Owning the Technical Baseline —a Key Enabler

Agility as the Counterweight to Uncertainty and Change

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The basic acquisition environment involves constant change. The threat to United States interests is going to change, technology is going to change and warfighters will discover different ways to use their equipment. In order for weapon systems to accommodate these certain yet—in specific terms—often unpredicted future changes, we must design systems up front to be constantly modified, perhaps in ways that we may not be able to anticipate now but will discover in the future. This fundamentally means we must embrace adaptability as a basic precept for how we develop, procure and sustain our weapons systems to be effective for the warfighter over their life cycles.

The underlying metric for such agility and adaptability is speed. When we can develop and field capabilities fast, we must do so. Furthermore, agility and adaptability can be enabled by designing systems with modularity, well-designed standards and open-system architectures and protocols. Developing systems this way allows the

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rapid insertion of technology breakthroughs or new capabilities to address threat changes. We also must continuously prototype and experiment and bring together warfighter experts, analysts and technologists to learn what works, what doesn't work and, most important, to innovate. These things are what we emphasize in the Air Force and with our colleagues in the Department of Defense (DoD), industry and academia. These approaches are embedded in all five of our Air Force acquisition priorities:

- Get the high-priority programs right and keep them on track.
- Improve relationships and transparency with stakeholders.
- **Own the technical baseline for important programs.**
- Build on "Better Buying Power" (BBP) to improve business acumen and small business to achieve best program outcomes.
- Build to the long-term strategy—resiliency to peer competitor—and experiment and innovate.

This article highlights priority No. 3, "Own the Technical Baseline for important programs." Owning the technical baseline is essential to our future and it means the government program team, independent of the prime contractor, can make proper decisions to achieve successful acquisition outcomes. Examples include:

- Deep understanding of system and sub-system designs and architectures
- Ability to conduct end-to-end performance models of the system combined with a continuous technical effort to update and validate system models, using testing and engineering data
- Ability to continually assess and mitigate system's cyber vulnerabilities
- Ability to understand and actively mitigate technology and system integration risks

Additional Reading/References

America's Air Force: A Call to the Future (http://airman.dodlive.mil/files/2014/07/AF_30_Year_Strategy_2.pdf)

Enhancing Adaptability of U.S. Military Forces (http://www.acq.osd.mil/dsb/reports/EnhancingAdaptabilityOfUSMilitaryForcesB.pdf)

Driving in the Dark: Ten Propositions About Prediction and National Security (http://www.cnas.org/files/documents/publications/CNAS_Prediction_Danzig.pdf)

Development Planning: A Strategic Approach to Future Air Force Capabilities (http://www.nap.edu/catalog/18971/development-planning-a-strategic-approach-to-future-air-force-capabilities)

Performance of the Defense Acquisition System 2014 Annual Report (http://www.acq.osd.mil/fo/docs/Performance-of-Defense-Acquisition-System-2014.pdf)

- Quantitative understanding of how related legacy systems or the system being upgraded is used and how it performs operationally (e.g., reliability/availability, key performance metrics, etc.)
- Access to competent test designers and planners and the ability to competently conduct post-test analysis
- Ownership and active management of integrated master schedules and, as needed, software schedules
- Establishment and maintenance of open interface standards, with the ability of the government program office to compete block upgrades to the system

In some ways, our emphasis on owning the technical baseline seeks to overcome the residual undesirable effects of the acquisition workforce downsizing during the 1990s "acquisition reform" era. In those days, there was significant outsourcing of government capabilities and decision making to the prime contractor with a "thin" government program office. With the rejuvenation of the acquisition workforce over the last five years, enabled by programs such as the Defense Acquisition Workforce Development Fund, owning the technical baseline allows us to raise the bar to a higher level with a focus on a collaborative relationship in which the government and the prime contractor together own the knowledge of the weapon system and both entities can competently work together and with the government functioning as an able and informed customer. We are moving toward the best of all worlds—both the government and industry teams challenging and holding each other to the highest standard and getting the right acquisition outcomes.

Recently, I commissioned a National Academies study on the subject of "Own the Technical Baseline" to assess comprehensively where Air Force program offices are and to recommend ways to further expand this initiative (the resulting report was expected to be issued in May 2015). Owning the technical baseline also is being piloted across a dozen Air Force Major Defense Acquisition Programs, using goals and metrics developed collaboratively by the Deputy Assistant Secretary of the Air Force for Science, Technology, and Engineering (SAF/AQR) and Program Executive Office Directors of Engineering. Some of the early findings from the participating programs indicate there are common skill gaps within the government program offices in the system reliability, production and manufacturing. In addition, a preliminary observation indicates program offices need to be stood up and staffed earlier (years earlier, in some cases) than we traditionally do for new starts—essentially begin to own the technical baseline even before there is a completed Analysis of Alternatives.

Our specific approach regarding owning-the-technical-baseline implementation begins with each program chief engineer performing a self-evaluation of his or her program using a tool developed by SAF/AQR. The assessment tool is tailored per the program's acquisition phase and has seven areas to be reviewed and assessed: system design, interface definition and controls, system model, performance data, data rights and architecture, cost data and technical risks and/or issues. As part of the assessment, workforce needs and skill gaps are identified along with mitigation strategies (such as reliance on Federally Funded Research and Development Centers, expert support contractors or matrixed personnel from other program offices and laboratories). These gaps fold into the workforce rejuvenation effort that is an integral part of the Air Force Engineering Enterprise Strategic Plan. This assessment will be updated regularly and progress will be measured over time as we reclaim the technical baseline in each program. We are learning that some programs are very close today to what we would consider robustly owning the technical baseline; others must do more work to get there. In either case, we will expand this initiative systemically across all Air Force programs to make us the smart and effective buyer the warfighter and the taxpayer expect us to be.

As we continue to roll out this initiative, we find the concept of owning the technical baseline resonates with the workforce and industry. In many ways, it is very much aligned and tightly linked with the innovation and technology focus of the most recent Better Buying Power 3.0 Achieving Dominant Capabilities through Technical Excellence and Innovation. Air Force program offices must have the technical expertise and the tools to understand and own the technical baseline so it can effectively manage technical risks and produce the agile and adaptable capabilities we desire (e.g., modularity, open systems architectures, continuous competition, etc.). In other words, we cannot achieve our goals of developing, procuring and fielding adaptable and agile capabilities without our government program offices "owning the technical baseline."

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