Global Shipbuilding Executive Summit III

White Paper

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Post-summit summary

The Global Shipbuilding Executive Summit (GSES) III, sponsored by the American Society of Naval Engineers (ASNE) in affiliation with Siemens PLM Software, was held on February 9, 2012. Building on prior summits, GSES III continued focus on the key shipbuilding issues of the day. In 2010, improving the affordability of new naval ships and reducing total ownership cost (TOC) were identified as top priorities. Those two topics were explored in greater detail during GSES II in 2011. The top six recommendations emerging from the second summit were as follows:

1. Build TOC fact-based models for each major ship class to help better understand cost drivers and decide where to focus initiatives to reduce TOC.
2. Implement Design-for-Manufacture and Design for Affordability.
3. Mandate Program Manager Longevity, and use a closed-loop detailing process to return personnel experienced in acquisition, technology and logistics back to Program Management Office leadership positions.
4. Mature design before production starts.
5. Make TOC count in the terms and conditions of each new contract.
6. Down-select the prime contractor earlier to involve the shipyard in the concept design process.

These recommendations (with the exception of #5) formed the basis for further discussion during GSES III.

Attendance at Summit III encompassed a broad cross-section of shipbuilding leaders from both government and industry. Participants included senior officials from the U.S. Navy and Coast Guard, representatives from the major U.S. shipbuilders and design agents, and members of the Royal Navy and Royal Canadian Navy. Ronald Kiss, President of ASNE, was the host for Summit III. Mike Schwind represented the sponsor, Siemens PLM Software.

The keynote speakers included RDML David H. Lewis, Program Executive Officer (PEO) for Ships, and Kevin Poitras, Senior Vice President for Engineering, Design and Business Development at General Dynamics Electric Boat. In his remarks, RDML Lewis noted that as of February 2012, PEO Ships has 22 ships under contract or in construction – going to 43 in 2013.

Given that, RDML Lewis said, “Production is king,” and his focus is on cost, schedule and performance for the ships in the construction backlog. Rear Admiral Lewis rejected the common wisdom that ships will always cost more over time, pointing out that in programs such as DDG 51, T-AKE and LCS cost has been decreasing with each additional ship. He noted that the 61st ship in the DDG 51 class, USS Spruance (DDG 111), cost less in real “checkbook” dollars than the lead ship in the class, Arleigh Burke. In addition, DDG 111 is a more capable ship than DDG 51.

RDML Lewis added that Government and industry have proven their ability to build capable, effective and affordable ships for the Fleet. Those programs experiencing downward-sloping cost curves have been marked by industry and government innovation, program stability and sufficient funding. He closed by
stating that good government-industry communication will be critical in replicating this success moving forward.

Mr. Poitras briefly related Electric Boat’s efforts to hold the construction costs of Block III Virginia-class submarines below their mandated $2 billion cap. He also noted the difficulties encountered in the past with both cost and schedule on the lead boats in a class, and how Electric Boat’s adoption of design-build has worked well to reduce and control these problems. One aspect that the company had not emphasized to the same degree, however, is lifecycle cost. Reduction in TOC is a major focus for the upcoming construction of Block IV, which will require the same kind of agreed upon cost targets, metrics and savings documentation that are being used to drive down construction costs.

3. Mandate Program Manager longevity, and use a closed-loop process to return personnel experienced in acquisition, technology and logistics back to Program Management Office Leadership positions.

4. Mature design before production starts.

5. Build TOC fact-based models for each major ship class to help better understand cost drivers and decide where to focus initiatives to reduce TOC.

After briefings of recommended courses of action from each roundtable, participants then voted on what they considered the most important new recommendations made this year. After tallying the votes, those recommendations were as follows:

1. Build class TOC models that relate to enterprise cost and which support an enterprise TOC model.

2. Design re-use/modularity, including the following associated points:
   • Ironclad interface control among all stakeholders
   • Partition of design among vendors
   • Facilitate construction/support configuration control
   • Facilitate modifications/upgrade without major impact to the hull and other systems

3. Improve interaction between production and engineering.

4. Need agreed upon TOC requirements for different phases.
   • For R&D, design, production, O&S reflecting cost drivers for acquisition, manpower, fuel, maintenance, sustainability, etc.

5. Accurately quantify through-life costs by building metrics that can be measured and calculated as a basis for tradeoffs between capital costs and O&M costs.


Top six GSES III recommendations

The Summit audience was subsequently distributed across ten tables (two tables eventually consolidated) to discuss the recommendations from GSES II and make further suggestions. The roundtable discussant topics were distributed into five categories:

1. Down-select the prime contractor earlier to involve the shipyard in the concept design process.

2. Implement Design-for-Manufacturing and Design-for-Affordability.
The following is a brief summary of all the recommendations, grouped according to issue:

**Down-select the prime contractor earlier to involve the shipyard in the concept design process.**

- Enable sustainment: Develop accurate lifecycle data models to allow tradeoffs between increased design/procurement costs and reduced lifecycle maintenance costs.
- Take advantage of shipbuilder buying power (multi-year) to fill the Navy supply system.
- Design collaboration early to bring together an expert team (constructors, support partners, operators, requirements owner).
- The prime contractor owns the concept and is incentivized to beat the TOC baseline during detailed design and construction.
- Implement Design-for-Manufacture and Design for Affordability.

**Improve interaction between production and engineering.**

- Design ships and systems to accommodate change.
- Performance – the Fleet is not getting a return on investment from existing 3D models and needs a standard interface to accept CAD.

**Mature design before production starts.**

- Initial design discipline – firm, realistic requirements from the start, reflected in the preliminary design and implemented on a realistic schedule.
- Design re-use/modularity, including the following associated points:
  - Ironclad interface control among all stakeholders
  - Partition of design among vendors
  - Facilitate construction/support configuration control
  - Facilitate modifications/upgrade without major impact to the hull and other systems
- Industrial base/shipyard readiness
- Design for future growth (modularity).

**Mandate Program Manager Longevity, and use a closed-loop detailing process to return personnel experienced in acquisition, technology and logistics back to Program Management Office leadership positions.**

- Enforce existing policy on PM tenure and manage the career paths of prospective PMs.
- Each PM should have a set billet structure and program track that protects the individual’s career (closed-loop detailing).
- Maintain rigid adherence to the four-year policy on PM longevity.
Build TOC fact-based models for each major ship class to help better understand cost drivers and decide where to focus initiatives to reduce TOC.

- Need agreed upon TOC requirements for different phases.
  - For R&D, design, production and Operations & Support (O&S) reflecting cost drivers for acquisition, manpower, fuel, maintenance, sustainability, etc.
- Need TOC estimating models with sufficient fidelity and implementing technology to confidently estimate the cost of alternative material solutions and design tradeoffs associated with performance, “producibility,” efficiency, reliability and maintainability.
  - Catalog, validate and integrate existing TOC models
  - Address sensitivity and uncertainty associated with concepts of operations (CONOPS), maintenance philosophy and service life assumptions
- Build class TOC models that relate to enterprise cost and which support an enterprise TOC model.
- Focused initiatives to drive commonality.
- Treat TOC as a key performance parameter (KPP) – a “forcing function” to get the needed authority and resources.

The Summit sponsors will share these recommendations with everyone who received an invitation, and they will brief these results to Navy and Coast Guard acquisition officials. The findings and recommendations also will be shared with naval allies around the world to help them reduce the costs of future joint fleet operations and improve logistics support interoperability and synergy. Additionally, ASNE, Siemens PLM Software and the Indian Maritime Foundation will jointly host an Indian Shipbuilding Executive Summit in New Delhi, India on March 28, 2012. The theme for this event will be “Enhancement of Naval & Commercial Ship Development Efficiency.” The Summit sponsors will soon initiate planning for the next Global Shipbuilding Executive Summit in Washington, D.C., in February 2013.

GSES III again highlighted the value inherent in the exchange of viewpoints between experienced industry and government shipbuilding leaders. As RDML Lewis stated, these Summits encourage high-level dialogue about the similar problems and issues being faced on both sides of the public-private divide. This year’s discussions and speakers highlighted procurement, construction and broader TOC issues, as well as the importance of determining a proper balance between them. As in past years, the focus on TOC was sharpened yet again in 2012, leading to a more focused set of recommendations to evaluate in 2013. Next year’s summit should yield even more specific, “actionable” recommendations that can inform future Navy and Coast Guard decisions.

If you have any comments about this report or recommendations for the 2013 summit, please contact ASNE at:
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