

CONSULTING ON ACQUISITION ISSUES AND NEEDS

The SEI engages directly with federal defense agencies (the Department of Defense and the military services), intelligence agencies, and other federal government organizations that acquire software and software-intensive systems. The purpose of these engagements is two-fold:

- help organizations meet their business and mission objectives
- encourage and advance the adoption of the best software engineering practices, as developed by the Software Engineering Institute

Direct Support

An SEI engagement can consist of direct support for some activities, tools, and methods.

Acquisition Process Improvement

Whether you're using Lean, Six Sigma, Theory of Constraints, AFSSO 21, or other process improvement methods, the SEI can help. The SEI works directly with acquisition programs and organizations to help define a set of measurable improvement objectives, analyze for improvement, and implement changes and control mechanisms for long-term improvement.

Support for Software Acquisition and Systems Engineering Activities

The SEI works directly with program managers and their staffs to help them achieve their objectives. Teams of SEI technical experts work in acquisition environments in the Army, Navy, and Air Force, as well as with other DoD and civil agencies, applying SEI products and services as well as other industry best practices. The SEI supports a wide range of activities that include identifying and mitigating risk, benchmarking and improving acquisition processes, implementing software and systems engineering best practices, and more.

Strategic Planning

The SEI helps acquisition programs develop acquisition strategies, and conducts hands-on workshops before and after contracts are awarded.

Acquisition Strategy Planning Workshop

Developing an acquisition strategy is a crucial component of acquisition planning. Acquisition-improvement experts from the SEI help workshop attendees gain a deeper understanding of a program's software-acquisition characteristics and the drivers that affect that program's strategic choices. In addition, participants learn how to use the Acquisition Strategy Development Tool to either formulate acquisition

strategies for a new program or evaluate the appropriateness of strategies that a program is already executing.

IT Strategic Planning

A well-founded information technology (IT) strategic plan communicates the mission, vision, objectives, values, and critical success factors for the organization's enterprise architecture and future products and services. The SEI helps organizations define and articulate an effective IT strategy from a systems perspective. SEI experts also consider the mechanisms for governance and focus on aligning the IT strategy with organizational business objectives.

Pre- and Post-Contract Award Workshops

SEI staff members help a program's personnel prepare for the request-for-proposal (RFP) process, reviewing and discussing potential pitfalls and problems. After contract award, the SEI can facilitate workshops between the government and the selected contractor team as they define program-specific processes in areas that are key to the success of the program, such as engineering practices, program management, communications, and risk and issue management.

Assessments, Reviews, and Evaluations

For many organizations, the most valuable engagement with the SEI comes in the form of a program assessment, review, or evaluation. The SEI has developed a valued reputation as a skilled, fair, and neutral examiner of software acquisition programs.

Independent Technical Assessments

Independent technical assessments (ITAs) uncover the root causes of problems affecting software-intensive programs, and provide recommendations that maximize a program's strengths and minimize and mitigate its risks. ITAs are typically initiated by a system program director, program executive officer, or other acquisition official. ITA teams comprise SEI staff members and visiting scientists with a mix of expertise who conduct a series of interviews with program stakeholders and deliver a briefing and recommendations.

Software Risk Evaluations

A software risk evaluation provides program managers with a mechanism to anticipate and address program risks. This evaluation is used to identify and categorize specific program risks emanating from products, processes, management, resources, and constraints. The program's staff members participate in the identification, analysis, and mitigation of risks that could affect their development effort.

Request for Proposal (RFP) Preparation and Reviews

The language used in a formal request for proposal (RFP) makes a critical difference in the quality of the proposals received and ultimately the success of an acquisition program. The SEI is adept at developing RFP language, including sample language for a variety of specific clauses relevant to software-intensive acquisition. For example, some proposals should specifically address the importance of software architecture, process improvement, the software test and evaluation approach, software measurement needs, and requirements. Additionally, the SEI works directly with acquirers to improve RFP processes and capabilities, conducting pre-award workshops to help identify and mitigate risks by evolving the RFP package. After the award, the SEI helps establish expectations and process interactions between the acquirer and developers.

Source-Selection Reviews

The SEI supports the proposal-evaluation phase of the source-selection process by providing technical reviews of the submissions, with an emphasis on software-related issues. Experienced SEI staff members help programs prepare to evaluate proposals, judge them against the criteria set forth in the solicitation, assist with past performance and cost evaluations, and more.

Measurement-Plan Evaluations

Effectively monitoring a contract requires that a program have in place an effective, customized measurement system. When a program's measurement system includes consistent collection of metrics and analysis for decision making and fact-based planning, it can operate as an effective early-warning system for program problems. The SEI helps programs create a system for recording metrics data so that they can use reliable historical data as a basis for more accurate program estimates.

System and Software Requirements Architecture Reviews

The SEI works with project stakeholders to ensure that customer requirements, product and architecture requirements, and analysis and validation processes reflect the fundamental needs that drive programs, from both mission and business perspectives. In addition, the SEI advises programs on how to manage requirements and architecture changes, maintain traceability and change history, and evaluate the impact of changes from the viewpoint of the stakeholders.

Quality Assessments of System Architectures and their Requirements (QUASAR)

The SEI Quality Assessment of System Architectures and their Requirements (QUASAR) assessment method provides a practical way to determine if a system's architecture, including its subsystems, meets quality requirements. SEI technical staff members help architects formulate claims, build arguments, and gather evidence to demonstrate to the program office and other stakeholders that their architectures possess sufficient quality.

Testing-Approach Evaluation

The testing approach for a software-intensive system has a significant impact on the ultimate quality of the delivered system. SEI experts help to ensure an appropriate approach to software testing by reviewing the system-test approach. Conducting an evaluation ensures appropriate test coverage, traceability to requirements, testing for COTS products, visibility into contractor testing, testing of both quality and functional requirements, and integration of software testing into the overall test strategy.

Sustainment-Readiness Review

A sustainment-readiness review can help an organization determine its overall software maintenance plan, whether its software is ready for sustainment, and whether sufficient artifacts exist. Technical experts from the SEI conduct sustainment-readiness reviews to identify potential issues with a project entering into sustainment and to recommend actions for preparing a project for sustainment.

Document Reviews

The quality, completeness, and level of detail of milestone document deliverables have a substantial impact on a program's ability to execute software development. Experts in many different areas of systems and software expertise can provide or augment the technical review of documents produced by both the program office and the contractor. Types of documents that can be reviewed include those emanating from the acquisition strategy as well as the transition and operations plans.

Contact Us

Software Engineering Institute
4500 Fifth Avenue, Pittsburgh, PA 15213-2612

Phone: 412/268.5800 | 888.201.4479

Web: www.sei.cmu.edu | www.cert.org

Email: info@sei.cmu.edu

Copyright 2015 Carnegie Mellon University

This material is based upon work funded and supported by the Department of Defense under Contract No. FA8721-05-C-0003 with Carnegie Mellon University for the operation of the Software Engineering Institute, a federally funded research and development center.

Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the United States Department of Defense.

NO WARRANTY. THIS CARNEGIE MELLON UNIVERSITY AND SOFTWARE ENGINEERING INSTITUTE MATERIAL IS FURNISHED ON AN "AS-IS" BASIS. CARNEGIE MELLON UNIVERSITY MAKES NO WARRANTIES OF ANY KIND, EITHER EXPRESSED OR IMPLIED, AS TO ANY MATTER INCLUDING, BUT NOT LIMITED TO, WARRANTY OF FITNESS FOR PURPOSE OR MERCHANTABILITY, EXCLUSIVITY, OR RESULTS OBTAINED FROM USE OF THE MATERIAL. CARNEGIE MELLON UNIVERSITY DOES NOT MAKE ANY WARRANTY OF ANY KIND WITH RESPECT TO FREEDOM FROM PATENT, TRADEMARK, OR COPYRIGHT INFRINGEMENT.

[Distribution Statement A] This material has been approved for public release and unlimited distribution. Please see Copyright notice for non-US Government use and distribution.

Internal use:* Permission to reproduce this material and to prepare derivative works from this material for internal use is granted, provided the copyright and "No Warranty" statements are included with all reproductions and derivative works.

External use:* This material may be reproduced in its entirety, without modification, and freely distributed in written or electronic form without requesting formal permission. Permission is required for any other external and/or commercial use. Requests for permission should be directed to the Software Engineering Institute at permission@sei.cmu.edu.

* These restrictions do not apply to U.S. government entities.

Carnegie Mellon® is registered in the U.S. Patent and Trademark Office by Carnegie Mellon University.

DM-0004487