



Using CMMI with Defense Acquisition

Providing a Framework
for Achieving Desired Outcomes



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Defense Acquisition: 30 Oct 2002 Interim Guidance

- Deputy Secretary of Defense interim guidance
 - 17 pages (plus tabs)
 - in place until revision in Jan 2003
- Cancelled:
 - DoD Directive 5000.1, “The Defense Acquisition System”
 - DoD Instruction 5000.2, “The Operation of the Defense Acquisition System”
 - DoD 5000.2-R, “Mandatory Procedures for Major Defense Acquisition Programs and Major Automated Information Systems”

Defense Acquisition: 30 Oct 2002 Interim Guidance

- Decentralize Responsibility
- Tailoring
 - Consistent with common sense, sound business management practice, applicable laws and regulations
- Innovation, Continuous Improvement, & Lessons Learned
 - Continuous examination and adoption of innovative practices – including best commercial practices...
- Technology Development and Transition
- Reduced Cycle Time
- Collaboration
 - Integrated Product Teams
- Interoperability

Defense Acquisition: 30 Oct 2002 Interim Guidance

- Information Superiority and Information Assurance
- Research and Technology Protection
- Intelligence Support
- Performance-Based Acquisition and Logistics
- Knowledge-Based Acquisition
- Competition
- Systems Engineering
- Products, Services, and Technologies
- Integrated Test & Evaluation
- Total Systems Approach
- Program Goals

Defense Acquisition: 30 Oct 2002 Interim Guidance

- Legal Compliance
- International Agreements
- Cost and Affordability
- Cost Realism
- Cost Sharing
- Program Stability
- Program Information
- Independent Operational Test Agency
- Streamlined Organizations
- Professional Workforce

DoD Committed to Promoting Mature Development Processes

No explicit guidance is in Interim Policy on Process Capability/Maturity

DoD's objectives remain:

- program managers should have alternative mechanisms to evaluate process capabilities;
- b) organizations should not be required to use a specific model or standard* in having their process capabilities independently evaluated, and
- c) bidders may be considered in source selections regardless of findings associated with independently-led appraisals
 - appraisals provide information that support decision making and risk mitigation

* This guidance clarification is not intended to mandate use of any particular standard, model, or appraisal method; rather, this allows use of alternative methods that use similar criteria for evaluating process capabilities.

OSD Support for CMM-based Process Improvement/Appraisal

- Key sponsor of CMMI
 - Participates through three members on the CMMI Steering Group
 - Provides guidance; sponsors and funds the SEI, the CMMI Steward
 - Provides advocacy in various communities of practice
 - Coordinates with the Services to provide implementation guidance
- Directed assessment & evaluation methods be integrated
 - SCAMPI Ver. 1.1 is an integrated Appraisal Method
- Working with SEI and Services to develop CMMI implementation aids
 - Refining criteria for Registered Appraisals to further encourage reuse
 - Sponsoring cost/benefit analysis of appraisal methods
 - Co-sponsoring efforts to develop SCAMPI Class B and C methods
 - Working with industry & other Federal agencies on discipline extensions
- Surveyed ACAT 1 program offices about previous CMM Level 3 policy
 - Policy was implemented, but some clarifications needed
 - Industry has embraced process improvement and capability maturity
 - Systems engineering is considered as important as software engineering

Why CMM Level 3 Criteria Has Been Used for Evaluating Capabilities

- At start-up, projects in level 3 organizations should be expected to tailor practices from standard organizational process assets to meet the needs.
- Defined, repeatable processes enable more realistic bids and project control (data from multiple companies*)
 - “less than level 3” projects normally overrun cost and schedule while cost and schedule are brought more in line for “level 3 & higher” organizations
 - Lower maturity level projects have more defects causing more rework

* “A Business Case for Software Process Improvement Revised: Measuring Return on Investment from Software Engineering Management,” Data and Analysis Center for Software (DACS) State-of-the-Art Report, Sep 1999 <http://www.dacs.dtic.mil/techs/roispi2>

Standard CMMISM Appraisal Method for Process Improvement (SCAMPISM) Ver 1.1

- SCAMPISM is designed to provide benchmark ratings relative to Capability Maturity Model® Integration (CMMISM) models.
 - It is applicable to a wide range of appraisal usage modes, including both internal process improvement and external capability determinations.
 - It satisfies all of the Appraisal Requirements for CMMI (ARC) requirements for a Class A appraisal method
 - It supports the conduct of ISO/IEC 15504 assessments.
- SCAMPI Method Definition Document (MDD) describes the requirements, activities, and practices associated with each of the processes that compose the SCAMPI method.
 - It is intended to be one of the elements of the infrastructure within which SCAMPI Lead Appraisers conduct a SCAMPI appraisal.
 - Precise listings of required practices, parameters, and variation limits, as well as optional practices and guidance for enacting the method.
 - Overview of SCAMPI's context, concepts, & architecture.



SCAMPI-Related Documents

- SCAMPI v1.1 Method Definition Document (MDD) is available via SEI web site
- SEI Technical Note on SCAMPI v1.1 Use in Supplier Selection and Contract Monitoring made available April 2002 for Lead Appraiser training
- SCAMPI Method Implementation Guide (MIG) for Government Source Selection & Contract Process Monitoring Handbook (CMU/SEI-2002-HB-002)
 - released in Sep 2002
 - provides guidance for use by Government personnel and their supporting organizations for fulfilling the objectives of the SCAMPI method in their acquisition environments.

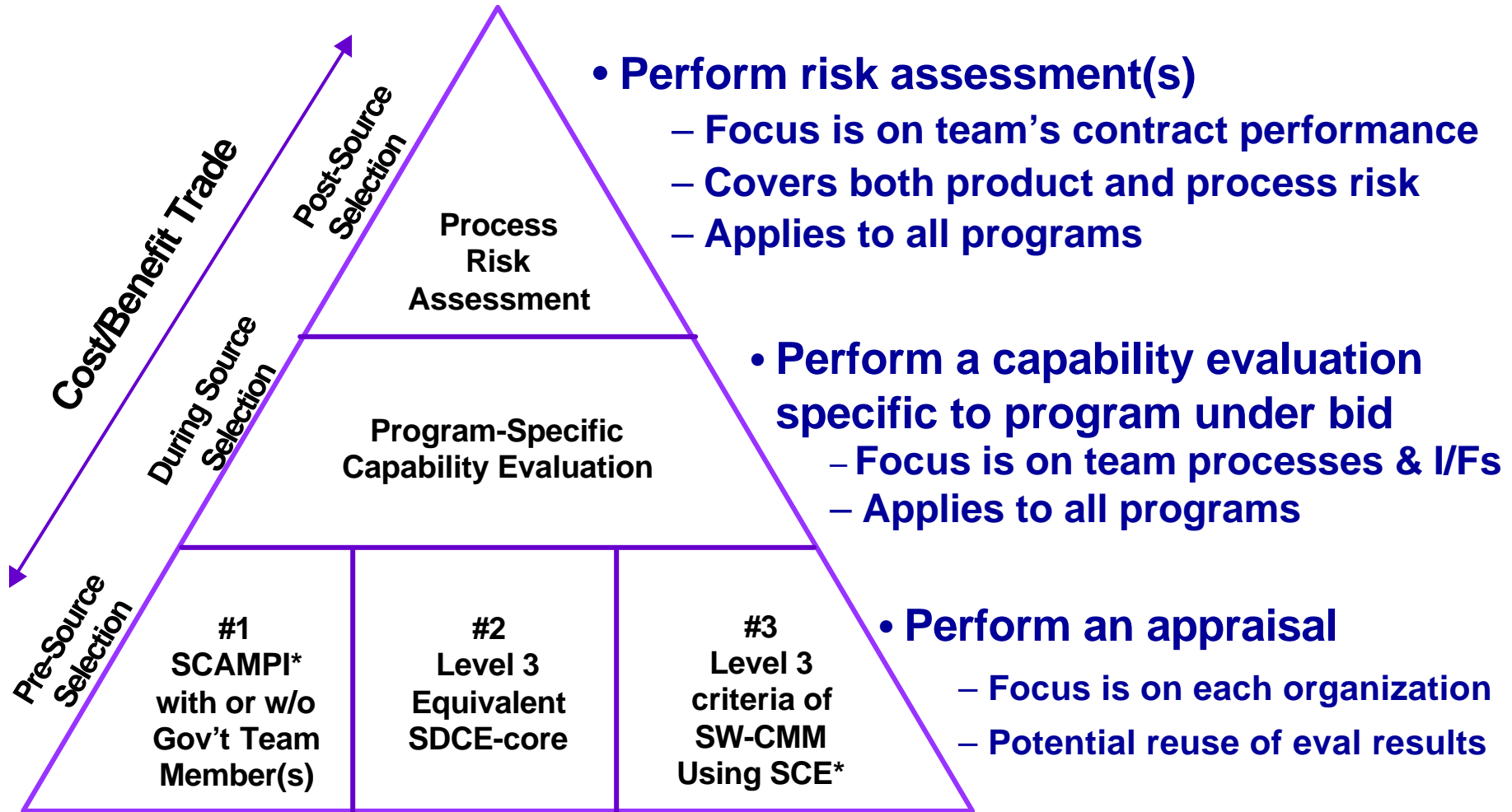
Use of CMM-based Appraisals

- CMM-based appraisals provide objective information to project managers:
 - to support decision making
 - to support risk mitigation efforts
- It is unlikely that any model or appraisal method will be specified in DoD policy
 - Defense programs will continue to use the tools that program managers (and their staffs) believe contribute the most value to achieving program objectives, from a cost/benefit perspective
 - DoD Policy encourages “Tailoring”
 - Consistent with common sense, sound business management practice, applicable laws and regulations
 - DoD Policy encourages Innovation, Continuous Improvement, & Lessons Learned
 - Continuous examination and adoption of innovative practices – including best commercial practices...

CMM-Related Implementation Guidance

- Further information related to use of CMMs to be found at <http://www.acq.osd.mil/sts/sis>.
 - Models
 - Implementation Guidance:
 - Appraisal Methods -
 - SCE – Software Capability Evaluation
 - » SDCE – Software Development Capability Evaluation
 - Independently-led SCAMPI – Standard CMMI Appraisal Method for Process Improvement
 - Independently-led Appraisals (criteria/considerations)
 - Government participation in appraisals (criteria & registration)
 - Reuse of Appraisals
 - Template/Requirements for Risk Mitigation Plan/Strategy
 - FAQs
 - Areas for discussion and feedback

Selection of Appraisals Commensurate with Program Risk



* CBA-IPI results might be considered for reuse

Registration of Cooperative Government/Industry Appraisals

Registration of cooperative appraisals

- Can now be processed for the purpose of encouraging reuse of these appraisals as part of applicable Government source selections.
- This is a new feature being added to the SEI Appraisal Program.

A registration validates that:

- the appraisal package submitted to the SEI met the requirements of the particular appraisal method used (i.e., SCAMPISM, CBA IPI, or SCE),
- an SEI Authorized Lead Appraiser led the appraisal,
- the Lead Appraiser was independent of the organizational entity, and
- at least one Government Participant was an SEI Authorized Lead Appraiser or Candidate Lead Appraiser (at least two trained Government participants should be on the appraisal team).

These registered appraisals may be submitted by an organizational entity

- to the Government (e.g., DoD)
- as evidence of appraisal of entity's process maturity at referenced time.

Registrations are valid for a two year period from the date of appraisal*

*The registration does not certify or otherwise validate the maturity level reported in the appraisal package, nor guarantee the performance of the organizational entity in the past or future. Government retains right to independently verify.

For further information contact SEI Customer Relations at 412-268-5800 or customer-relations@sei.cmu.edu

CMMISM Evolution



- CMMISM will continue to evolve to better address needs of those delivering software-intensive systems
 - Address the total scope of functional disciplines that must be brought together in ‘delivery’ capabilities in an integrated team
 - Ensure greater participation from acquisition-related organizations to improve DoD project managers’ ability to work with contractors with mature process capabilities
- Additional disciplines and process improvement will continue to be addressed within the context of the CMMI framework
 - Address practices from various communities of practice
 - Address needs of various user communities
- Sponsor CMMISM transition enablers
 - Mappings to standards
 - Guidebooks for specific domains
 - Alternative appraisal methods
 - Implementation and training aids

Contact Information

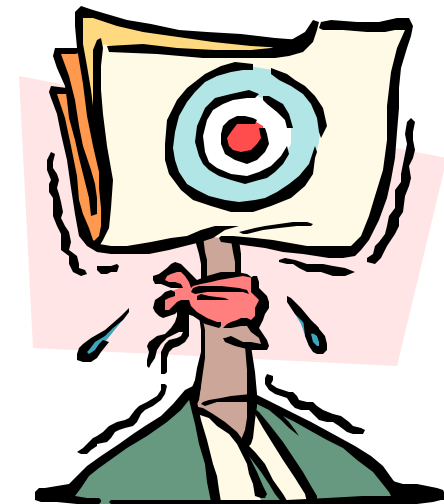


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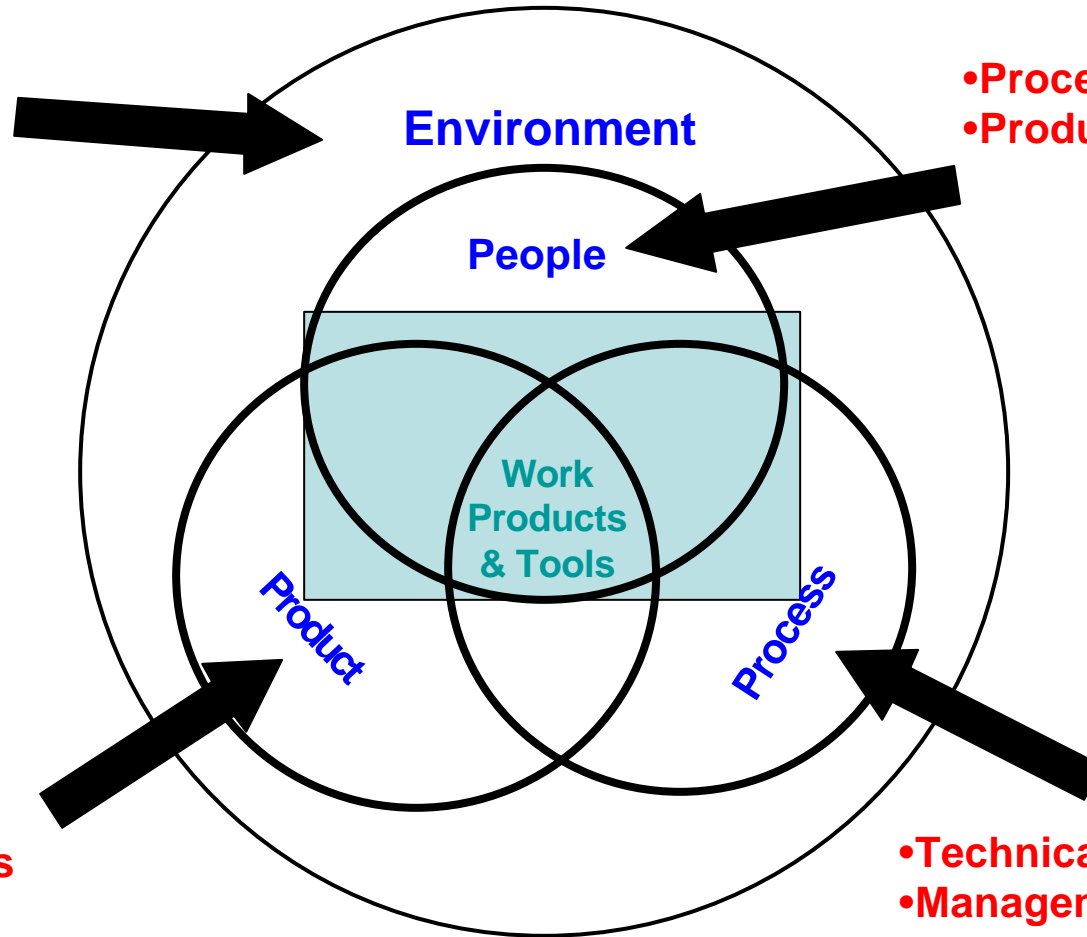


SCAMPI Capability Evaluation: Supplier Selection & Contract Monitoring

- SCAMPI typically will be used in two different environments within acquisitions:
 - (1) source selection and (2) contract monitoring.
 - Supplier source selection, the application for which SCE was originally developed, and which SCAMPI will replace, has been in use since 1987
 - Contract monitoring
 - current trends have seen a consistent application of SCE in the post-contract award environment;
 - commercial sector of the software community has been applying SCE in the selection of subcontractors and teaming partners.
 - It is expected that these applications will continue with the use of SCAMPI.

Range of Appraisals: Scope and Focus of SCAMPI vs Others

- Enterprise
- Finance
- Customers
- Project Office(s)

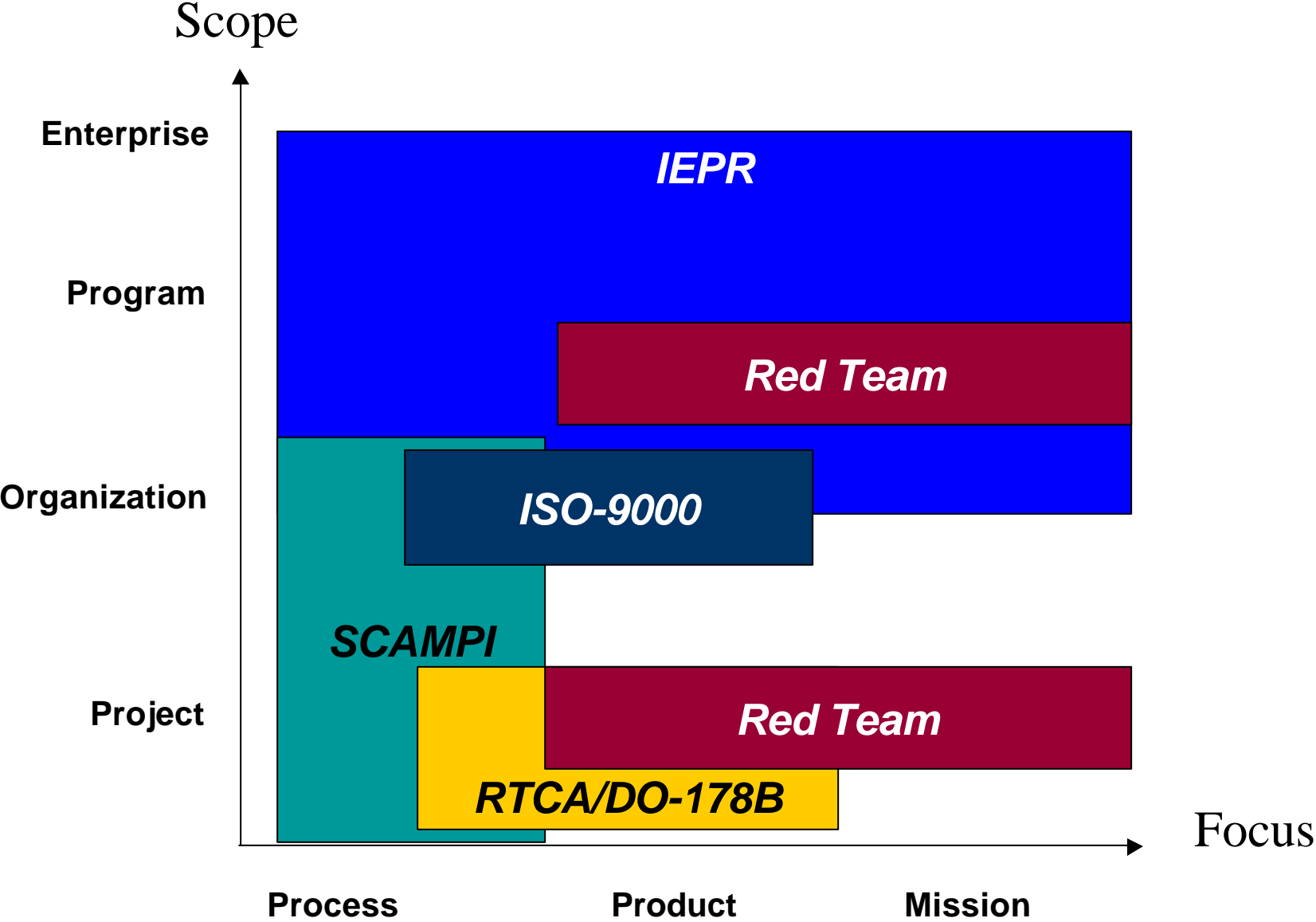


- Process Knowledge
- Product Knowledge

- Deliverables (-ilities)


- Technical Processes
- Management Processes

Comparing Some Existing Appraisal Methods



Previous DoD 5000.2-R Policy on CMM (now superceded by Interim Guidance)

Initiated 26 Oct 99



THE UNDER SECRETARY OF DEFENSE
3010 DEFENSE PENTAGON
WASHINGTON, DC 20301-3010

26 OCT 1999

MEMORANDUM FOR COMPONENT ACQUISITION EXECUTIVES
DIRECTOR OF BALLISTIC MISSILE DEFENSE ORGANIZATION


SUBJECT: Software Evaluations for ACAT I Programs


It is DoD policy that software systems be designed and developed based upon software engineering principles. This includes the selection of contractors with the domain experience in developing comparable software systems, a successful past performance record, and a demonstrable mature software development capability and process. It also requires a software measurement process to plan and track the software program, and to assess and improve the development process and associated software product.

Software development and performance is an integral component of advanced defense systems. Accordingly, it will be a technical requirement for contract that each contractor performing software development or upgrade(s) for use in an ACAT I program will undergo an evaluation, using either the tools developed by the Software Engineering Institute (SEI), or those approved by the DoD Components and the DUSD(S&T).

At a minimum, full compliance with SEI Capability Maturity Model Level 3, or its equivalent level in an approved evaluation tool, is the Department's goal. However, if the prospective contractor does not meet full compliance, a risk mitigation plan and schedule must be prepared that will describe, in detail, actions that will be taken to remove deficiencies uncovered in the evaluation process and must be provided to the Program Manager for approval. The Deputy Under Secretary of Defense (Science & Technology) will define Level 3 equivalence for approved evaluation tools. The evaluation will be performed on the business unit proposed to perform the work. The reuse of existing evaluation results performed within a two-year period prior to the date of the government solicitation is encouraged.

This policy is effective immediately and will be incorporated into the current DoD 5000 series rewrite.


J. S. Gansler



- Contractor selection
 - Domain experience
 - Past performance
 - Mature software process
 - Measurement program in place
- Evaluation
 - SEI SW-CMM Level 3 compliance, or equivalent (SDCE)
 - Risk mitigation plan for deficiencies
 - Equivalent tools approved by DUSD(S&T)
 - Must be performed on business unit proposed to do the work
 - Reuse of evaluation results within a two-year period encouraged