



# Editor's foreword

By Chris A. Ciuffo, Editor

## Open architecture and small business collaboration

### Lockheed Martin praises COTS as good for business

Back in my day (it seems like only last week), *COTS* was a four-letter word. Prime contractors like Boeing and Lockheed (before buying Martin Marietta) and Northrop (before Grumman) designed *stovepipe* systems and controlled the whole enchilada from software to hardware, and from operating systems to components. Even post-*COTS Mandate*, primes fought it, believing that their importance to the government was being whittled and that it wouldn't be long before Uncle Sam was shopping at Circuit City and Radio Shack for weapons systems. Hogwash.

However, progressive primes like Lockheed Martin (LM) with its Aegis program are using open standards such as VME in their weapons control system, Aegis display system, and command and decision system (see figure). But shockingly (feign surprise), LM discovered that using COTS middleware from GoAhead Software has earned them big-time brownie points with the U.S. Navy. In a recent interview I conducted, Jim Sheridan, director of the Aegis program at lead systems integrator Lockheed Martin, told me that COTS is good for business. That's because GoAhead's high-availability middleware is extremely cohesive with the Navy's core open architecture principles:

- Modular designs
- Reusable application software
- Interoperability among joint war fighting applications
- Life-cycle affordability
- Encouraging collaboration and competition

By moving from an exceedingly closed weapons system on 83 ships around the globe, Aegis, as recently installed on DDG 91 (USS Bunker Hill), is the first "mostly COTS" system of its kind that totally endorses the Navy's OA requirements. As you might expect, this has the Navy grinning from ear to ear. Even better, it puts LM in the catbird's seat on other naval programs such as DDG 1000 – and

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positions Aegis as the likely backbone for the "missile shield" President Bush wants in the Ballistic Missile Defense initiative.

Sheridan told me that five of the nine key Aegis subsystems in the figure (signal processor, radar control, display, C&D, and weapons/fire control) will all utilize either mainstream (meaning: available on the open market) or open architecture strategies starting with CG 52 (2008) and ending with DDG 51 (2012). Rome wasn't built in a day, and neither are cruisers and destroyers.

The Aegis Open Architecture relies heavily on large and small businesses – but small companies like GoAhead, Aonix, Gallium, RTI, Concurrent, Symmetricom, Wind River, and others play pivotal roles in the baseline subsystems. And increasingly, these subsystems are being leveraged by the Navy into other platforms, which happily feed back to Lockheed Martin with increased business and contracts. As Perry predicted: Everyone wins with COTS.

LM has had such a positively transformational experience with small business

success on Aegis that it has set up the *Technology Collaboration Center (TCC)* near the Navy Yard in D.C. With the motto of "encouraging collaboration and competition" (sound familiar?), the center's director of technology collaboration Bill McFarland emphasizes that the TCC is offered at "no cost to small businesses, academia, and labs." Part of the company's gung-ho attitude is probably due to their glowing success with GoAhead, whose SelfReliant HA middleware facilitated a working Aegis implementation in 30 days.

Clearly, Lockheed Martin is a true COTS believer – along with their customer the Navy. Who'd have thought COTS could move from force multiplier to business multiplier? Well, some of us knew it all along.

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