Policy Note to Readers

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Section 804 of the fiscal year 2003 National Defense Authorization Act (Public Law 107-314) requires each military department to improve its software acquisition processes. The Air Force approach integrates Section 804 and ongoing systems engineering improvement activities to support our agile acquisition objectives of decreasing acquisition cycle time and improving our credibility in acquisition program execution. As a first step, we recently established policy to revitalize the software aspects of systems engineering. The policy identifies focus areas that we consider fundamental to developing realistic program baselines and promoting discipline in the acquisition and development of software-intensive systems. We plan to supplement the policy in the next few months with additional guidance, training, and other tools to support successful implementation of our acquisition improvement objectives.

UNDER SECRETARY OF THE AIR FORCE
WASHINGTON

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MEMORANDUM FOR SEE DISTRIBUTION   04A-003

SUBJECT: Revitalizing the Software Aspects of Systems Engineering
REFERENCE: Air Force Software-Intensive Systems Strategic Improvement Program (AFSSIP) memo dated 13 Jan. 2004.

In multiple programs across our acquisition communities, we have recognized systems engineering challenges over the past few years, and have taken steps to improve the implementation and effectiveness of our systems engineering processes.

This policy memorandum is intended to improve the efficiency and effectiveness of our acquisition processes and software management. These processes are applied as an integral part of our systems engineering and capability acquisition processes. To support our overall agile acquisition objectives, we expect you to address, as a minimum, the following software focus areas throughout the life cycle of your acquisition programs beginning with pre-Milestone/Key Decision Point A activities:

1. **High Confidence Estimates:** Estimate the software development and integration effort (staff hours), cost, and schedule at high (80-90%) confidence.

2. **Realistic Program Baselines:** Ensure cost, schedule, and performance baselines are realistic and compatible. Ensure the baselines support the disciplined application of mature systems/software engineering processes, and ensure software-related expectations are managed in accordance with the overall program's expectation management agreement. The program budget must support the high confidence estimates for effort (staff hours), cost, and schedule.

3. **Risk Management:** Continuously identify and manage risks specific to computer systems and software as an integral part of the program risk management process. Ensure the risks, impact, and mitigation plans are appropriately addressed during program and portfolio reviews.

4. **Capable Developer:** Identify the software-related strengths, weaknesses, and risks; domain experience; process capability; development capacity; and past performance for all developer team members with significant software development responsibilities. Consider this information when establishing program baselines and awarding contracts, and throughout the program execution.

5. **Developer Processes:** Ensure the entire developer team establishes, effectively manages, and commits to consistent application of effective software development processes across the program.

6. **Program Office Processes:** Ensure the program office establishes and employs effective acquisition processes for software, is adequately staffed, and consistently supports the developer team in the disciplined application of established development processes.

7. **Earned Value Management Applied to Software:** Continuously collect and analyze earned value management data at the software level to provide objective measures of software cost and schedule. The Earned Value Management System should support and be consistent with the software effort and schedule metrics.

8. **Metrics:** Employ a core set of basic software metrics to manage the software development for all developer team members with significant software development/integration responsibilities. Guidance for the core metrics is provided in the enclosure. Programs are encouraged to implement additional metrics based on program needs.

9. **Life Cycle Support:** Address sustainment capability and capacity needs during the system design and development phase, and balance overall system acquisition and sustainment costs. Ensure you plan, develop, and maintain responsive life cycle software support capabilities and viable support options.

10. **Lessons Learned:** Support the transfer of lessons learned to future programs by providing feedback to center level Acquisition Center of Excellence (ACE) and other affected organizations. Lessons learned information includes original estimates and delivered actuals for software size, effort, and schedule; program risks and mitigation approaches; and objective descriptions of factors such as added functional requirements, schedule perturbations, or other program events that contributed to successes and challenges.

These focus areas will be incorporated as appropriate in your Systems Engineering Plan, Integrated Program Summary, or acquisition plans. We also expect you to address these focus areas as applicable during Acquisition Strategy Panels and PEO portfolio reviews. PEOs may tailor the implementation of these focus areas as required and the appropriate Acquisition Executive will be notified of all tailoring.

Sample language and additional guidance will be available in November 2004 in an Air Force Software Guidebook. Our POCs are Mr. Ernesto Gonzalez, SAF/AQRE, 703-588-7846, Ernesto.Gonzalez@pentagon.af.mil, and Maj Mark Davis, SAF/USAL, 703-588-7385, Mark.Davis2@pentagon.af.mil.

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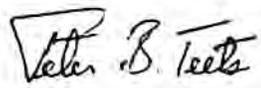
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