THE ASSISTANT SECRETARY OF THE NAVY
(RESEARCH, DEVELOPMENT AND ACQUISITION)
1000 NAVY PENTAGON
WASHINGTON DC 20350-1000

SEP 16 2008

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Department of the Navy Policy for Acquisition of Naval Software Intensive Systems

Successful development and acquisition of software is paramount for acquiring Naval warfighting and business systems. The Software Process Improvement Initiative (SPII) was chartered in 2006 in response to Public Law 107-314 Section 804 to evaluate existing policies and implement process improvements to enhance our ability to develop and acquire software without sacrificing the cost, schedule and performance goals of our acquisition programs.

The attached software process improvement policy, implements overarching practices for acquisition of systems with major software components and is applicable to both organic government software development and software development contracted to the private sector. Previously promulgated SPII policy regarding training, contract language, and measurement remain in effect and are synopsized in the attachment for convenience. Effective immediately, or to be implemented into the next major change order on existing contracts, the policies and processes will be applied as an integral part of acquisition systems engineering processes.

A key element for successful software acquisition improvement is institutionalization, using existing mechanisms wherever possible. The System Engineering Plan (SEP) and associated Systems Engineering Technical Review (SETR) processes provide the means to link software and hardware development and integrate software improvement processes throughout the acquisition timeline.

Specific policy elements are delineated in the attached policy. A companion guidebook to assist program offices is promulgated simultaneously with this correspondence. The point of contact (POC) for any revisions to this policy or the guidebook is the Assistant Secretary of the Navy (Research, Development and Acquisition) Chief Systems Engineer (ASN (RD&A) CHSENG).

Sean J. Stackley

SUBJECT: Department of the Navy Policy for Acquisition of Naval Software Intensive Systems

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As stated

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Department of the Navy Policy For Acquisition Of Naval Software Intensive Systems

1 Introduction

Successful development and acquisition of software is paramount for acquiring Naval warfighting and business systems. The Software Process Improvement Initiative (SPII) was chartered in 2006 to evaluate existing policies and implement process improvements to enhance our ability to develop and acquire software without sacrificing the cost, schedule and performance goals of our acquisition programs. This policy document outlines actions and processes to be followed by all program offices responsible for systems with major software components. This policy is additional to previously promulgated training, contract language, and measurement policies. Key policy elements include:

- Software process improvement management
  - Mandates use of IEEE/EIA 12207 as framework for software processes
- Contract language
  - Synopsizes previously promulgated policies
- Measurement
  - Synopsizes previously promulgated policy regarding four core metrics
- Personnel experience or training
  - Identifies functional disciplines for which DAWIA certification must be pursued

2 Software Process Improvement Management

The complexity of software acquisition and development dictates a well-understood framework within which both the program office and the developer can determine and follow commonly understood processes throughout the acquisition life cycle. A standard life cycle framework contributes to program and risk management by enabling a clear understanding of responsibilities and expectations. In addition, a standard framework provides the structure to define, control, and improve software life cycle processes across the Naval Enterprise.

Program offices will adopt IEEE/EIA 12207 as their standard life cycle framework. IEEE/EIA 12207 is an International Standard, adopted by DoD in 1998, that consists of processes for acquiring and supplying software products and services. IEEE / EIA 12207 does not stand alone but invokes a family of supporting IEEE / EIA standards that assist in interpreting and implementing 12207. IEEE / EIA 12207 is applicable from the government's initial planning stages through proposals, contract award and execution, and implementation / maintenance.

Because not all projects need to apply all of the processes, activities, and tasks that are defined by IEEE/EIA 12207, projects may tailor IEEE/EIA 12207 appropriately by removing those that are not relevant to the project. Also, projects may selectively add unique processes, activities, and tasks as appropriate.

Compliance with IEEE/EIA 12207 is defined as the performance of all the processes, activities, and tasks selected from this IEEE/EIA 12207 in the Tailoring Process for the software project. The performance of a process or an activity is complete when all its required tasks are performed in accordance with the pre-established criteria and the requirements specified in the contract as applicable.

Naval program offices are also responsible for specifying the minimum set of required processes, activities, and tasks, which constitute the contractor's compliance with this Standard. Rather than direct offerors to adhere to a specific approach however, Naval program offices should establish the context and general guidelines concerning their programs, and solicit the contractor base to propose their best-effort strategies. These strategies should be defined in a Software Development Plan (SDP) to be submitted as a part of their proposals, as required by ASN RDA policy memo of 17 November 2006.

3 Contract Language

On 17 November 2006, as a part of the Software Process Improvement Initiative (SPII), ASN RDA issued a memorandum directing the use of standard contract language. The memo directed that the language be included in all contracts that contain software development, acquisition and/or life cycle support, beginning with RFPs issued after January 1, 2007. On 13 July 2007 ASN RDA issued an additional policy memorandum amplifying the November 2006 policy by providing further detail regarding tailorable and non-tailorable language as well as assistance in understanding the software engineering processes behind the directed contract language. This policy is applicable to all programs that involve the handling of software, including its development, maintenance, enhancement, and configuration. This scope recognizes that even small changes to software code can result in significant changes to software system behavior, safety, security, and quality. Consequently, it is necessary for developers to define and follow disciplined and appropriate processes.

The directed policy language is intended to provide to the Navy sufficient visibility into contractors' development processes so that the Navy may be confident that there are well-documented, effective software processes and continuous process improvement practices in place. The language will facilitate the Navy's ability to make an informed source selection decision, and facilitate monitoring and tracking of software development discipline and process improvement after the contract is awarded. Incorporation of this language into RFPs and contracts should conform to the current practice and requirements

of each SYSCOM and acquisition authority across the Naval Enterprise. However, certain portions of the language are crucial and must be included in RFPs without alteration.

The crucial elements of the standard language address

- the requirement that offerors submit a proposed Software Development Plan (SDP) with their proposals, and after contract award, submit a completed SDP (based on the proposed SDP) as a CDRL subject to Government review and approval.
- the information content of the SDPs, which must follow the framework of IEEE/EIA Std 12207 regarding subject content, level of detail, and completeness.
- the requirement that, after contract award, the SDP will serve as the sole governing plan for the software development effort.
- the requirement that as a part of continuous process improvement, the SDP will be periodically evaluated and updated, subject to Government review and approval.

The tailorable elements of the language are:

- where the language is placed in the RFP
- the format of the SDP (including whether it needs to be a single volume or may consist of multiple volumes)
- the specific elements of IEEE/EIA 12207 that must be included, as based on the needs of the system to be acquired and its associated work content

The Policy language requires that offerors and their subcontractors (if any) specify their proposed software approach in an SDP to be submitted with their proposal, and to use the IEEE/EIA 12207 standard as a basis for defining their approach. The intent is not to change their internal standards and practices, but rather to establish a standardized way of describing these standards and practices to the Navy. While IEEE/EIA 12207 covers the entire software development life cycle, offerors need to complete only those areas which are applicable for the software effort. In particular, contracts that are small and focused can satisfy the policy with minimal effort by developing SDPs that address the specific work to be performed.

The Policy language also specifies the required characteristics and content of the SDP. The language describing the plan contents may be placed into a DID for the SDP, but alternately may be included elsewhere at the option of the acquisition authority. The information required may be augmented by the Government as appropriate.

It is important to note that there is no requirement that specific IEEE/EIA 12207 documents need to be created, just that their information content must

be provided in some form, as appropriate for the proposed work effort. The way these are packaged can be tailored by the Government or by the offerors, based on their organizational practices and based on the work effort. However, all information relating to the software development processes, activities, tasks, techniques, and tools to be used on an effort must be described.

4 Measurement

Metrics are a critical risk management mechanism for successful acquisition of Naval systems and platforms. Metrics provide management visibility into the software development process. The metrics should clearly portray variances between planned and actual performance, provide early detection or prediction of situations that require management attention, and support the assessment of the impact of proposed changes on the program. The following minimum set of core foundation metrics is to be implemented in all software intensive systems:

- Software Size
- Software Organization
- Cost/Schedule (WBS focus on software)
- Software Quality

Program offices and developers should agree upon and establish additional metrics or means of insight to address software issues deemed critical or unique to the program. Measurement policy promulgated in July 2008 provides further detail regarding implementation of the four core metrics.

5 Personnel experience or training

The sound application of modern software technologies and the use of sound software engineering practices over the acquisition life cycle is an important element of program execution. It is imperative our workforce understand software process and technology fundamentals central to their functional roles.

To ensure program office organizations include workforce trained in essential core software competencies, the SPII has examined software human resources with a holistic view of identifying fundamental functional disciplines, determining necessary competencies and knowledge, and identifying training to satisfy those requirements.

- *Functional disciplines:* The following six functional disciplines provide the core focus areas for program office attention to software training: Program Management, Systems Engineering, Test & Evaluation, Logistics, Contracting, and Legal.
- *Competencies:* ASN RDA CHSENG will continue to participate with OSD / DAU – led software competency reviews to advocate for identification and inclusion of Naval software acquisition requirements

- *Training:* Necessary courses will be as defined by Defense Acquisition Workforce Improvement Act (DAWIA) Level I/II/II certification for appropriate career fields. Program managers will ensure their functional organization includes personnel meeting DAWIA certification for the six functional disciplines.

6 Summary

The policy elements discussed above shall be incorporated by all program offices responsible for systems with major software components at the next contract or contract modification. Final approval of the application of software improvement processes in acquisition programs rests with the appropriate Milestone Decision Authority (MDA).