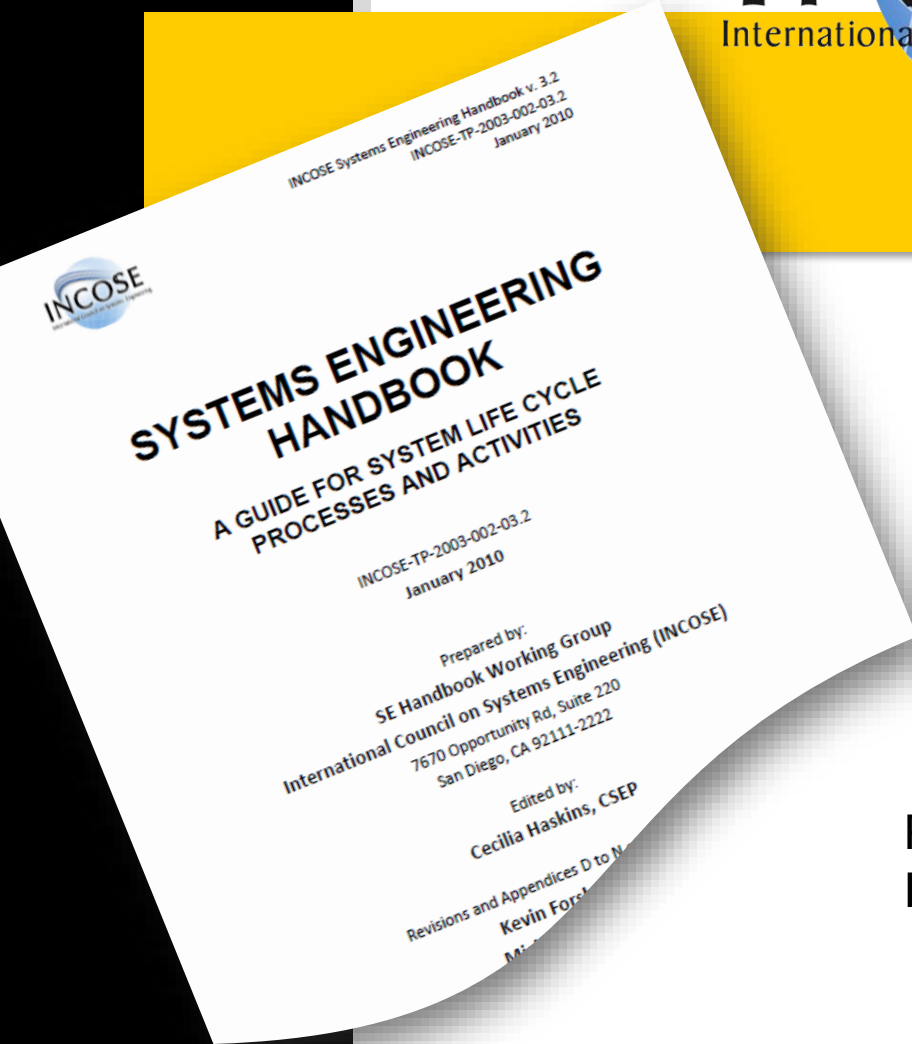




Chesapeake Chapter
INCOSE
International Council on Systems Engineering



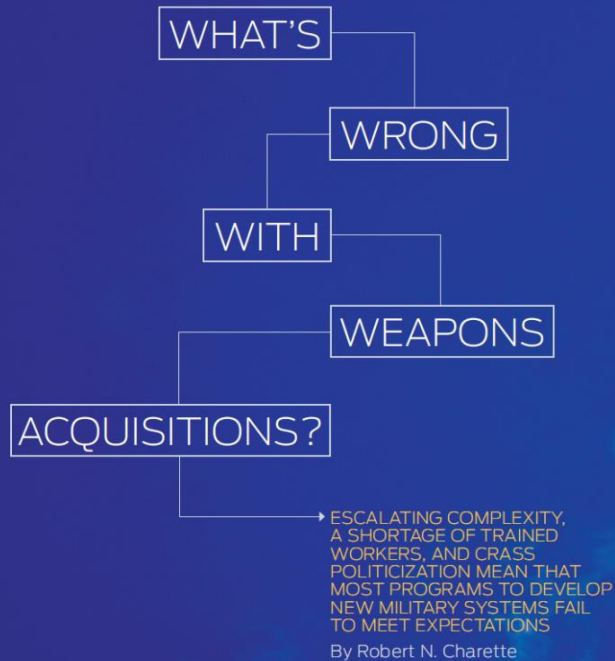
International Council on Systems Engineering



INCOSE SE Certification Overview

Paul Martin, CSEP
INCOSE CC Communications Officer

The need for Systems Engineers



32 NA • IEEE SPECTRUM • NOVEMBER 2008

WWW.SPECTRUM.IEEE.ORG

"Another factor contributing to program failure is the shortage of technically trained people, especially systems engineers. A systems engineer translates technical needs into an overall system architecture that creates the best operational capability at the most affordable cost. As a project proceeds and goals or needs shift, systems engineers have to determine the difficult but necessary cost, schedule, and performance trade-offs to keep everything on track. As programs get bigger and more complex, the need for rigorous systems engineering increases."

**IEEE Spectrum, Volume 45, Issue 11,
November 2008 Page(s):33 - 39**

CNNMoney.com

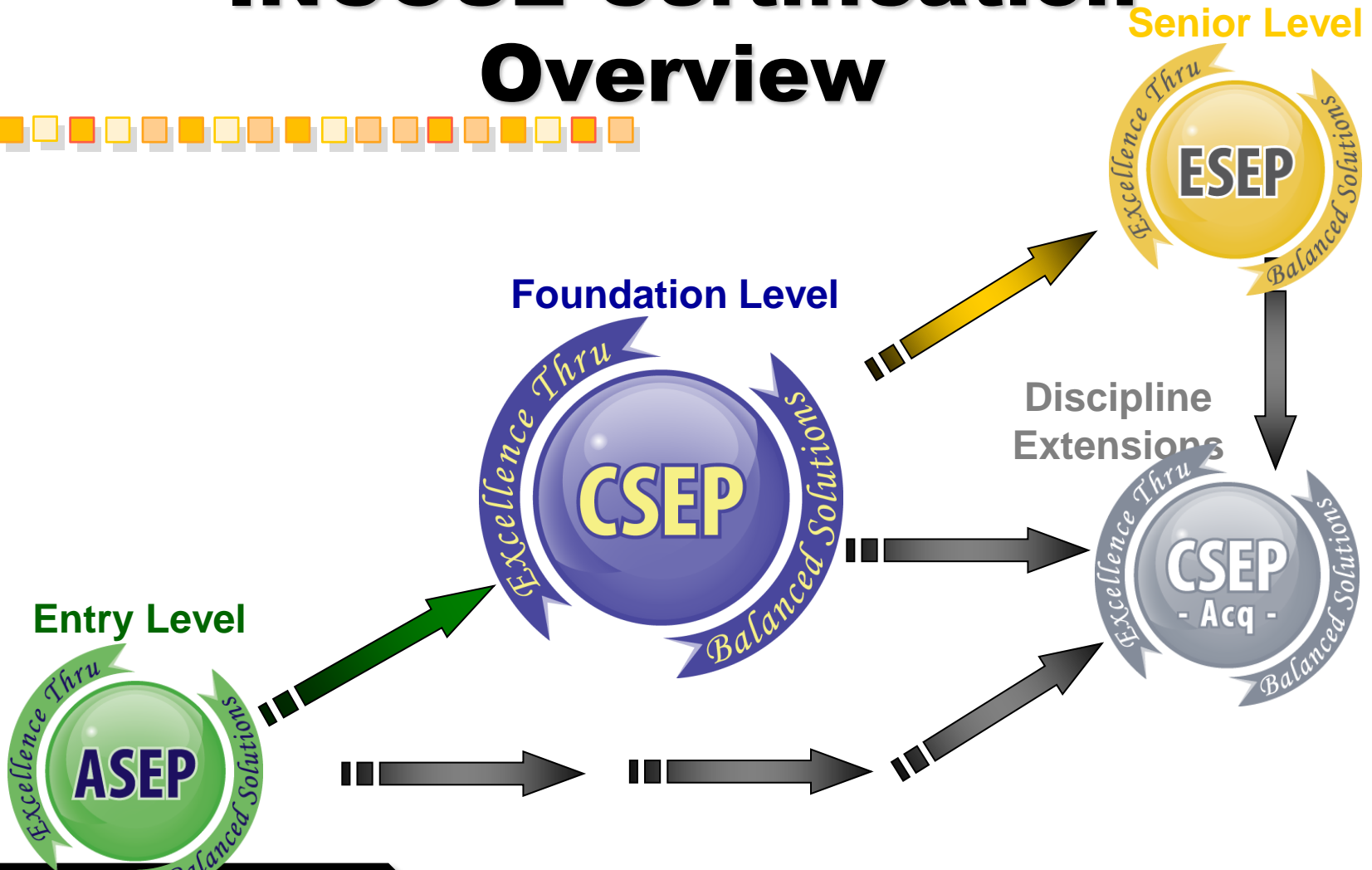


- Date: Oct 2009
- Systems Engineer ranked as #1 job in America
- Mentions INCOSE CSEP as a potential pre-requisite



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International Council on Systems Engineering

INCOSE Certification Overview



© 2011 International Council on Systems Engineering
Original presentation can be found at
http://www.incose.org/educationcareers/doc/Certification_Overview.pdf

The INCOSE certification program has been developed as the highest quality, independent assessment of system engineering professionals.

Purpose and Design (benefits)

- **Systems engineering community:**
 - Creates the standard to identify and develop systems engineering professionals .
 - Establishes a formal, recognized body of knowledge for the systems engineering community.
- **System engineering professionals:**
 - Provides a portable standard of recognition for attainment of knowledge, education, and experience.
 - Its recertification requirements serve as a mechanism for continued professional development.
- **Organizations/institutions:**
 - A universal, industry-approved measure of a professional's knowledge – achieved through the independent evaluation of relevant tasks, projects, and programs.

INCOSE's certification program continues to grow due to the professionals increasing recognition of its value to professionals, to organizations/ institutions, and to the overall systems engineering community.

What Is Certification?



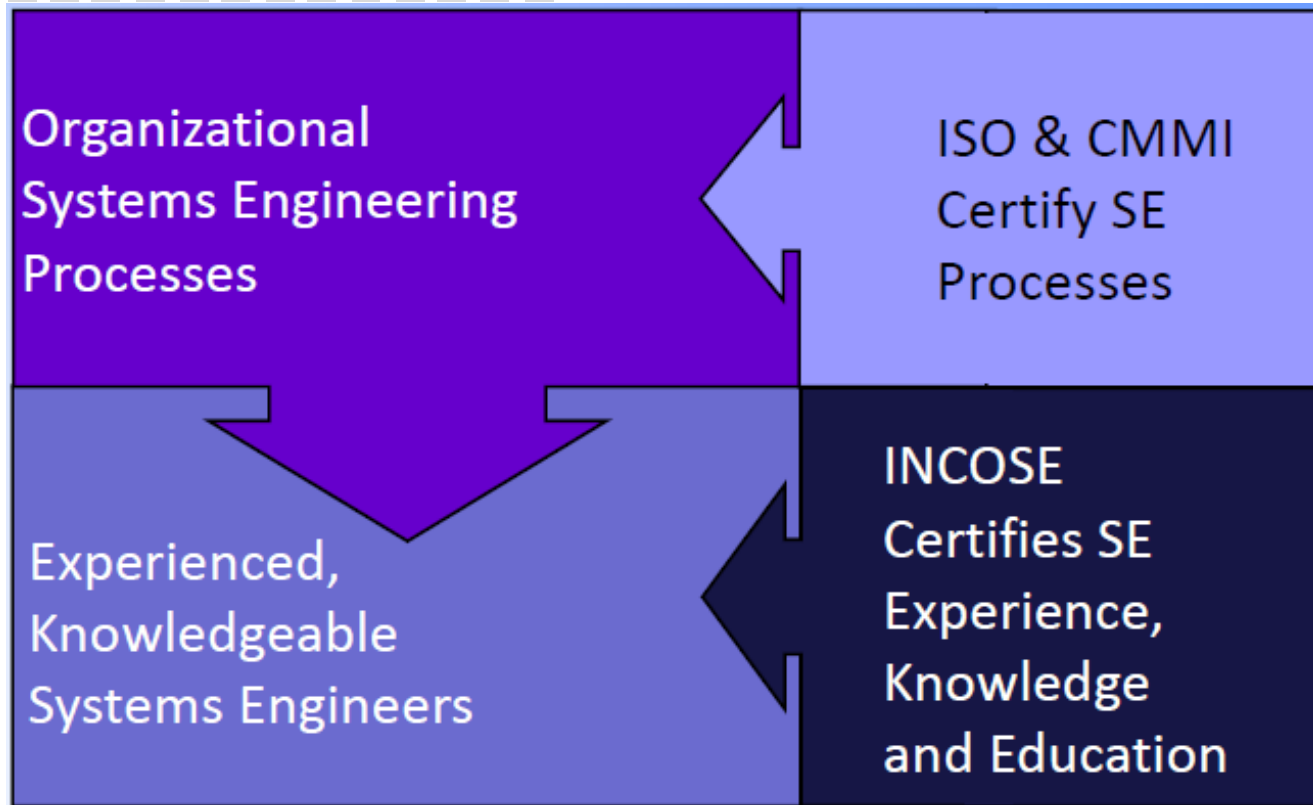
~~Certificate~~

~~License~~

- **Certification is an occupational designation**
 - Provides confirmation of an individual's competency (demonstrated education, experience, and knowledge) in a specified profession or occupational specialty
- **Certification is a formal process**
 - Issued by an organization
- **Certification is voluntary**
 - It is neither a barrier nor a gate to entering a job
 - However, it may be used as a qualifier in placement

INCOSE's Systems Engineering Professional Certification Program is a formal process that recognizes individuals who have demonstrated a measurable level of comprehension (education and knowledge) and proficiency (experience) in performing tasks applicable to the systems engineering profession.

Successful Systems Engineering



Certification focuses on your people. It complements your organizational initiatives.



Certification Change in Focus



From Organization to People

Organization ABC...

ISO 9000
ISO 15504
CMMI
etc.

Individual First_Last ...

ASEP, CSEP, ESEP
CSDP
CAPM, PMP, PgMP
CSSIP
etc.

**Certification focuses on your people.
It complements your organizational
initiatives.**

Just like other Certifications



International
Information Systems
Security Certification
Consortium, Inc.

Multiple Certifications

- Project Management Professional (PMP)®
- Certified Associate in Project Management (CAPM)®
- Program Management Professional (PgMP)®
- PMI Scheduling Professional (PMI-SP)®
- PMI Risk Management Professional (PMI-RMP)®

Exam based on Handbook

- A Guide to the Project Management Body of Knowledge

Application to confirm Experience

Multiple Certifications

- Certified Information Systems Security Professional (CISSP)
- Information Systems Security Architecture Professional (ISSAP)
- Information Systems Security Management Professional (ISSMP)
- Information Systems Security Engineering Professional (ISSEP)
- Certification and Accreditation Professional (CAP)
- Systems Security Certified Practitioner (SSCP)
- Certified Secure Software Lifecycle Professional (CSSLP)

Exam based on Handbook

- Common Body of Knowledge (or CBK)

Application to confirm Experience

All Based on ISO/IEC 17024: *Conformity assessment -- General requirements for bodies operating certification of persons*

Why is Certification Important?



For organizations...

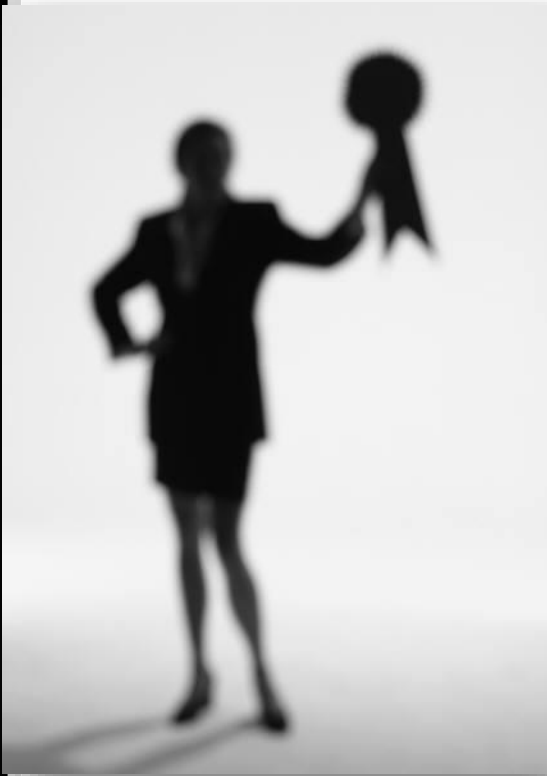
- Formally recognizes the Systems Engineering capabilities of your people
- Certified systems engineers can be a selling point and a discriminator for your proposals
- Can be used as part of the hiring and promotion process
- It encourages employee participation in continuing education
- Provides an independent internal and external assessment
- It is a tool for promoting professional competence

INCOSE Certification sets your organization apart!



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INCOSE
International Council on Systems Engineering

Why is Certification Important?



For individuals...

- Formally recognizes your Systems Engineering capabilities
- It is a discriminator that can aid in obtaining your next job
- Can provide a competitive advantage in your career
- Provides a portable Systems Engineering designation that is recognized across industry
- Furthers your professional development as a systems engineer
- Participation in continuing education indicates your commitment to personal development

INCOSE Certification sets you apart!



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Why is Certification Important?



For your teams...

- Allows the team to level-set on Systems Engineering concepts and activities
- Can help establish a common Systems Engineering language for your team
- This can help break down ...
 - geographic boundaries
 - organizational boundaries
 - cultural boundaries


INCOSE Certification is particularly useful for multi-organization, geographically distributed teams.

Ways to Leverage Certification



- Individuals
 - Recognition
 - Designation on business card resume signature etc
 - Performance objective
- Organizations
 - Performance expectation
 - Career ladder alignment
 - Job advertisement
 - Proposal discriminator
 - Supplier qualification

Certification Agreements

- 
- Several organizations have recognized the value in partnering with INCOSE on certification
 - The following are examples of certification agreements in place
 - Please contact the certification Program Manager if your organization is interested in forming a certification agreement

Certification Agreements - Industry



INCOSE has formed agreements with the following companies to collaborate in offering Certified Systems Engineering Professional status to qualifying employees:

- **EADS** (June 2008)
- **Booz Allen Hamilton** (June 2009)
- **ManTech** (Aug 2009)
- **MITRE** (Jul 2010)
- **Lockheed Martin** (December 2010)

Certification Agreements - Academia

- **Stevens Institute of Technology** (January 2009) - Stevens and INCOSE agree to encourage and enable offering Systems Engineering professional certification to qualified Stevens' graduate students and alumni.
- **University of Texas – El Paso** (March 2010) – UTEP and INCOSE agree to encourage and enable offering Systems Engineering professional certification to qualified UTEP graduate students.

Certification Agreements - Special



- **DAU Equivalency** (February 2009) - Defense Acquisition University (DAU) recognizes INCOSE CSEPAcq and ASEP-Acq certifications as meeting or exceeding desired outcome, content, and evaluation techniques of DAU courses SYS 101 and SYS 202.
- **OMG Collaboration** (May 2009) – The Object Management Group (OMG) and INCOSE agree to collaborate on developing OMG's new program to certify Systems Engineers and other practitioners on the OMG Systems Modeling Language (OMG SysML™) standard
- **IES Collaboration** (July 2010) – The Institution of Engineers, Singapore (IES) and INCOSE agree to jointly develop a certification recognition scheme by which national certification programs can be internationally recognized through INCOSE.

INCOSE Multi-Level Certification

For every stage of your career



ESEP	Expert Systems Engineering Professional
CSEP	Certified Systems Engineering Professional
ASEP	Associate Systems Engineering Professional
-Acq	Certification w/ US DoD Acquisition



Certification Focuses on the Breadth of Demonstrated Learning Needed for a Career of System Engineering



ESEP focused on:

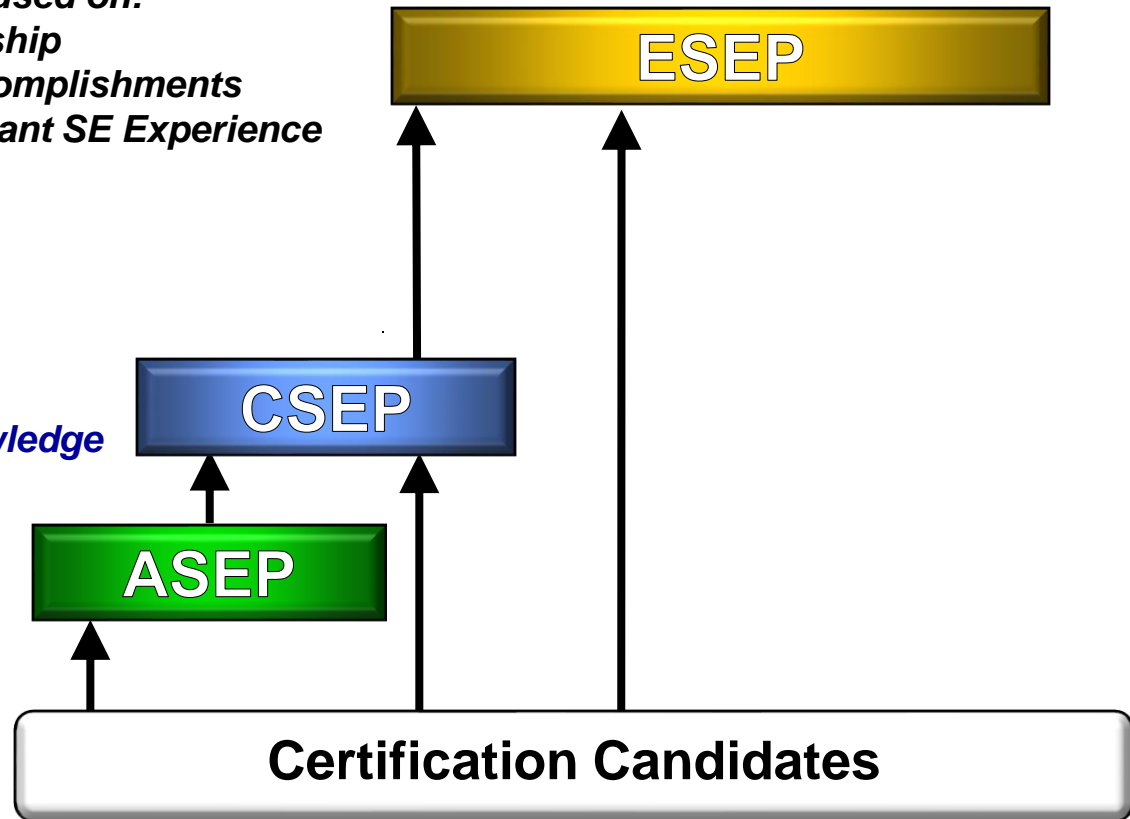
- Leadership
- SE Accomplishments
- Significant SE Experience

ESEP focused on:

- SE Experience
- Applied SE Knowledge

ASEP focused on:

- SE Knowledge





Entry Level

Associate Systems Engineering Professional

- Targeted towards junior/emerging Systems Engineers and recent college graduates with limited Systems Engineers work experience
- ASEPs are certified against knowledge requirements through an exam
- ASEPs must be, and remain, INCOSE members
- Renewal every 5 years through professional development, maximum duration of 15 years
- Available since 2008



Foundation Level

Certified Systems Engineering Professional

- Targeted towards people with five or more years of Systems Engineers work experience
- CSEPs are certified against experience, education, and knowledge requirements
- Experience must be substantiated by 3-5 work-related references
- Knowledge certified through an exam
- INCOSE membership not required
- Renewal every 3 years through professional development
- Available since 2004



Senior Level

Expert Systems Engineering Professional

- Targeted towards Systems Engineering leaders with significant work experience and demonstrated systems accomplishments and who have many years of systems engineering experience
- ESEPs are certified against experience, leadership, professional development, and education requirements
- Experience must be substantiated by 3-5 work-related references
- Interviews used to validate leadership and significant systems accomplishments
- ESEPs must be, and remain, INCOSE members
- No renewal requirements other than INCOSE membership
- Available since 2010

Acquisition Extension

US DoD Acquisition Extensions



- Targeted towards Systems Engineers who support or work in a US Department of the Defense acquisition environment
- Candidates must first become an ASEP, CSEP, or ESEP
- Acquisition knowledge items tested through both the core ASEP/CSEP exam and an additional Acq exam
- Extension renewed concurrently with base certification
- Available since 2008

Multi-Level Certification Concept



*Leadership
Demonstrated Accomplishments
Significant Experience
References
Education
INCOSE Member*

20 yrs SE experience
Technical Bachelor's*

No Exam
Professional Development
Oral Interviews

25 yrs SE experience
Technical Bachelor's*

ESEP requirements plus
DAG Chap 4 Exam

*Experience
References
Education
Knowledge*

CSEP

CSEP-Acq

CSEP requirements plus
DAG Chap 4 Exam

*Knowledge
INCOSE Member*

ASEP

ASEP/CSEP
Exam

ASEP/CSEP Exam
5 yrs SE experience
Technical Bachelor's*

ASEP-Acq

ASEP requirements plus
DAG Chap 4 Exam

Certification Candidates

** or Non-Tech Bachelor's & additional 5 yrs experience
or No Bachelor's & additional 10 yrs experience*



14 Functional Areas Recognized for Systems Engineering Experience



- SE Technical Competencies
 - Requirements Engineering
 - Design Development
 - System Integration
 - Qualification, Verification, and Validation
- SE Management Competencies
 - Technical Planning
 - Technical Effort Assessment
 - Risk and Opportunity Management
 - Baseline Control
- SE Support Competencies
 - Specialty Engineering
 - Process Definition
 - Training
 - Tool Support
 - Quality Assurance
- Other SE Competencies
 - To allow for the variety of SE across domains

Successful candidates must have balanced experience across multiple areas

SE Disciplines/Functional Areas Qualifying for SE Experience (1 of 2)



Systems engineering functions include but are not limited to the following:

- **Requirements Engineering:** analyze customer and stakeholder needs, generate/develop requirements, perform functional analyses, derive requirements, ensure requirements quality, allocate requirements, control requirements, maintain requirements database, develop and implement Requirements Management Plans, develop measures of effectiveness and performance
- **Risk and Opportunity Management:** develop and implement Risk and Opportunity Management Plans, identify risk issues and opportunities, assess risk issues and opportunities, prioritize risks and opportunities, develop and implement risk mitigation and opportunity achievement plans, track risk reduction and opportunity achievement activities
- **Baseline Control:** develop and implement Configuration Management Plans, establish and update baselines for requirements and evolving configurations/products, establish and implement change control processes, maintain traceability of configurations, participate in Configuration Control Boards, participate in configuration item identification and status accounting, participate in functional and physical configuration audits
- **Technical Planning:** identify program objectives and technical development strategy; prepare Systems Engineering Management Plans, program Work Breakdown Structures, product Breakdown Structures, Integrated Master Plans, and Integrated Master Schedules; identify program metrics including product technical performance measures and key performance parameters, identify program resource needs in terms of equipment, facilities, and personnel capabilities
- **Technical Effort Assessment:** collect, analyze, track, and report program metrics including product technical performance measures and key performance parameters; conduct audits and reviews; assess process and tool usage compliance; conduct capability assessments; recommend and implement process and product

SE Disciplines/Functional Areas Qualifying for SE Experience (2 of 2)



- **Architecture/Design Development:** identify baseline and alternate candidate concepts and architectures, prepare Trade Study Plans, conduct and document trade studies, evaluate and optimize candidate concepts and architectures, prepare system/solution description documents
- **Qualification, Verification, and Validation:** develop and implement Qualification, Verification, and Validation Plans; develop verification requirements and pass/fail criteria; conduct and record results of qualification, verification, and validation efforts, and corrective actions; prepare requirements verification matrix and qualification certificates
- **Process Definition:** define enterprise processes and best practices, tailor enterprise processes for program/project applications
- **Tool Support:** specify requirements for, evaluate, select, acquire, and install SE computer programs/tools
- **Training:** develop and implement Training Plans, develop and give training courses on processes and tools
- **Systems Integration:** define technical integration strategy, develop Integration Plans, develop integration test scripts, develop and implement integration test scenarios, conduct and document integration tests, track integration test results and retest status
- **Quality Assurance:** develop and implement a Quality Assurance Plan, perform quality audits, report quality audits, define and track quality corrective actions
- **Specialty Engineering:** develop and implement Specialty Plans as part of, or an addendum to, the Systems Engineering Management Plan to cover such specialties as reliability, maintainability, supportability, survivability, logistics support, security, safety, human factors, electromagnetic environmental effects, environmental engineering, packaging and handling, etc.
- **Other:** describe other functions that you have performed and can justify as system engineering activities.



Taken from the INCOSE *Which Level is Right for Me?* Webpage:
<http://www.incose.org/educationcareers/certification/details.aspx?id=level>

CSEP Certification Experience Requirements

- Systems Engineering Experience
 - Minimum 5 years in multiple Systems Engineering competencies
- Experience Confirmation
 - Recommendations from at least 3 colleagues / peers / managers
 - References must cover the required period needed by the applicant (including any additional years)
 - References must also be knowledgeable in Systems Engineering

Distribution of Systems Engineering Experience for CSEP

- The CSEP candidate must have at least 1 year of SE experience in each of 3 or more of the 14 systems engineering functional areas

CSEPs should have experience in performing some, but not all, SE areas

Option 1	A1	A2	A3			
Option 2	A1	A2	A3	A4		
Option 3	A1	A2	A3	A4	A5	
Option 4	A1	A2	A3	A4	A5	A6
Option X	A1	A2	A3	Applicant's Choice		
	1	2	3	4	5	Years

Some Options for Distributing Five Years of SE Experience in Various SE Functional Areas (A1, A2, etc.)

ESEP Certification Experience Requirements



- Systems Engineering Experience
 - Minimum 25 years of professional level experience in multiple Systems Engineering functional areas if not a CSEP
 - Minimum 20 years of professional level experience in multiple Systems Engineering functional areas if already a CSEP
 - Applicant must be willing to participate in an oral review (typically not exceeding 60 minutes) in the English language by an ESEP evaluation panel (the review will be by phone).
- Experience Confirmation
 - Recommendations from at least 3 colleagues / peers / managers
 - Must cover at least the last ten (10) years of the applicant's total experience
 - The references must also be knowledgeable in Systems Engineering
 - At least two (2) of the references must be willing to participate in an oral review (if required, typically not exceeding 30 minutes) in the English language by an ESEP evaluation panel (the review will be by phone).

However, experience is just a threshold requirement, the emphasis of ESEP is SE leadership & accomplishments.

Distribution of Systems Engineering Experience for ESEP



ESEPs should have experience in performing many, but not all, SE areas

- In order to ensure a sound systems engineering technical foundation, the ESEP candidate's systems engineering experience is to be
 - In 2 year or greater increments
 - in at least 6 of the 14 systems engineering functional areas
 - have demonstrated leadership of engineering teams

ESEP Professional Development Requirements

- Have at least five (5) years of post-bachelor's professional development.
- Qualifying development includes:
 - Product Development Leadership Years – Years of leadership in a product development position, such as chief engineer or development team lead – **one (1) year credit** for each year in a leadership position - no limit.
 - Technical Society Leadership Years – Leadership of a professional technical society as elected officer or appointed committee chair – **one-half (0.5) year credit** for each year of service – no limit.
 - Advanced Academics Years – limited to a maximum of four (4) years credit
 - Master's degree (or international equivalent) in a technical field – **one (1) year credit**
 - Doctor of Philosophy degree (or international equivalent) in a technical field – **two (2) years credit** if separate credit is given for a Master's degree; **three (3) years credit** if separate credit is not given for a Master's degree.
 - Systems engineering graduate-level teaching – limited to a maximum of three (3) years. [**One (1) year of credit** is earned for each five hundred (500) hours of classroom instruction spread over a three (3) year time period.]



ESEP Certification Oral Review

- Applicant must be willing to participate in an oral review
 - Purpose of the oral review is to confirm the applicant is a Systems Engineering leader and to verify the applicant's leadership, significant accomplishments, and experience
 - The oral review questions are in behavior-based format.
- At least two (2) of the references must be willing to participate in an oral review (if required)
 - Purpose of the reference oral review(s) is to confirm/supplement the applicant's information
- The oral review
 - Are done via phone
 - Typically do not exceeding 60 minutes, (30 minutes for references)
 - Are in the English language
 - Are conducted by an ESEP Certification Application Reviewer (CAR) evaluation panel

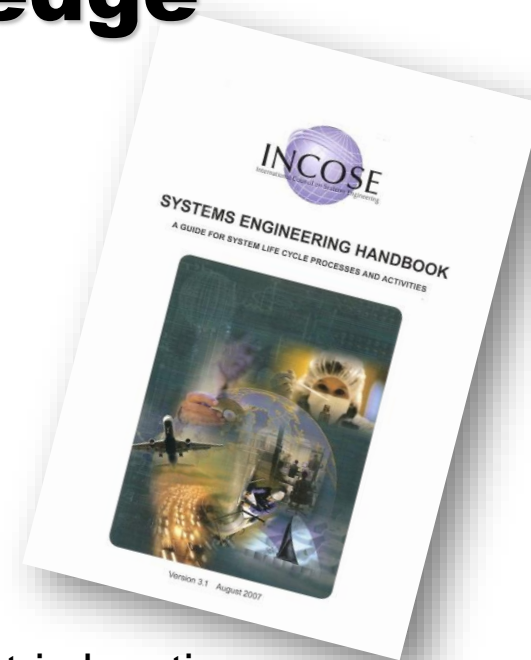
Certification Education Requirements

- Education
 - Minimum Bachelor's Degree (or international equivalent) in technical field
 - BS or BSE in the following or related engineering disciplines: Aeronautical, Astronautical, Electrical, Mechanical, Civil, Chemical; or in Math, Chemistry or Physics.
 - If the degree does not come from an ABET (or international equivalent) accredited school, then an MS, MSE, or PhD. in those fields will suffice.
- Additional Experience Can be Substituted
 - 5 more years of general engineering experience for non-technical Bachelor's
 - Total of 10 years for CSEP
 - Total of 25 years for ESEP (w/ CSEP)
 - Total of 30 years for ESEP (w/o CSEP)
 - 10 more years of general engineering experience if no Bachelor's degree
 - Total of 15 years for CSEP
 - Total of 30 years for ESEP (w/ CSEP)
 - Total of 35 years for ESEP (w/o CSEP)

Certification Knowledge Requirements

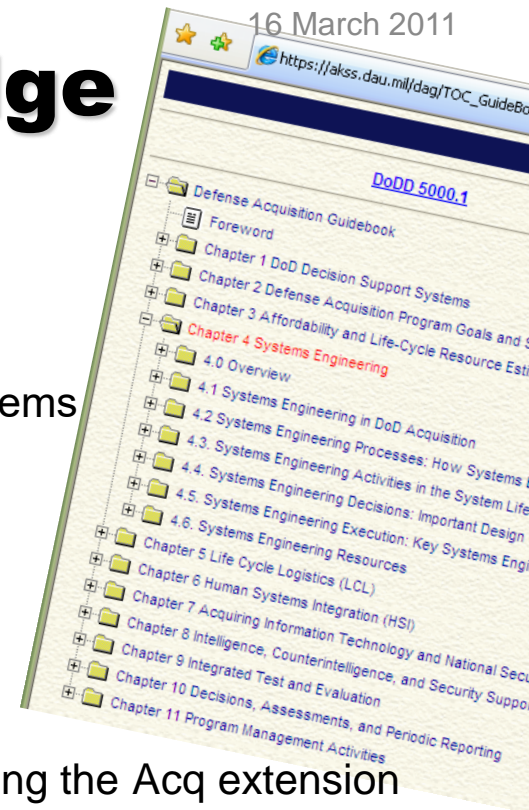


- CSEP/ASEP Exam Basis
 - **INCOSE SE Handbook v3.2 or v3.2.1**
 - Free download available to INCOSE members
- Exam is
 - 2 hours in length
 - 120 questions
 - Administered electronically at world-wide Prometric locations - Pass/Fail results provided immediately upon exam completion
- Candidates are eligible for two re-tests within one year of application submittal



The INCOSE Systems Engineering Handbook is the basis for the CSEP & ASEP exams.

CSEP-Acq Knowledge Requirements



- CSEP-Acq Exam Basis
 - Defense Acquisition Guidebook (DAG) Chapter 4 “Systems Engineering”
 - Reference version on INCOSE website
- CSEP-Acq Extension Exam is
 - 1 hour in length
 - 60 questions
 - You must pass the Core CSEP/ASEP exam before taking the Acq extension
 - Administered electronically at world-wide Prometric locations - Pass/Fail results provided immediately upon exam completion
- Candidates are eligible for two re-tests within one year of application submittal

The DAG Chapter 4 is the basis for the acquisition extension exam.

Note that the Acq exam will not be offered between 9-30 April 2011. After 1 May 2011, only the 2010 version of the DAG Chapter 4 should be used.

Representative Exam Questions



- Which three of the following are methods to express functional behavior? (Choose three)
 - Network Tree (NT)
 - Behavior Diagram (BD)
 - Allocated Requirement Diagram (ARD)
 - Functional Flow Block Diagram (FFBD)
 - Integrated Definition for Functional Modeling (IDEF) Diagram
- Which are three justifications for Configuration Management? (Choose three)
 - facilitates communication
 - forces change evaluations
 - prevents requirements changes
 - controls requirements changes
 - encourages requirements changes

Note: These questions **ARE NOT** from the INCOSE Certification Exam. The format and content are similar (based on SEH v2A). They were created by CSM and Prometric and are used with permission.

Representative Exam Questions



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-Acq Extension Comparison to CSEP



Requirement	CSEP	-Acq
Experience	Minimum 5 yrs SE experience, substantiated by references	No additional requirement
Education	Minimum BS (or equivalent) in Technical Field (can substitute additional experience if non-tech/no degree)	No additional requirement
Knowledge Basis	INCOSE SE Handbook v3.1 (Handbook v3.2 after Jan 2011)	DAG Chapter 4
Exam	Core exam (20 Questions 2 hours) ~ Take at Prometric	Must be an ASEP, CSEP, or ESEP Must pass core exam first Acq exam (60 Questions , 1 hr) Take at Prometric
Renewal	120 PDUs Every Three Years	No additional requirement Renewed with base certification



So What Level of Certification is Right for You?



- If you have recently graduated from college or have just started (or want to start) performing systems engineering
- If you are a practicing Systems Engineer with more than five years of systems engineering experience
- If you support or are working in a Us DoD acquisition environment
- If you have more than 25/20 years of systems engineering experience and have recognized systems accomplishments






Key Requirements of Certification



These elements of the INCOSE certifications are measurable tangible parameters consistent with ISO guidelines for a certification program.

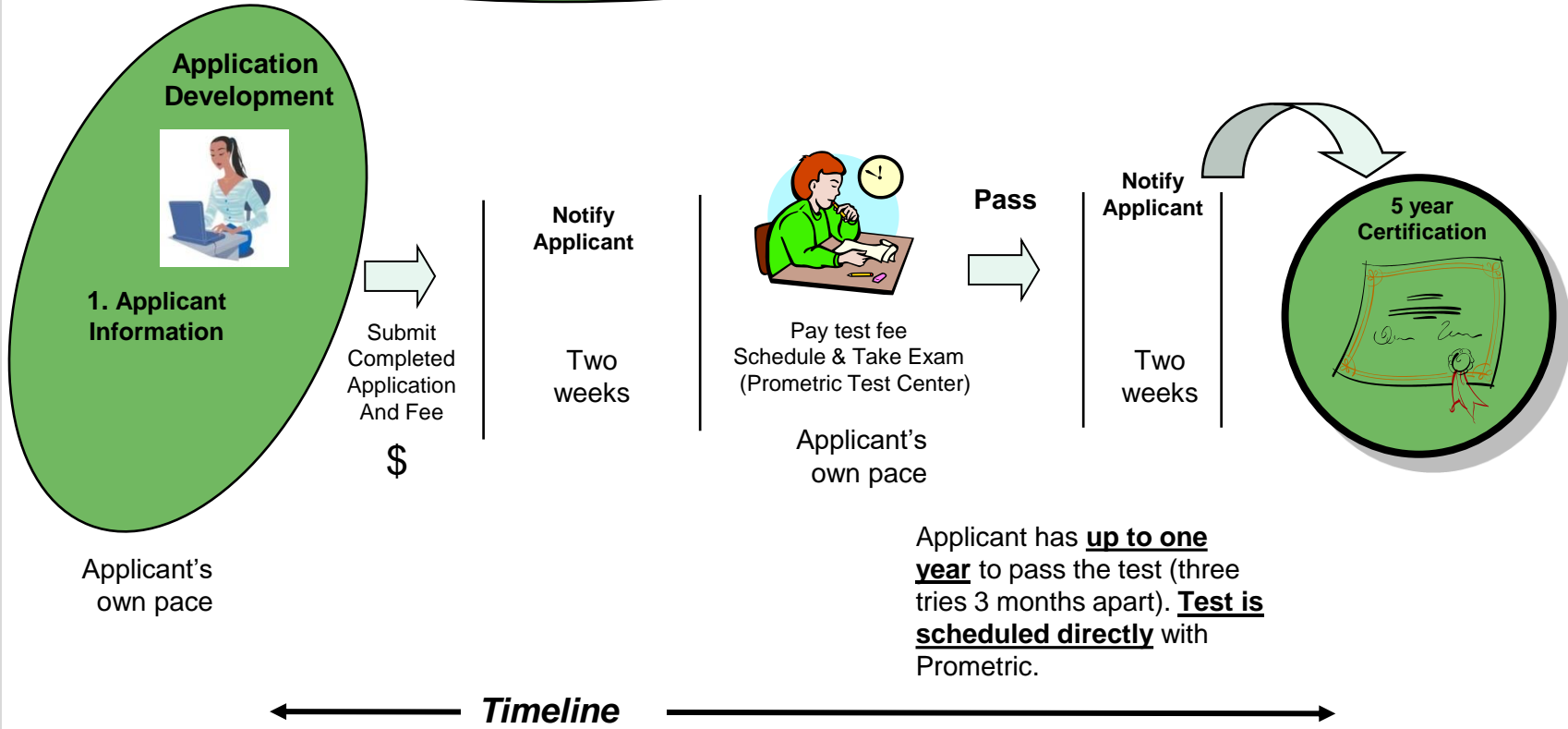
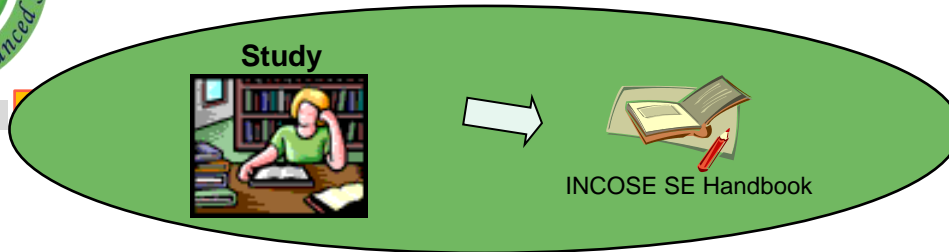
The Key Elements of INCOSE Certification (What is Certified?)

	SE Knowledge	Education	SE Experience	SE Leadership & Accomplishments
	Via an exam based on the INCOSE SE Handbook			
	Via an exam based on the INCOSE SE Handbook	Via confirmation of technical degree (or additional experience, if required)	Via confirmation of applicant's and references written experience claims	
		Via confirmation of technical degree (or additional experience, if required)	Via confirmation of applicant's and references written experience claims	Via oral review of applicant (and references, if required)
Extensions	Via an exam based on the extension body of knowledge			

These four elements (education knowledge experience education, knowledge, experience, and leadership & accomplishments) allow for a variety of certifications to be earned.



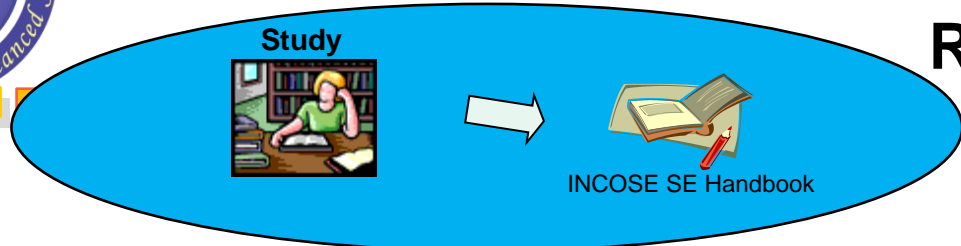
ASEP Certification Process Diagram





CSEP Certification Process Diagram

Review First Option



Application Development

1. Verifiable Education
2. Verifiable Experience
3. Applicant's Advocates (three references knowledgeable about SE)

INCOSE Application Center

INCOSE Evaluation

Notify Applicant

Pay test fee
Schedule & Take Exam
(Prometric Test Center)

Notify Applicant

Pass

3 year Certification

Submit Completed Application And Fee \$

Applicant's own pace

Four to six weeks

Two weeks

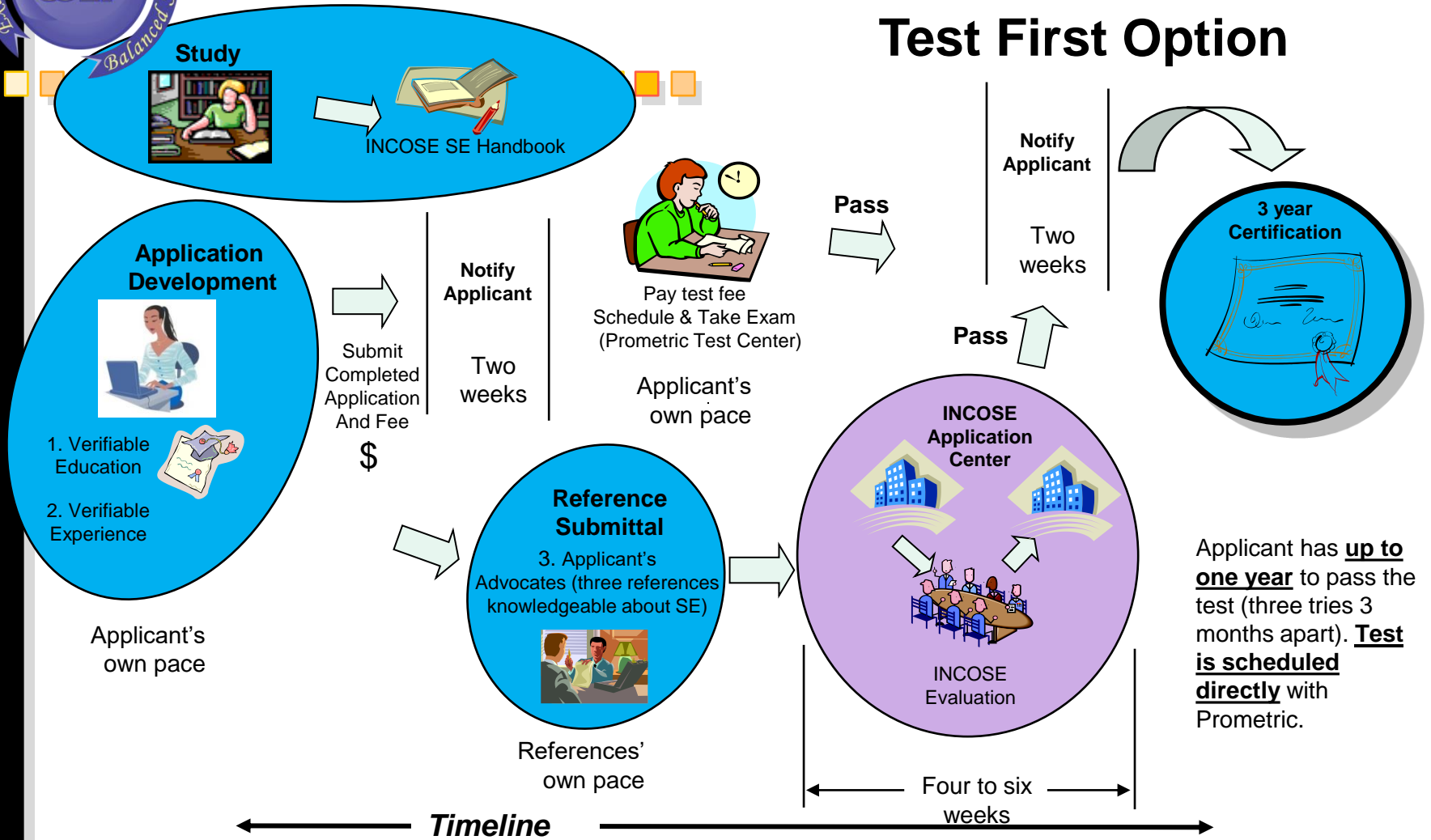
Applicant has **up to one year** to pass the test (three tries 3 months apart). **Test is scheduled directly** with Prometric.



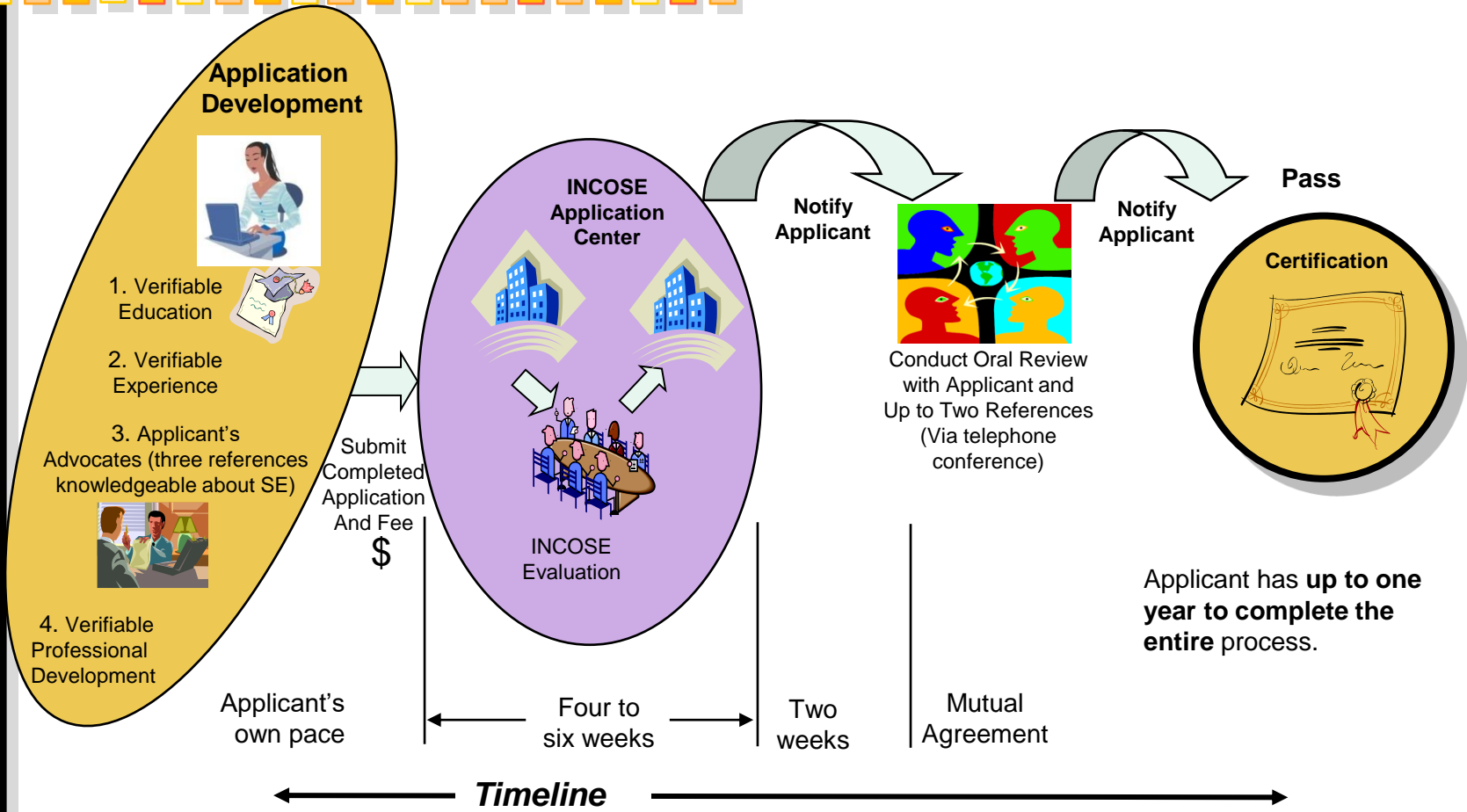


CSEP Certification Process Diagram

Test First Option



ESEP Certification Process Diagram



All of the Application Material is Available On-line

You are: [Home](#) -> [Education & Careers](#) -> [Certification](#) -> How do I apply?

How Do I Apply for Certification?

The following table lists the steps you typically go through to apply for certification:

Step	Description	Link or Material
1	Determine what type of certification you wish to apply for. You may enter at the ASEP, CSEP, or CSEP-Acq level or you can transition from an existing certification to either CSEP or CSEP-Acq.	See Which Certification Level is Right for Me? for additional guidance.
2	Complete the certification application form.	Application Form in MS Word Application Form in Adobe PDF Application Instructions in Adobe PDF
3	Pay the application fee	How much does certification cost? Secure Online Payment Form
4	Email and mail the signed form and copy of transcript/diploma.	e-mail: Certification Office Postal Address: <div style="border: 1px solid black; padding: 2px;"> Certification Program Office INCOSE 7870 Opportunity Rd #220 San Diego CA 92111 </div>
		Instructions to References

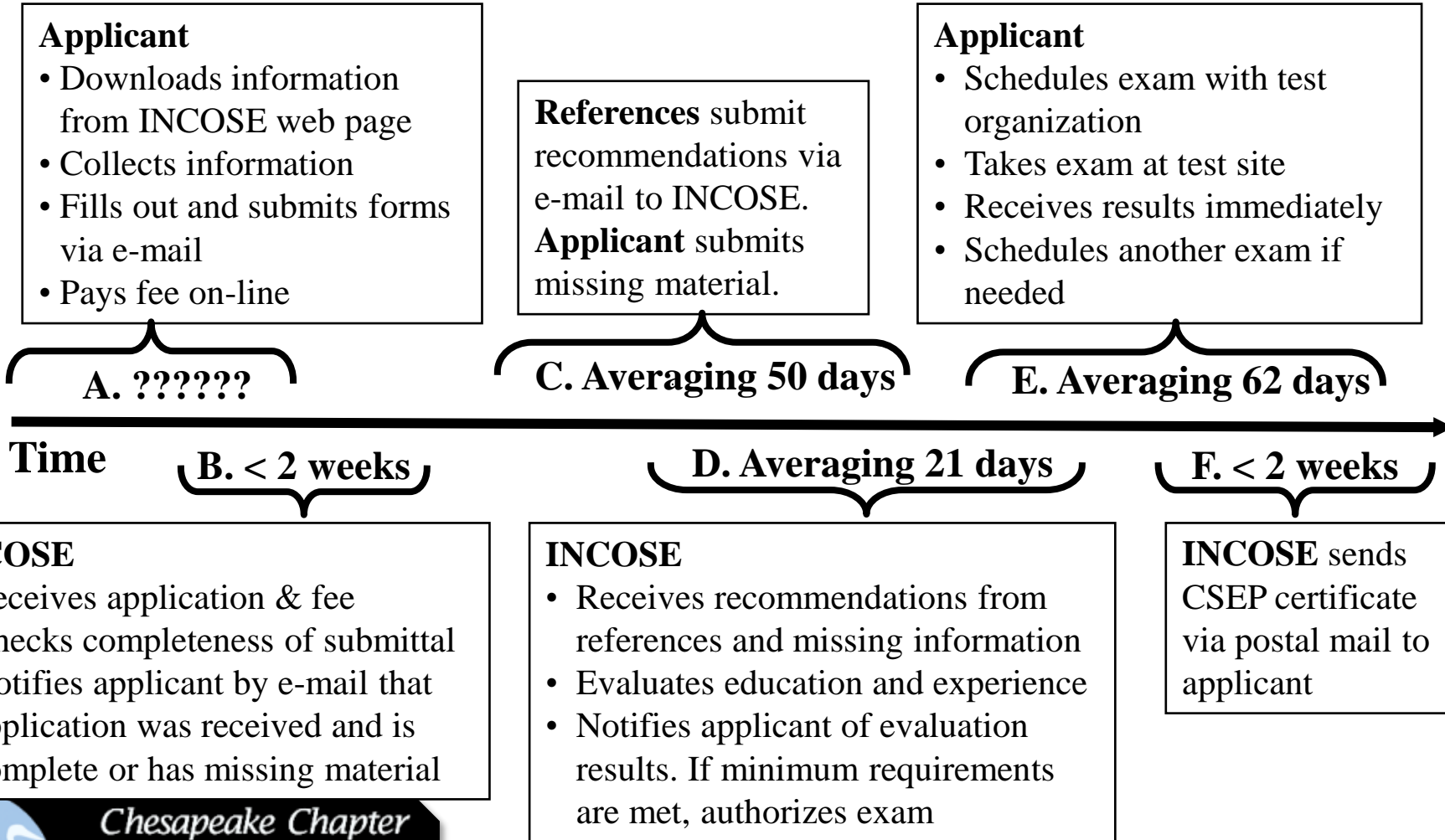
Certification Program Detail

- ▶ Introduction
- ▶ Process Flow
- ▶ Which Certification is Right for Me?
- ▶ **How do I apply?**
- ▶ How do I Renew?
- ▶ How much does certification cost?
- ▶ INCOSE Code of Ethics
- ▶ Frequently Asked Questions
- ▶ Possible Future Certification Levels
- ▶ List of CSEPs
- ▶ History
- ▶ Training Providers
- ▶ Agreements



How Long Will It Take to Get Certified?

There is no one answer. Much depends on the applicant.



Time for Steps B-F: Shortest is 37 days, Average is 147 days



Chesapeake Chapter

Certification Renewal Requirements

- Certification is Valid for
 - 3 Years for CSEP
 - 5 Years for ASEP and must maintain INCOSE membership
 - Indefinite for ESEP, but must maintain INCOSE membership
 - Extensions (e.g., -Acq) are renewed concurrent with the base certification, regardless of when earned
- Certification renewal requires
 - Minimum of 120 Professional Development Units (PDUs)
 - Renewal application
 - Continuing education log submittal
 - Must be submitted before current certification period ends
 - Up to 30 “excess” PDUs can be “carried forward”

INCOSE Certified professionals have an ongoing growth and learning obligation



PDU for Certification Renewal

Professional Development Activities (All must be relevant to the practice of systems engineering)	Credit	3/5 Year Limit
Technical Society Participation Category		
Be an INCOSE member	5 PDU/year	15 PDU
Attend professional technical society local event/chapter presentation/exhibit	1 PDU/hour attendance (10 PDU/year limit)	30 PDU
Attend professional technical society conference/symposium	1 PDU/hour attendance (24 PDU/year limit)	72 PDU
Participate on professional technical society working groups, committees, etc.	1 PDU/hour of effort	No limit
Perform leadership role in professional technical society at local, national or international level	1 PDU/hour of effort	No limit
SE Course Work & Publication Category		
Complete a technical graduate level course	2 PDU/class hour	No limit
Attend educational course, tutorial, or seminar	1 PDU/hour	No limit
Teach professional development coursework, including presentations not part of job function.	2 PDU/hour (prep) 1 PDU/hour (teach)	40 PDU
Write & publish SE article	5 PDU/article	No limit
Write & publish SE book	30 PDU (primary author)/book 10 PDU (contributing author)/book	No limit
Attend vendor presentation with educational value	1 PDU/hour attendance 5 PDU/year limit	15 PDU
SE Job Function Participation Category		
Receive patent award	10 PDU/award	No limit
Serve as designated lead systems engineer for a system, product or service	15 PDU/year	45 PDU
Lead organization to increase INCOSE systems engineering certifications	5 PDU/year	15 PDU



All of the Renewal Material is Available On-line

Systems Engineering Professional Certification

The International Council on Systems Engineering has established a multi-level Professional Certification Program to provide a formal method for recognizing the knowledge and experience of systems engineers, regardless of where they may be in their career.

Education & Careers

- ▶ Certification
 - ▶ Certification Introduction
 - ▶ Process Flow
 - ▶ How do I apply?
 - ▶ How do I renew?
 - ▶ INCOSE Code of Ethics
 - ▶ Frequently Asked Questions
 - ▶ Future Certification Levels
 - ▶ List of CSEPs
 - ▶ List of ASEPs
 - ▶ List of ESEPs
 - ▶ Certification Program History
 - ▶ Training Providers
 - ▶ Certification Agreements
 - ▶ All Certification Related Forms
- ▶ Short Courses
- ▶ Job Bank
- ▶ Careers in SE
- ▶ FAQs for Students
- ▶ Policy on SE Education
- ▶ Directory of SE Academic Programs

What is certification?
 Certification is a formal process whereby a community of knowledgeable, experienced, and skilled representatives of an organization, such as INCOSE, provides formal recognition that a person has achieved competency in specific areas (demonstrated by education, experience, and knowledge). Certification differs from licensing in that licenses are permissions granted by a government entity for a person to practice within its regulatory boundaries. Certification also differs from a "certificate" that documents the successful completion of a training or education program.

ESEP	Expert Systems Engineering Professional
CSEP	Certified Systems Engineering Professional
ASEP	Associate Systems Engineering Professional
-Acq	US DoD Acquisition Extension



The screenshot shows a web browser window displaying the INCOSE website. The page title is "INCOSE - Forms - Windows Internet Explorer". The address bar shows the URL "http://www.incose.org/educationcareers/certification/forms.aspx". The page features a navigation menu with options like Home, About INCOSE, Membership, Chapters, News & Events, Products & Publications, Education & Careers, and Advancing the Practice. The main content area is titled "SE Certification Forms Library" and lists several forms for download:

- Initial Application for INCOSE Systems Engineering Certification**
 - Instructions for Filling out SE Certification Application (498KB, 60KB)
 - Application for Systems Engineering Certification (637KB, 84.5KB)
 - Instruction Letter to References (475KB, 54KB)
 - Certification Reference Endorsement Form (489KB, 37.5KB)
- Appeals**
 - Certification Reconsideration Appeal (55KB, 11KB)
- Renewal of INCOSE Systems Engineering Certification**
 - Instructions for Renewing SE Certification (464KB, 244KB)

A sidebar on the left lists "Education & Careers" with sub-links for Certification, Short Courses, Job Bank, Careers in SE, FAQs for Students, Policy on SE Education, and Directory of SE Academic Programs. A right sidebar titled "Certification Program Detail" lists various topics like Process Flow, Which Certification is Right for Me?, How do I apply?, How do I Renew?, How much does certification cost?, INCOSE Code of Ethics, Frequently Asked Questions, Possible Future Certification Levels, List of CSEPs, History, and Training Providers.

Download the [forms](#) from INCOSE website

- Application for Systems Engineering Certification
- Instructions for Filling out SE Certification Application
- Instruction Letter to References
- Certification Reference Endorsement Form



Form 1 Application for INCOSE Systems Engineering Certification

See Form 2 (6/25/2008) "Instructions for Filling Out a Systems Engineering Certification Application"

The shaded rectangular areas can be activated with a click of your left mouse button to insert (or remove) an "X" in the square shaded boxes. The form is protected to prevent modifications to the form. Please submit this form as a Microsoft Word document; do not convert it to any other format, such as PDF, for submittal.

Section 1

Date: _____

Applicant's Last: _____

Date of Birth: _____

Mailing Address: _____
 Number & Street: _____
 City: _____
 State or Province: _____
 Zip or Postal Code: _____
 Country: _____

E-mail Address: _____

Phone Number: _____
 Business: _____
 FAX: _____
 Home: _____

Name of Primary Reference: _____
 Address of Reference: _____
 Number & Street: _____
 City: _____
 State or Province: _____
 Zip or Postal Code: _____

Form 2 Instructions for Systems Engineering (SE) Certification Application (Form 1)

General Instructions

1. An element of the type of information provided in this form is required for certification.
2. The element of information provided in this form is required for certification. The shaded rectangular areas will expand to accommodate your text. The shaded square boxes can be activated with a click of your left mouse button to insert (or remove) an "X" in the square shaded boxes. The form is protected to prevent modifications to the form. Please submit this form as a Microsoft Word document; do not convert it to any other format, such as PDF, for submittal.
3. The applicant for professional certification must provide ample references in the form. Recommendations should be provided in the shaded areas for paste inputs. The square boxes of the form should be returned in the square boxes of the form.
4. Applicants should provide ample references in the form. Recommendations should be provided in the shaded areas for paste inputs. The square boxes of the form should be returned in the square boxes of the form.

To: Reference Home Address: _____
 City, State: _____
 Country: _____

Dear _____:
 _____ (Applicant) with the International Council on Systems Engineering (INCOSE) is applying for certification. Your validation of the applicant's experience is requested.

The certification references in this form provide ample recommendations. The shaded areas for paste inputs. The square boxes of the form should be returned in the square boxes of the form.

Please carefully follow the instructions below:

- Applicant should provide ample references in the form.



Reference's Comments & Recommendations on CSEP Application

See Form 4A "Instruction Letter to References" for guidance on filling out this form with your comments and recommendations on certification of the applicant.

The shaded rectangular areas in the form are for you to type or paste inputs. The rectangular shaded areas will expand to accommodate your text. The shaded square boxes can be activated with a click of your left mouse button to insert (or remove) an "X" in the square shaded boxes. The form is protected to prevent modifications to the form. Please submit this form as a Microsoft Word document; do not convert it to any other format, such as PDF, for submittal.

Applicant's Information

Applicant's Name: Last: _____ First: _____ MI: _____

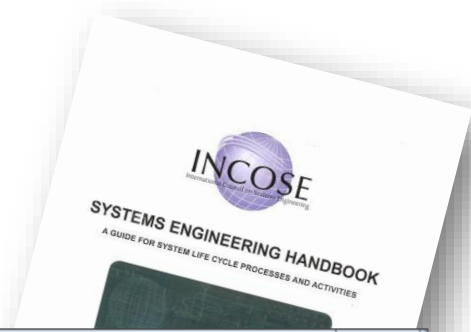
Mailing Address: Number & Street: _____
 City: _____
 State or Province: _____
 Zip or Postal Code: _____
 Country: _____

Reference's Information

Reference's Name: Last: _____ First: _____ MI: _____

Mailing Address: Number & Street: _____
 City: _____

The Handbook



- Available to members as a free download
- Log into Connect / Product Area

Authentication Required

The server connect.incose.org:443 at connect.incose.org requires a username and password.

User Name:

Password:

Home - Product Area - Windows Internet Explorer
 https://connect.incose.org/products/default.aspx

INCOSE Connect > Product Area
 Welcome Paul Martin

Bringing the systems engineering community together
INCOSE CONNECT
Product Area

Home Documents and Lists Create Site Settings Help

View All Site Content
Documents
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Lists
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Surveys
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 Shared Documents
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 Links

INCOSE Product Area
 This product portal is designed to make it easy for you to access the latest INCOSE technical data from INCOSE working groups, leverage INCOSE products, and learn the...
 This Product Area is managed by the Technical Leadership Team. To request the updates reports, please contact TLT-comms@incose.org or the webmaster.

Announcements
Updated Measurement Primer Now Available for download
 by Christine Kowalski
 The measurement practices described here apply to all aspects of a systems engineering process. The principle activities, tasks, and resources involved in an SE measurement process "measurement"...

REGAL: Requirements Engineering Guide for All
 by Christine Kowalski
 REGAL available. Product of Requirements Working Group

Add new announcement

Shared Documents

Type	Descriptive Title	Name	Short Description	Author(s)	Publication Date	File Size
INCOSE Products : (11)						
Folder	Technical Resources					
Folder	Other Technical Products					
Folder	Systems Engineering Vision					
Folder	SE Handbook Certification Tutorial					
Folder	Webinar Archives					
Folder	SE Handbook					
Folder	Measurement Products					
Folder	Webinar Archives - MBSE					
Folder	Webinar Archives - Chapter					
Folder	Webinar Archives - Complex Systems					
File	2004-2005 Member CD	2004-MemberCD	This first Member CD, containing all INCOSE products, was mailed to members with the October 2004 INSIGHT. E-only members can download their version here. If you only want an individual product, all INCOSE products can be found in the Product Area.	INCOSE	11/1/2004	72653 KB

INCOSE Products : (3)

Type	Descriptive Title	Name	Short Description	Author(s)	Publication Date	File Size
Folder	SE Handbook Historical					
File	Systems Engineering Handbook v3.1	INCOSE Systems Engineering Handbook v3.1 (Red Printing)	The INCOSE Systems Engineering Handbook ver 3.1 has been updated to address minor errata identified by current users. Spelling and appendices corrections have also been made.	Cecilia Haskins, Kevin Forsberg and Michael Krueger	12/24/2008	4336 KB
File	INCOSE SE Handbook v3.2	SE Handbook 2010-0201 v3.2 Updated Final 8.5x11	The INCOSE SE Handbook v3.2 has been updated: * Bring the text into alignment with ISO/IEC 15288:2008 * Resolve inconsistencies in v3.1, * Consolidate related process information * Eliminated most of the appendices, added elaborations	SE Handbook Team, Kevin Forsberg	2/15/2010	6693 KB

My Sites List
 INCOSE Connect
 Aerospace and Defense
 Architecture Working Group
 INCOSE Arch Workshop Bi-Weekly Meeting - TEST
 INCOSE Architecture Workshop Bi-Weekly Meeting
 INCOSE Architecture Workshop Workspace
 INCOSE Comms

Exam Preparation

• Read the Handbook – 374 Pages

- 1 Systems Engineering Handbook Scope
 - 2 Systems Engineering Overview
 - 3 Generic Life-Cycle Stages
 - 4 Technical Processes
 - 4.1 Stakeholder Requirements Definition Process
 - 4.2 Requirements Analysis Process
 - 4.3 Architectural Design Process
 - 4.4 Implementation Process
 - 4.5 Integration Process
 - 4.6 Verification Process
 - 4.7 Transition Process
 - 4.8 Validation Process
 - 4.9 Operation Process
 - 4.10 Maintenance Process
 - 4.11 Disposal Process
 - 4.12 Cross-Cutting Technical Methods
 - 4.13 References
 - 5 Project Processes
 - 5.1 Project Planning Process
 - 5.2 Project Assessment and Control Process
 - 5.3 Decision Management Process
 - 5.4 Risk Management Process
 - 5.5 Configuration Management Process
 - 5.6 Information Management Process
 - 5.7 Measurement Process
 - 5.8 References
 - 6 Agreement Processes
 - 6.1 Acquisition Process
 - 6.2 Supply Process
 - 6.3 References
 - 7 Organizational Project-Enabling Processes
 - 7.1 Life Cycle Model Management Process
 - 7.2 Infrastructure Management Process
 - 7.3 Project Portfolio Management Process
 - 7.4 Human Resource Management Process
 - 7.5 Quality Management Process
 - 7.6 References
 - 8 Tailoring Processes
 - 8.1 Tailoring Process
 - 8.2 References
 - 9 Specialty Engineering Activities
 - 9.1 Design for Acquisition Logistics – Integrated Logistics Support
 - 9.2 Cost-Effectiveness Analysis
 - 9.3 Electromagnetic Compatibility Analysis
 - 9.4 Environmental Impact Analysis
 - 9.5 Interoperability Analysis
 - 9.6 Life-Cycle Cost Analysis
 - 9.7 Manufacturing and Producibility Analysis
 - 9.8 Mass Properties Engineering Analysis
 - 9.9 Safety & Health Hazard Analysis
 - 9.10 Sustainment Engineering Analysis
 - 9.11 Training Needs Analysis
 - 9.12 Usability Analysis/Human Systems Integration
 - 9.13 Value Engineering
 - 9.14 References
- Appendix A: System Life-Cycle Process N2 Chart
Appendix B System Life-Cycle Process Mappings
Appendix C Acronym List
Appendix D Terms and definitions

Exam Preparation Courses



- <http://www.umbc.edu/trainctr/engineering/csep.html>
- Next Class – On-Line:
 - 4 Saturdays April 2 - April 23, 2011 9:0AM. - 4:00PM.
 - Uses Adobe Connect
- Teacher: **Paul Martin, CSEP**
- Price: \$1,295.00 (discounts for INCOSE Members)



- <http://www2.csm.com/systems-engineering>
- Missed last class: March 8 – 10th in Northern VA.
- Teacher: **Dr. Kevin Forsberg, ESEP**, co-founder of CSM



- <http://www.honourcode.com/crsinfo-csep.htm>
- Next Classes:
 - Minneapolis, MN - 30-31 Mar 11
 - Huntsville, AL - 11-12 Apr 11
 - Seattle, WA - 13-14 Jul 11
- Teachers: **Eric Honour, CSEP**
Bill Fournier, CSEP-ACQ, PMP
- Price: \$990

Free Handbook Tutorial



- <https://connect.incose.org/tut/sehandbook/default.aspx>
- Log into INCOSE Connect
- Look for **SE Handbook Tutorial** under *My Sites List* on left
- 19 classes, 1 hour at lunch
- INCOSE Live Meeting and telecon infrastructure has been set to handle up to a total of 300 participants.
- Teacher: John Clark, CSEP, Hampton Roads Area Chapter Director of Education & Training, and Chief Engineer in Northrop Grumman Information Systems

Suggestions

- E-Mail prospective references – At least 5
 - Confirm their interest
 - Confirm their Information for application

Reference's Name:

Last:

First:

MI:

Mailing Address:

Number & Street:

City:

State or Province:

Zip or Postal Code:

Country:

Business Affiliation/Unit:

Business or Professional Title:

Business Phone Number:

Home Phone Number (if we may contact you there):

E-mail Address:

Are you an INCOSE Certified Systems Engineer? Yes No

If Yes, your Certification Number:

E-mails

Dear so and so,

I'm applying for certification as a Systems Engineering Professional with the International Council on Systems Engineering (INCOSE). Part of the certification process requires three references who can attest to my systems engineering acumen. So I thought of you and how you can explain my work in [*place here Systems engineering function(s) i.e. Requirements Engineering*] for [*place here the activity you did i.e. the SpaceAge contract where I analyzed the customer comments against the system spec and went through the CM process in order to incorporate the changes.*]

They need a two week turn around so **before** I submit my application and start the clock I wanted to make sure my references were agreeable and available to help me out. So let me know if you can. No pressure if you're uncomfortable with the request or, more likely, too busy. Just let me know so I can keep looking around. Attached are the instructions and form so you'll know what you'll be asked to do.

Thanks for the consideration. Just let me know if you can or can't. If you can, I need the "reference's information" (mailing address, title, etc) so I can fill out the application. Don't fill out the forms until I send them to you again.

Let me know,

INCOSE Certification Advisory Group (CAG)



- Mark A. Wilson, ESEP (CAG Chair)
- Jerry Fisher, ESEP (CAG Co-Chair)
- David Hall, ESEP (CAG Recorder)
- Eileen Arnold ESEP-Acq
- Terje Fossnes, ESEP
- Bill Mackey, ESEP
- Bruce Shelton, CSEP
- Dr. Dan Surber, ESEP
- Bob Turk, ESEP

The INCOSE Certification Advisory Group is responsible for the certification policies & procedures and the examination content.

Any Questions?



Email Contacts

- Certification Office: secert@incose.org
- Dave Walden, CSEP-Acq
 - Certification Program Manager:
David.Walden@incose.org

For more information visit:

www.incose.org/educationcareers/certification/

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