



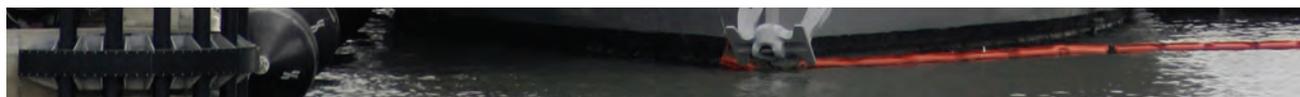
# Global Shipbuilding Executive Summit

Post-Summit Summary

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The inaugural Global Shipbuilding Executive Summit was held on April 8, 2010 in Washington DC. Sponsored by the American Society of Naval Engineers in conjunction with Siemens PLM Software, the summit was attended by more than 45 senior shipbuilding industry leaders from around the world. Both industry and government agencies sent representations, including the US Navy, UK Royal Navy, Royal Australian Navy, General Dynamics Corporation: Electric Boat, Bath Iron Works and NASSCO, Austal, ABS America, 21<sup>st</sup> Century Systems, Inc., Lockheed Martin, USEC, Rosenblatt & Associates, Marinette Marine, BMT Syntek, Herbert Engineering, Marine Force International, Luerssen Werft GmbH, Columbia Group, Northrop

Grumman, Siemens Marine Solutions, Metro Machine Corporation, Maersk Line, Grey Ghost LLC, BMT Designers & Planners Inc., Raytheon, SAP Global Defense & Aerospace, CDI Government Services BAE Systems Ship Services.

The VIP hosts for the summit were Ms. Kathleen Hinton, President, ASNE; Dr. Klaus Borgschulte, Managing Director & COO, Luerssen; and Mr. Fred Harris, President, NASSCO ( a General Dynamics company). Each host made a brief introductory presentation to summit participants. The moderator for the Summit was RDML Joe Carnevale, USN (ret.), Senior Defense Advisor, Shipbuilders Council of America.

## Introductory presentations

The VIP hosts emphasized the following points in their introductory presentations.

### Global commercial shipbuilding industry

- Significant over capacity (40M CGT of orders cancelled from 2008 to 2009)
- New orders will only come when trade improves
- Developing technology should comply with new regulatory and environmental standards
- Industry must look to adjacent markets until market recovers

### US shipbuilding industry

#### *Commercial*

- Must adopt world class processes
- Must provide timely and adequate Title XI funding

#### *Naval*

- Must meet quality standards when delivering new naval ships
- Must reduce total ownership cost (TOC)
- Incorporate world class processes
- Reduce material cost
- Improve program management continuity

### European shipbuilding industry

- Requirements to commissioning: need shorter lead time
- Specialized shipbuilding: requires significant engineering resources
- Need sophisticated tools and processes optimization, including:
  - Standardization*
  - Involvement of supply network*
  - Elimination of non-productive work*
  - Synchronized parallel process*

After the introductory presentations, the six tables each selected an issue from the following list to discuss and provide recommendations for future improvements

1. How do we ensure ships built for the U.S. Government meet requisite quality standards at delivery?
2. How do we maintain an experienced labor force, comprised of trade workers and design personnel, in periods of low shipbuilding activity?
3. How do we reduce the total ownership cost (TOC) of new USN vessels?\*
4. How do we incorporate world class shipbuilding processes into domestic shipyards to improve performance?\*
5. How do we reduce the material content cost of our ships (spec and non-spec)?\*
6. How do we improve program manager continuity?

\* Four of the six tables selected Issue #3 and the others selected Issues #4 and #5.



## Summaries

Below is a summary of the recommendations/comments from several tables at the Summit regarding:

### **Issue #3: Reducing TOC**

#### **TOC as a top priority**

- Focus on TOC at the very beginning of a program
- Incentivize TOC behavior; this is a cultural change needing top leadership support
- Facilitate good TOC decisions to produce a 20:1 return on investment
- Break paradigm that ship costs increase > inflation

#### **Design tools and technology**

- Use same collaboration tools for lifecycle management in government and industry
- Implement closed-loop feedback between acquisition and lifecycle costs
- Use systems engineering to improve TOC control: MTBF, overhaul, etc.
- Consider cutting-edge technology vs evolutionary technology

#### **Contracting process**

- Provide shipyards with more authority to impact TOC
- Need better balance between early TOC studies and in-construction tradeoffs
- Improve cost responsibilities

- Current navy acquisition process: low risk tolerance
- Need upfront funding to focus on TOC
- Need more budget flexibility between RDTE and O&M,
- Incentivize quality more: extended warranties, service-lifecycle agreements
- Enable KPPs to link in-service and construct cost
- Facilitate fixed price contracts with availability, reliability service metrics
- Protect TOC funding
- Consider TOC metrics at each gate review
- Facilitate more competition
- Encourage multi-ship buys

#### **Uniform business modeling for better TOC decision making**

- Complete TOC studies early in the program
- Lengthen ROI time span
- Need better comprehensive lifecycle with fact-based data/cost projections
- Implement uniform TOC modeling approach
- Include construction, outfitting and lifecycle costs in TOC model
- Better understand the cost impact of requirements on TOC

#### **Program management continuity**

- Understand that leadership continuity is crucial to TOC control
- Once program is defined, don't let making it better undermine TOC containment

- Need continuity of vision and leadership at both PEO and shipyard
- Set and maintain standards/requirements for a batch of ships

#### **Suppliers**

- Incorporate suppliers earlier in construction process
- Need more flexible, open and modular designs
- Need long-lead procurements
- Simplify specifications
- Compete at the modular level

#### **Best practices recommendations**

- Leverage open architectures
- Complete design and planning before start of construction(SOC)
- Make engineers responsible for logistics
- Facilitate standardization
- Research best practices in related industries: plane, trains, etc.
- Understand that parallel, synchronized development can reduce TOC
- Retain top engineering talent (crucial)
- Leverage mature technology before detailed design
- Implement standardized production processes
- Facilitate design for modernization with modular architecture

TOC was also addressed during the concurrent ASNE Day program by RADM Kathleen Dussault, Director, Supply, Ordnance and Logistics Operations Division (OPNAV N41). The following comments were extracted from her presentation (summarized in detail by Geoff Fein in the *Defense Daily*, 4/9/2010)

*"We have to really embrace the culture affordability.....understanding and influencing cost drivers is essential."*

*"Military personnel, and operations and maintenance are the real bow waves of TOC..."*

*"...the Navy needs to declare that TOC is important..."*

*"...have to break down barriers between the various stovepipes inside the organization..."*

*"...we make decisions about acquisition programs without understanding just what the infrastructure is that is going to be required to support it..."*

#### **Issue #4: Incorporating world class processes**

##### **Implement best practices**

- Share lessons learned
- Learn from high volume commercial shipyards

##### **Reduce shipyard labor**

- 1/3 of the cost is internal labor
- 2/3 of the cost is purchased material
- Need stable requirements

##### **Facilitate cycle reduction by implementing lean principles and practices**

- Research best practices in international shipyards
- Research best practices in related/ adjacent industries

##### **Need sophisticated tools and process optimization for specialized ship classes**

- Implement standardization
- Involve the supply network
- Eliminate non-productive work
- Synchronize parallel process

#### **Issue #5: Reducing material content cost**

##### **Focus on eliminating deficient/ high maintenance equipment and sub-systems**

##### **Involve supplier base earlier in the design phase**

##### **Pre-qualify products and mature sub-systems**

- In a non-acquisition environment.

##### **Use just enough technology to satisfy requirements and mission**

## **Conclusions**

In the summation, it was acknowledged by the VIP hosts that there were striking similarities and differences between shipbuilding challenges in the US and Europe, but clearly sharing experiences, best practices and lessons learned could be mutually beneficial. To facilitate that process, planning has begun for a European shipbuilding summit in the next 6-9 months and subsequently a summit in Asia during 2011.

The importance of total ownership cost at this Summit suggests that this issue warrants the immediate attention of a joint committee of government, industry and consultants to address the challenges and potential solutions to reducing TOC across a complete lifecycle and value chain. If you want to contribute some of your time to this important initiative, please contact:

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The goal for this committee is to deliver a definitive, fact-based set of recommendations to the Navy and report back to the members of the GSES at its next summit.

