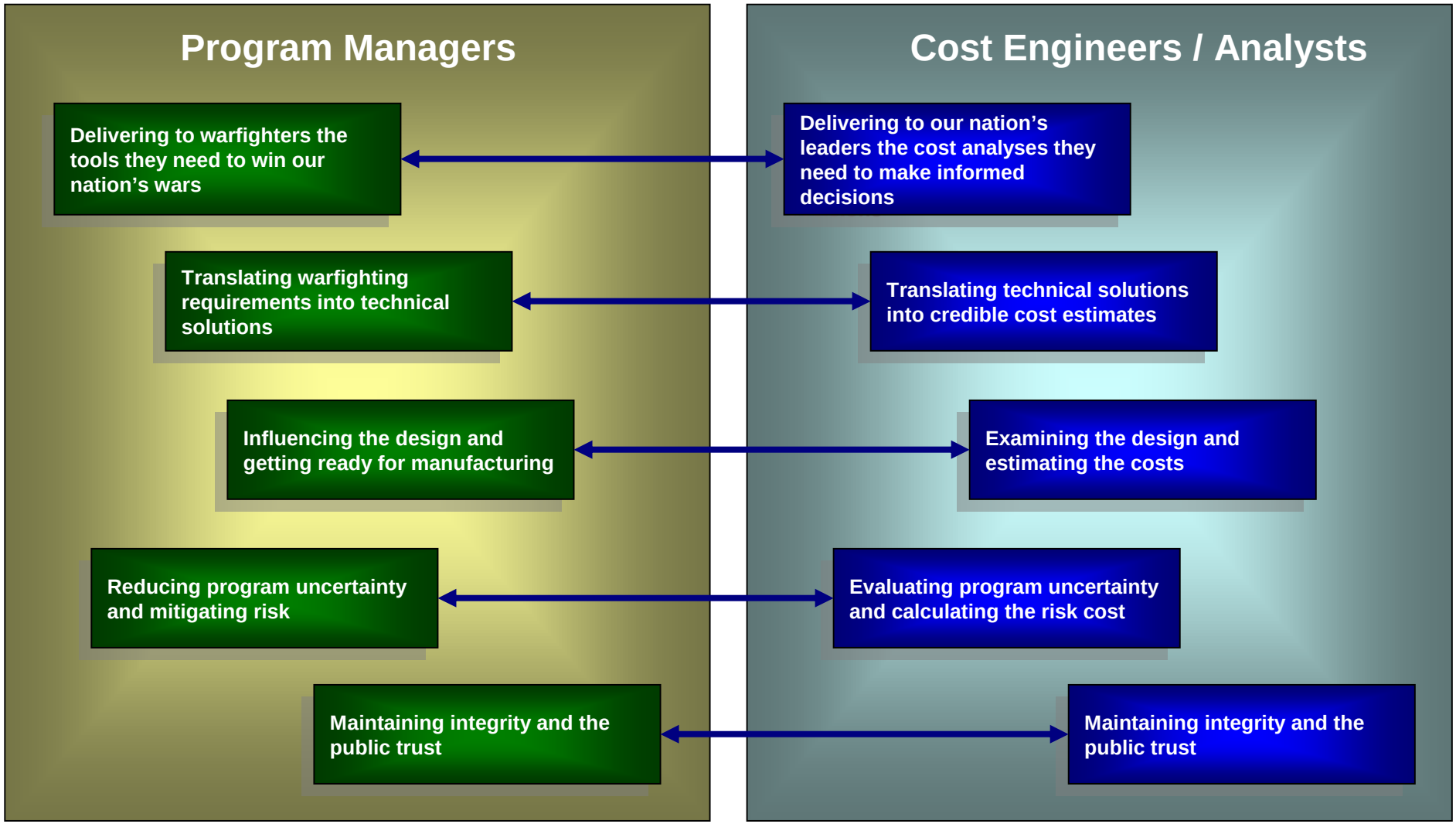
- Focus on restoring confidence in the Navy's ability to execute shipbuilding effectively
- Mature designs before beginning construction
- Production plans that yield success
- Rigor in executing those plans
- Build the first ship like a follow ship
- Measuring productivity improvements from unit to unit rather than ship by ship
- A ruthless drive for affordability and efficiency
- Funding design for affordability and capital improvement initiatives
- Measuring and evaluating performance of the companies, not the programs
- Managing shipbuilding as a business rather than a series of independent programs

Program Management

and

Cost Estimating

Where you stand depends on where you sit



Shared Disciplines

Source: GAO-07-1134SP Cost Assessment Guide with modifications

Pressurizing Shipbuilding

- Cost Performance
- Budget
- Navy Planning and Programming
- Economic Realities
- Wall Street
- Options for Change

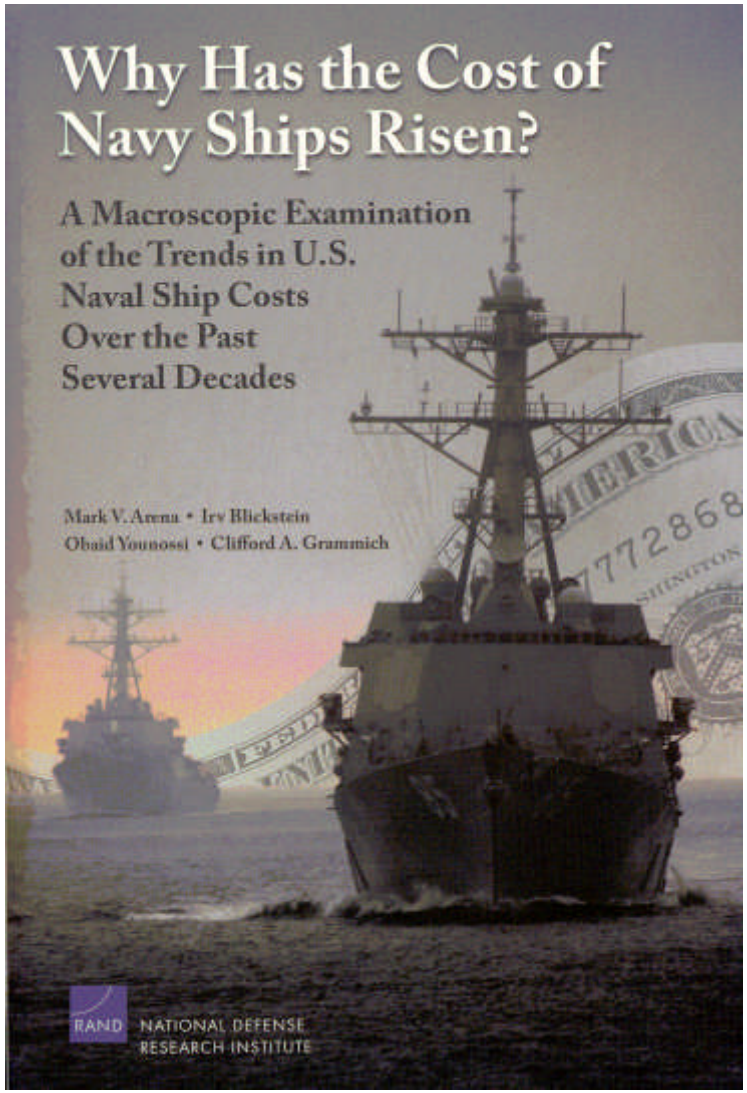
Challenges in Cost Estimating

- Eroding future buying power to pay for cost growth today
- Defensibility and Perception of Cost Products
  - Need improved design tools
  - Identification of relevant and meaningful data
- Increasing Demand Signal
  - Alternatives considered
- Workforce Realities
  - Rebuilding core knowledge, skills, and processes
- Industrial base implications
  - Overarching view

QUESTIONS?

Back Up Slides

2006 RAND Corp Evaluation



Highlights of Findings:

- **7.4% - 10.8% annual inflation from 1950 - 2000** for Battle Force Ships (Amphibs, Combatants, CVNs, Attack Subs)
- **~50% due to economic factors,** such as labor and commodities
- **~50% due to customer-driven factors,** such as capability and build rate

Recommendations

- Increase investments in producibility
- Increase procurement stability
- Fund technology and efficiency improvements
- Improve management stability
- Change GFE-program management controls
- Employ batch production scheduling
- Consolidate the industrial base
- Encourage international competition/participation
- Build ships as a vehicle
- Change the design life of ships
- Buy a mix of mission focused and multi-role ships
- Build commercial-like ships

CAPE establishment

- **Weapons System Acquisition Reform Act of 2009 established a new Director of Cost Estimating and Program Evaluation**
  - **Principal adviser to SECDEF, USD, and service secretaries on cost estimating and analysis**
  - **Provides realistic cost estimates and analysis for DoD acquisition programs**
  - **Assesses and updates DoD cost indices**
  - **Prepares annual report on cost assessment activities**
  - **Ensures that military departments and defense agencies comply with proper policies and procedures**
  - **Analyzes any discrepancies between independent cost estimate and defense agency estimates**