

Slides From ATI Professional Development Short Course
CSEP Acquisition Extension Exam Preparation Course

Instructor:

William “Bill” Fournier

ATI Course Schedule: <http://www.ATCourses.com/schedule.htm>

ATI's CSEP Acquisition: http://www.atcourses.com/CSEP_Acquisition_Preparation.htm

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CSEP Acquisition Preparation

September 17, 2010

Chantilly, Virginia

\$650 (8:30am - 4:00pm)

"Register 3 or More & Receive \$100⁰⁰ each Off The Course Tuition."

NEW!

CSEP Acquisition Prep is designed to complement CSEP Preparation – Consider taking them together.

Summary

Professor of Engineering Management rating is a useful and coveted milestone in the career of a DoD systems engineer, demonstrating knowledge, education and experience that are of high value to systems organizations. The certification requires passing an extensive examination based on the Defense Acquisition Guidebook Chapter 4. This course provides you with the detailed knowledge and practice that you need to pass the CSEP Acquisition examination. This can be taken after the CSEP Preparation exam.

Instructor

Mr. William "Bill" Fournier is Senior Software Systems Engineering with 30 years experience, the last 11 for a Major Defense Contractor. Mr. Fournier taught DoD Systems Engineering full time for over three years at DSMC/DAU as a Professor of Engineering Management. Mr.



Fournier has taught Systems Engineering at least part time for more than the last 20 years. Mr. Fournier holds a MBA and BS Industrial Engineering / Operations Research and is DOORS trained. He is a certified CSEP, CSEP DoD Acquisition, and PMP. He is a contributor to DAU/DSMC, and INCOSE publications.

What You Will Learn

- How to pass the CSEP acquisition examination!
- Details of the DAG chapter 4, the source for the exam.
- Your own strengths and weaknesses, to target your study.
- The key processes and definitions in the DoD SE language of the exam and differences from INCOSE handbook terminology.
- How to tailor the DoD SE processes.
- Five rules for test-taking.

Course Outline

1. Introduction. What is the CSEP Acquisition and what are the requirements to obtain it? Terms and definitions. Basis of the examination. Study plans and sample examination questions and how to use them. Plan for the course. Introduction to the DAG. Self-assessment quiz.

2. Differences between CSEP and CSEP Acquisition. Terminology, philosophy, policy and approaches between DoD DAG and INCOSE V3.1 SE handbook.

3. DOD Systems Engineering Overview. From user capability needs to system specifications to system deployed and eventually disposal. This covers section 4.0 of DAG.

4. Systems Engineering in DOD Acquisition Process. The DoD processes that take a system from concept to operation, maintenance and disposal. Stakeholder requirements and technical requirements, including concept of operations, requirements analysis, requirements definition, requirements management. Architectural design, including functional analysis and allocation, system architecture synthesis. Implementation, integration, verification, transition, validation, operation, maintenance and disposal of a system. This covers section 4.1 in the DAG.

5. SE Process Implementation and Activities. Technical management and the role of systems engineering in guiding a project. Project planning, including the Systems Engineering Plan (SEP), Integrated Product and Process Development (IPPD), Integrated Product Teams (IPT), and tailoring methods. This covers section 4.2 in the DAG.

6. SE in System LC Phases. DoD Life cycle phases and what activities should happen in each phase and prior to the next milestone. This is the exam largest area and covers section 4.3 in DAG.

7. SE Decisions. DoD Systems Engineering decisions and design considerations like open systems, HIS, RMA, supportability, COTS, ESOH etc. This covers section 4.4 in the DAG.

8. SE Execution. It includes technical, cost and schedule oversight methods and techniques. Also covers general knowledge management. This covers section 4.5 in the DAG.

9. SE Resources. This provides links to resources in government, industry and academia. This covers section 4.6 in the DAG.

AFTER-CLASS PLAN. Study plans and methods. Using the self-assessment to personalize your study plan. How to use the sample examinations. How to reach us after class and what to do when you succeed.

Module 1- Introduction

- Administration/Agenda
- Course Objectives
- CSEP Acquisition Extension Examination
- Defense Acquisition Guidebook (DAG) Nov. 2004
- Changes in the latest DAG
- Sample Questions
- Self Assessment

Course Objectives

After completing the course, the attendees should be able to:

- Know how to pass the CSEP-Acquisition Extension Examination
- Explain Details of the DAG Chapter 4
- Be aware of Your own strengths and weaknesses to target your study
- Understand the key processes and differences in DAG from INCOSE handbook terminology
- Comprehend how to tailor the DoD SE processes
- Understand the Six rules for test-taking

CSEP Acquisition Extension Exam

- 1 hour / 60 questions multiple choice knowledge/recall/recognition
- Perceived less multiple answer questions
- Based on DAG Chapter 4
- You can take same session as CSEP exam but do not recommend this due to differences of source material
 - Shift in terminology Generic vs. DoD
 - DoD more directive and PM acquisition oversight oriented
 - Exam constructed by different people
 - Less information available of standard and content

Sample Tests

- In back of your book 2 sample tests with some from each section in proportion to expected test areas
- Sample Question 1-1
- Systems Engineering way of responding to a capabilities or requirements document is the following:
 - a. Balance cost, schedule, performance and risk and a rigorous process.
 - b. Apply a detailed SE approach that balances performance and life cycle cost for systems.
 - c. Apply a robust SE approach that balances total system performance and total ownership costs within the family-of-systems, systems-of-systems context.
 - d. Tailor SE process for the risk and rewards maximization over the entire life cycle.

Module 2- Differences From the CSEP

- Length & Priority
- Terminology
 - DoD vs. Generic
 - Exam structure
- Philosophy Policy Differences from INCOSE Handbook v 3.2
 - More directive
 - More theoretical
 - More specific Acquisition Policy dealing with Major system PMs oversight Job than SE communicating in a common language
 - Less trusting
 - Weaker editing
- Approaches
 - Top down
 - IPPD
 - Planning
 - Measurement
 - M&S
 - Tailoring

Differences

Module 3- DoD SE Overview

- User capability needs translated into system specifications to system deployed & eventual disposal.
- Section 4.0 of DAG.
- DoD policy and guidance recognize the importance of and introduce the application of systems engineering approach in achieving an **integrated, balanced system solution**.
- ***Systems Engineering. Acquisition programs shall be managed through the application of a systems engineering approach that optimizes total system performance and minimizes total ownership costs. A modular open-systems approach shall be employed, where feasible.***
- The use of SE ***Effective sustainment of weapon systems begins with the design and development of reliable and maintainable systems through the continuous application of a robust systems engineering methodology. ...:***

4.0 SE / Purpose/ Content

4.0.1/4.0.2

- **Facilitate compliance with the above mandatory SE direction.**
- **Describes SE processes & fundamentals application to DoD Acquisition System**
- Design issues a **PM** must face to achieve **desired balanced system solution.**
- Guidance and describes expectations for completing the **SEP.**
- **4.1 SE in DoD Acquisition.** *Defines SE and its relationship to acquisition.*
- *Provides perspective on the use of SE processes to **translate user-defined capabilities into actionable engineering specifications** and on the **role of the PM in integrated system design activities...***
- ***All programs responding to a capabilities or requirements document, shall apply a robust SE approach that balances total system performance and total ownership costs within the family-of-systems, systems-of-systems context.***
- ***Programs shall develop a Systems Engineering Plan (SEP) for MDA approval in conjunction with each Milestone review, and integrated with the Acquisition Strategy.***
- ***SEP shall describe the program's overall technical approach, including processes, resources, metrics, and applicable performance incentives. It shall also detail the timing, conduct, and success criteria of technical reviews.***

4.0 SE / Purpose/ Content (Continued)

4.0.2

- 4..2, **SE Processes**: How SE is Implemented, discusses SE processes and activities.
- Groups SE processes into **technical management processes and technical process categories**.
- Discussion of **the use and tailoring of process, models and standards**, as well as **what to expect of the contractor's SE process**
- 4.3, SE in the System Life Cycle, provides an **integrated technical framework** for SE processes throughout the acquisition phases of a system's life cycle,
- Distinguishing the particular SE **inputs and outputs of each acquisition phase**.
- 4.4, **SE Decisions: Important Design Considerations**, discusses the many design considerations that should be taken into account throughout the SE processes.
- Introduction to open systems design; interoperability; software; COTS items; manufacturing capability; quality; RAM; supportability; HSI....
- 4.5, **SE Execution**: and techniques used in the technical management and technical **Key SE Tools and Techniques, includes the important technical, cost, and schedule oversight methods** processes...
- 4.6, **SE Resources**...

Summary

- **Balanced & Integrated**
- **Open Systems**
- **Complete Life-cycle oriented**
- **PM robust SE process for TOC especially SOS, FOS**
- **Tailored technical management processes**
- **What to expect of the contractor's SE process**
- **Important Design Considerations**
- **Key SE Tools & Techniques, includes important technical, cost, and schedule oversight methods processes.**



Quiz 3-1

The Systems Engineering processes to translate user-defined capabilities into the following initially?

- a. Engineering Specifications
- b. CONOPS
- c. Drawings
- d. TDP

Quiz 3-2

Systems Engineering satisfy what?

- a. The need of the system user
- b. The needs of the customer
- c. The needs of the stakeholders
- d. The need of the program sponsor



Module 4- SE in DOD Acquisition Process

- **The DoD processes that take a system from concept to operation, maintenance and disposal.**
- **Stakeholder requirements and technical requirements**, (concept of operations, requirements analysis, requirements definition, requirements management), **Architectural design**, (functional analysis and allocation, system architecture synthesis), **Implementation, integration, verification, transition, validation, operation, maintenance and disposal** of a system.
- Covers section 4.1 of the DAG.

Technical Processes

4.2.2.2

Technical Management Processes	Technical Processes
Decision Analysis	Requirements Development
Technical Planning	Logical Analysis
Technical Assessment	Design Solution
Requirements Management	Implementation
Risk Management	Integration
Configuration Management	Verification
Technical Data Management	Validation
Interface Management	Transition

SE in DoD Acquisition

- SE is the overarching process that a program team applies to transition from a stated capability need to an operationally effective and suitable system.
- SE encompasses the application of SE processes across the acquisition life cycle (adapted by phase) and is intended to be the integrating mechanism for balanced solutions addressing capability needs, design considerations and constraints, ...limitations imposed by technology, budget, and schedule.
- SE processes are applied early in concept definition, and then continuously throughout the total life cycle.
- SE is an interdisciplinary approach or a structured, disciplined, and documented technical effort to simultaneously design and develop systems products and processes to satisfy the needs of the customer.



SE in DoD Acquisition (Continued)

- SE transforms needed operational capabilities into an integrated system design through concurrent consideration of *all Lifecycle needs....*
- *SE is approach to coordinate and integrate all acquisition Lifecycle activities.*
- *SE integrates technical management processes to achieve Integrated System Design...*
- *...Integrated Product and Process Development framework.*
- SE is an interdisciplinary approach or a structured, disciplined, and documented technical effort to simultaneously design and develop systems products and processes to satisfy the needs of the customer.



SE Processes

- *Although numerous definitions exist, this chapter adopts the following formal definition, adapted from EIA/IS 632, Processes for Engineering a System:*
- ***SE is an interdisciplinary approach encompassing the entire technical effort to evolve and verify an integrated and total Lifecycle balanced set of system, people, and process solutions that satisfy customer needs.***
- **SE offers a technical framework to enable sound decision making relative to trade studies among system performance, risk, cost, and schedule.**
- **Successful implementation of proven, disciplined SE processes results in a total system solution that is–**
 - **Robust to changing technical, production, and operating environments;**
 - **Adaptive to the needs of the user; and**
 - **Balanced among the multiple requirements, design considerations, design constraints, and program budgets.**



Technology Development



Integrated Master Plan

- **The program manager should use event-driven schedules and the participation of all stakeholders to ensure that all tasks are accomplished in a rational and logical order and to allow continuous communication with customers.**
- Necessary input conditions to complete each major task are identified, and no major task is declared complete until all required input conditions and component tasks have been satisfied. ..
- **One way of defining tasks and activities is the use of an integrated master plan, which provides an overarching framework against which all work is accomplished.**
- It documents all the tasks required to deliver a high quality product and facilitate success throughout the product's life cycle.
- Cost, schedule (specific dates), and non-essential tasks are not included in this plan.
- **As the program is defined,** the integrated master plan is iterated several times, each time increasing the level of detail and confidence that all essential work has been identified.
- The specific format for this plan is not critical; however, it usually reflects an Event/Accomplishment/Criteria hierarchical structure--a format that greatly facilitates the tracking and execution of the program. ...

Resources Standards and Models

- International Organization for Standardization (ISO)/International Electrotechnical Commission (IEC) 15288, System Life Cycle Processes
- ISO/IEC 12207, Software Life Cycle Processes
- Electronic Industry Alliance (EIA)/Institute of Electrical and Electronic Engineers (IEEE) J-STD-016, Software Development
- American National Standards Institute (ANSI)/EIA 632, Processes for Engineering a System
- ANSI/EIA 649, National Consensus Standard for Data Management
- *ANSI/EIA 748A, Earned Value Management Systems*
- EIA 859, Consensus Standard for Data Management
- IEEE 1220, Application Management of the Systems Engineering Process
- EIA 731, Systems Engineering Capability Model
- CMMI SWE/SE/IPPD/SS, Capability Maturity Model-Integration, Software Engineering, Systems Engineering, Integrated Product and Process Development and Supplier Sourcing

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