INCOSE Systems Engineering Professional (SEP) Certification

Program Overview

June 2012

The INCOSE SEP Program Purpose and Benefits

- The INCOSE SEP program has been developed as the highest quality, independent assessment of system engineering professionals benefiting:
- 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 increasing recognition of its value to professionals, to organizations/ institutions, and to the overall systems engineering community.

Topics

- What is certification and why is it important?
- Who is recognizing and supporting certification?
- What level of certification is right for me?
- How do I apply for certification?
- How do I renew my certification?
- Where can I find more information?

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What is INCOSE?

- The International Council on Systems Engineering (INCOSE) is a not-for-profit membership organization founded in 1990 to develop and disseminate the interdisciplinary principles and practices that enable the realization of successful systems.

- Mission
  Share, promote and advance the best of systems engineering from across the globe for the benefit of humanity and the planet.
- Vision
  The world's authority on Systems Engineering.

Certification is just one of many INCOSE products and offerings.

What Is Certification?

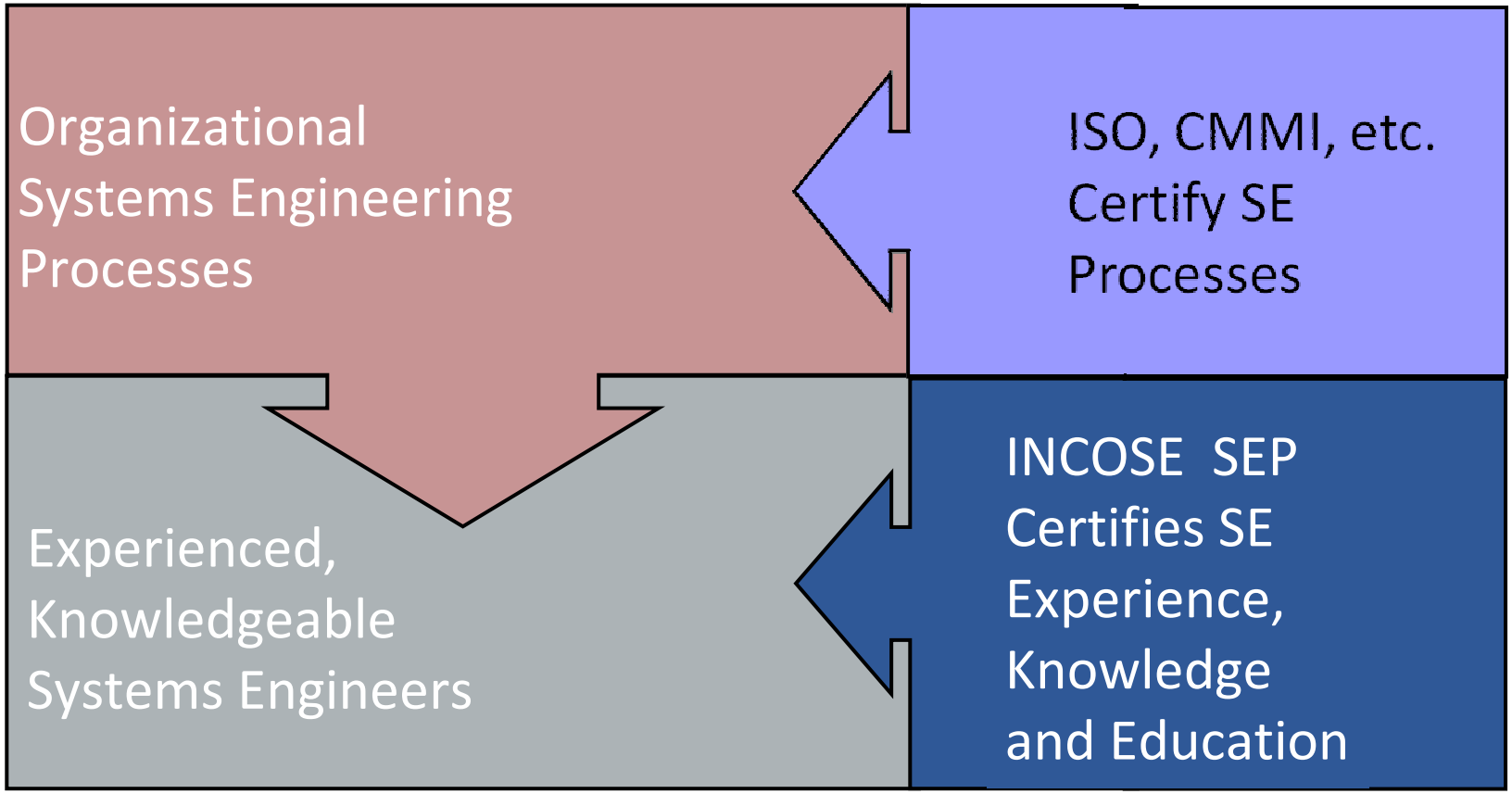
- Certification is an occupational designation
  - Provides confirmation of an individual's competency (demonstrated knowledge, education, and experience) in a specified profession or occupational specialty
- Certification is a formal process
  - Issued by an organization
- Certification is voluntary
  - 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.

Origins of INCOSE Certification

- INCOSE members supported establishment of a certification program in their responses to a 2001 survey:
  - Certification will increase the credibility, marketability, and professional status of Systems Engineers
  - A certification program will benefit employers by providing an objective means for selecting candidates and assessing skills
  - More than half of the respondents indicated that they would participate in a certification program
  - Note: Similar sentiments were re-iterated in a 2003 member survey.
- The Board of Directors (BOD) of INCOSE recognized an industry-wide void and in 2002 responded to a request by its members to establish a program to certify the knowledge and experience capabilities of personnel who perform Systems Engineering
- Certifications have been offered by INCOSE since 2004

Successful Systems Engineering



INCOSE SEP focuses on your people.
It complements your organizational initiatives.

Why is Certification Important?

For organizations…

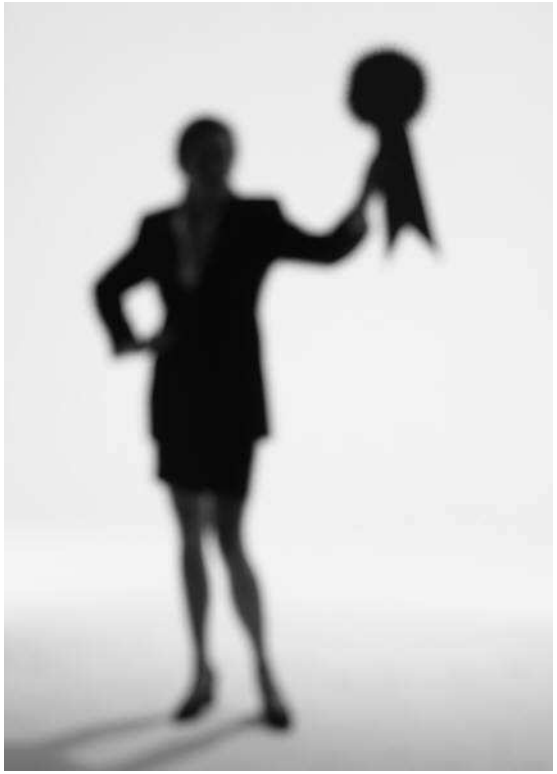
- Formally recognizes the Systems Engineering capabilities of your professional staff
- Can provide a discriminator for your proposals
- Can be used as part of the hiring and promotion process
- Provides an independent external assessment
- Encourages employee participation in continuing education

INCOSE SEP sets your organization apart!

Why is Certification Important?

For individuals…

- Formally recognizes your Systems Engineering capabilities
- Provides a discriminator for job applicants
- Provides a competitive advantage in your career
- Provides a portable Systems Engineering designation that is recognized across industry domains
- Participation in continuing education indicates your commitment to personal development



INCOSE SEP sets you apart!

Why is Certification Important?

For your teams…

- Allows the team to level-set on Systems Engineering concepts and activities
- Helps establish a common Systems Engineering language for your team
- Helps break down…
  - geographic boundaries
  - organizational boundaries
  - cultural boundaries

INCOSE SEP 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

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A growing number of organizations are recognizing the value of the INCOSE SEP.

- U.S. Department of Defense, Office of the Undersecretary, Acquisition & Technology, Systems and Software Engineering
- Federal Aviation Administration, SE-2020 RFP
- U.S. Department of Homeland Security, Secure Border Initiative RFP
- National Research Council, Committee on Pre-Milestone A Systems Engineering: A Retrospective Review and Benefits for Future Air Force Systems Acquisition
- Federal Highway Administration and the California Department of Transportation Systems Engineering Guidebook

Federal Highway Administration and the California Department of Transportation SE Guidebook for ITS Web Site

- **Chapter 7 Capabilities and Best Practices in System Development**
  - "Systems Engineering Technical Assistance [SETA] consultants or systems managers may not be currently considering any formal assessment to be performed. An internal assessment using continuous representation would be recommended. As an alternative, staff can demonstrate their expertise through professional certification programs like the INCOSE Certified Systems Engineering Professional [CSEP] and Project Management Institute [PMI] certification."

Source: http://www.fhwa.dot.gov/cadiv/segb/views/document/Sections/Section7/7.htm, January 2007

Pre-Milestone A and Early-Phase Systems Engineering: A Retrospective Review and Benefits for Future Air Force Acquisition

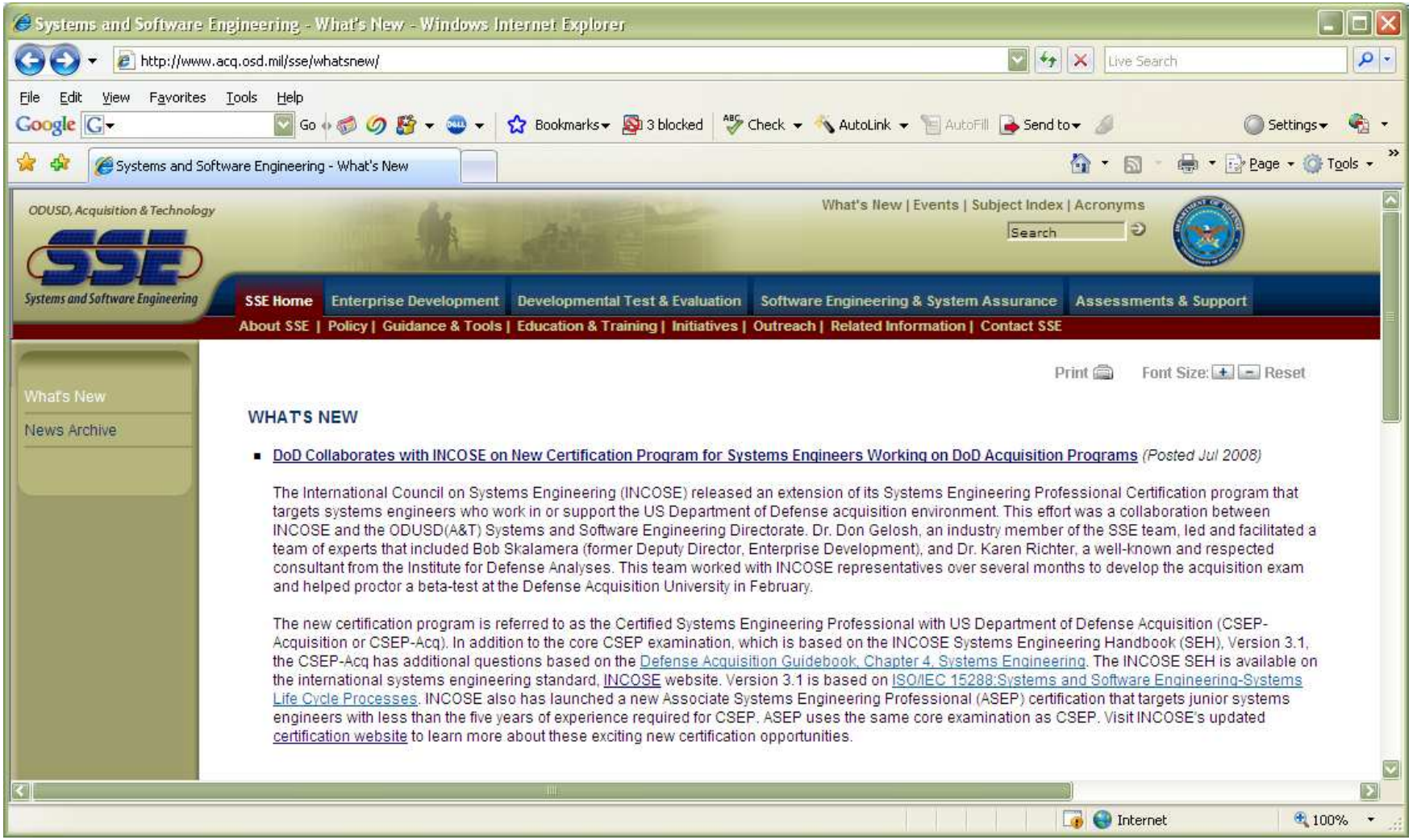
Committee on Pre-Milestone A Systems Engineering: A Retrospective Review and Benefits for Future Air Force Systems Acquisition, National Research Council

ISBN: 0-309-11476-4,
150 pages, 6 x 9, (2008)

Production of Systems Engineers by U.S. Industry

- "…The committee interviewed representatives from four major U.S. aerospace companies … common themes that emerged from the interviews…
  - *Training, not just education, is crucial…*
  - *All the companies agree that mentoring is essential…*
  - *Subject matter expertise and/or domain knowledge are more important than is a knowledge of tools…*
  - *Both internal and external training are valuable; the most successful training approach is usually a hybrid…*
  - *Certification by and participation in INCOSE are considered essential.* All the companies require certification (acquired through the right training and experience), and all participate in and support INCOSE.
  - *Investment in SE training is necessary whether or not the return on investment can be directly estimated…*
  - *A systems engineering culture is essential…*
  - *Systems engineering organizations vary…*
  - *The "trigger" for a company's emphasis on systems engineering is usually failing programs…"*

US Undersecretary of Defense, Acquisition & Technology, Systems and Software Engineering "What's New" News Announcement – July 2008



Source: http://www.acq.osd.mil/sse/whatsnew/

Certification Magazine
Article by Meagan Polakowski

- Introduction to INCOSE's Certification options
- Focus was on the new July 2008 offerings
- Interview with INCOSE Certification Program Manager

CERTIFICATION MAGAZINE

INCOSE Systems Engineer Certs Offer Broad-Based Skills Validation

Sept. 15, 2008

Back By Meagan Polakowski –

The job title of "systems engineer" might not sound all that glamorous at first, but once you consider that these IT pros work on complex systems that can include military aircraft and tanks, the job description suddenly becomes a lot more exciting.

As David Walden, Certified Systems Engineering Professional (CSEP) and INCOSE certification program manager, explained it, a systems engineer is an IT professional who heads up a development project on an intricate, software-intensive system. The system engineer has a broad role, looking at the entire system from conception to final disposal.

Take, for example, a nuclear reactor. Walden said the systems engineer would need to consider: "How do you dispose of that system safely, in a way that is both economical and good for the environment? How do you design the system so that it can be easily disassembled or reused or recycled?

"[Ultimately], a systems engineer looks at the whole problem and interfaces with the customer to determine what the real need is, envision what that system will be and then make sure it's delivered and meets and exceeds [the] customer's expectations," Walden said.

"They translate all of those vague and soft-and-fuzzy stakeholder [requirements] – 'I want a car that goes fast,' 'I want a rocket ship that can be launched 42 times' – and then they work with the design engineers to make that a technical reality."

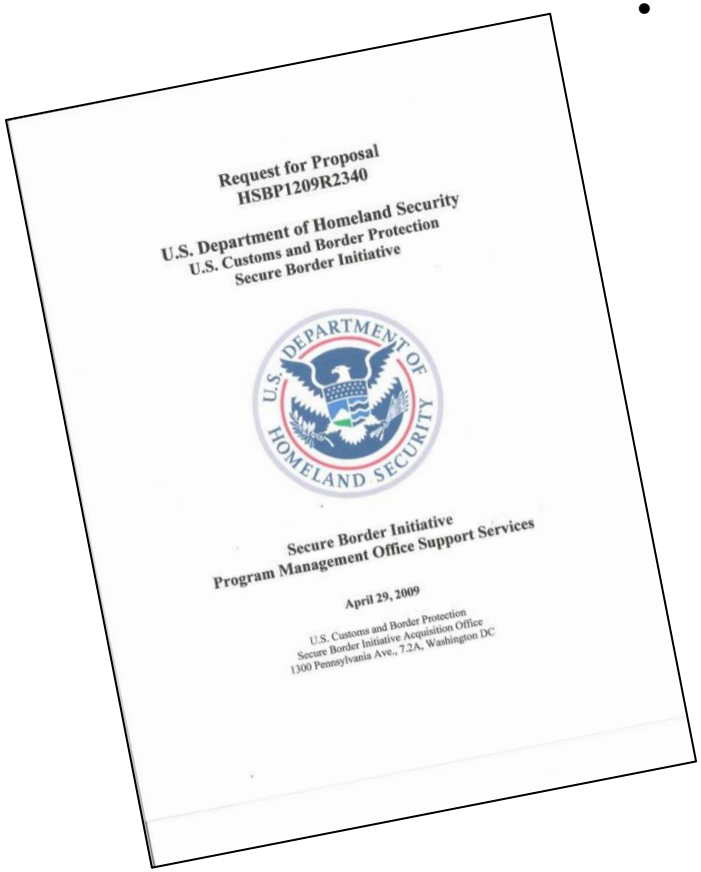
Like many roles in the IT industry, there are organizations dedicated to training and certifying systems engineers. One such organization is the International Council on Systems Engineering (INCOSE). The professional society – created in 1990 – serves more than 6,000 professionals worldwide through its efforts to provide education and development opportunities to the global systems engineering community. INCOSE also establishes professional standards for the field.

Earlier this year, INCOSE upgraded its certification program to a three-tiered model. CSEP is the core certification for the program and validates a foundational level of systems engineering knowledge. This exam – created in 2004 – was upgraded in July in conjunction with the release of a new version of INCOSE's Systems Engineering Handbook: Version 3.1. This upgrade gives the exam an international perspective, using international standard ISO/IEC 15288.

The CSEP is for professionals with a minimum bachelor's degree in science or a technical subject, along with five years of experience in systems engineering. The degree also can be replaced by additional years of experience.

Source: http://www.certmag.com/print.php?in=3583

Secure Border Initiative RFP
US Department of Homeland Security


Request for Proposal
HSBP1209R2340

U.S. Department of Homeland Security
U.S. Customs and Border Protection
Secure Border Initiative

Secure Border Initiative
Program Management Office Support Services

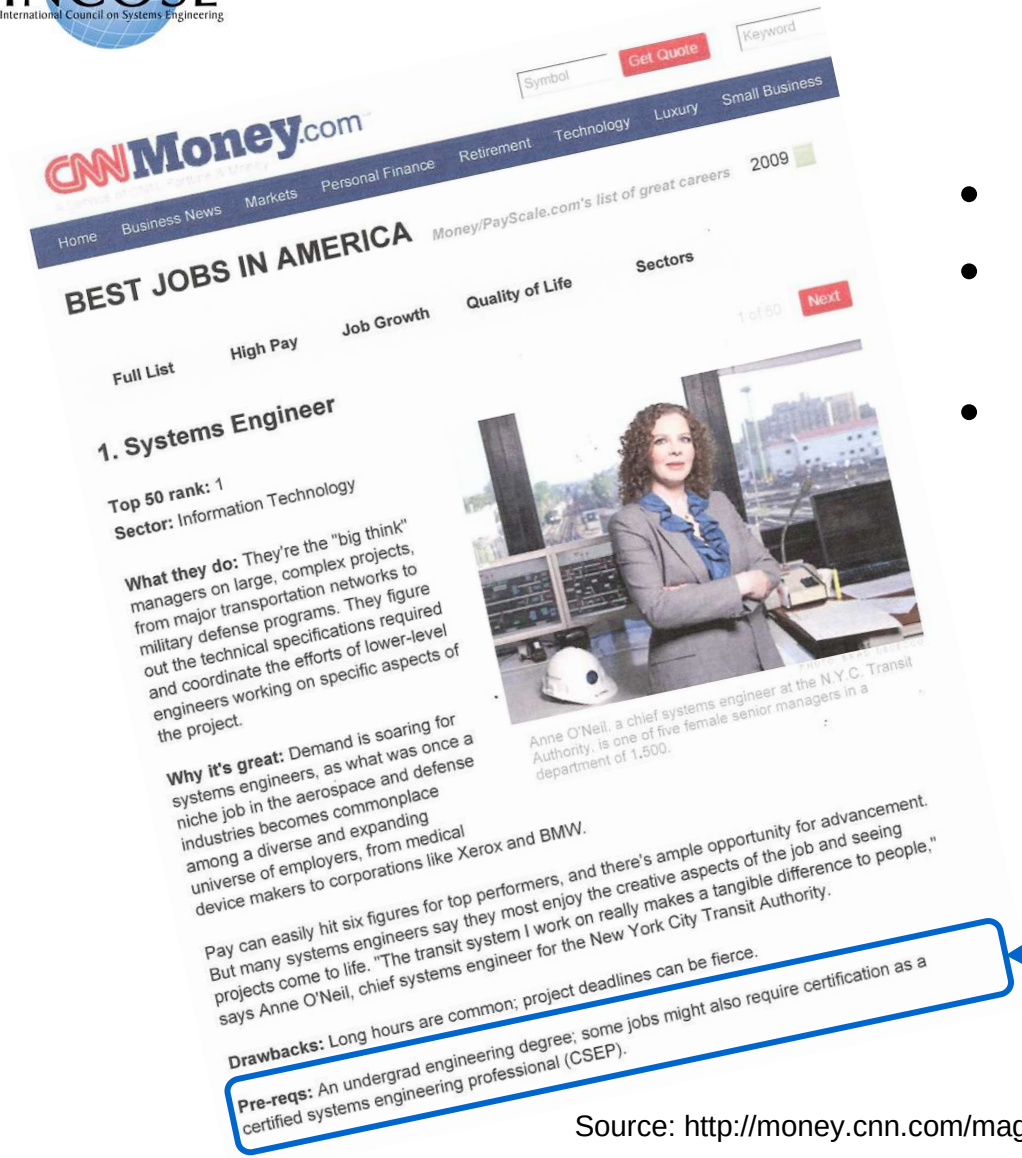
April 29, 2009

U.S. Customs and Border Protection
Secure Border Initiative Acquisition Office
1300 Pennsylvania Ave., 7.2A, Washington DC

- Section H.16 Key Personnel
  (b) **Key Personnel #2: Senior Systems Engineer**
  - "The Contractor shall identify a Senior Systems Engineer (SE) for the Chief Engineer and the Mission Engineering Directorate to serve as the Government's major Systems Engineer POC and to provide supervision and guidance for all engineering Contractor personnel assigned to the contract. The Senior SE shall be Systems Planning, Research, Development and Engineering (SPRDE) Level 2 certified or possess an equivalent certification from private industry such as INCOSE CSEP. The Senior System Engineer is ultimately responsible for the quality and efficiency of the Engineering program support. The Senior SE shall have at least 8 years experience in systems engineering; and educational experience and accomplishments appropriate to the discipline. The Senior SE should have demonstrably strong experience managing and overseeing the successful implementation of proven, disciplined systems engineering processes resulting 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."

Source: US Department of Homeland Security, April 2009

CNNMoney.com



CNNMoney.com

Home | Business News | Markets | Personal Finance | Retirement | Technology | Luxury | Small Business

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BEST JOBS IN AMERICA *Money/PayScale.com's list of great careers* 2009

Full List | High Pay | Job Growth | Quality of Life | Sectors | 1 of 50 | Next

1. Systems Engineer

Top 50 rank: 1
Sector: Information Technology

What they do: They're the "big think" managers on large, complex projects, from major transportation networks to military defense programs. They figure out the technical specifications required and coordinate the efforts of lower-level engineers working on specific aspects of the project.

Why it's great: Demand is soaring for systems engineers, as what was once a niche job in the aerospace and defense industries becomes commonplace among a diverse and expanding universe of employers, from medical device makers to corporations like Xerox and BMW.

Anne O'Neil, a chief systems engineer at the N.Y.C. Transit Authority, is one of five female senior managers in a department of 1,500.

Pay can easily hit six figures for top performers, and there's ample opportunity for advancement. But many systems engineers say they most enjoy the creative aspects of the job and seeing projects come to life. "The transit system I work on really makes a tangible difference to people," says Anne O'Neil, chief systems engineer for the New York City Transit Authority.

Drawbacks: Long hours are common; project deadlines can be fierce.

Pre-reqs: An undergrad engineering degree; some jobs might also require certification as a certified systems engineering professional (CSEP).

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

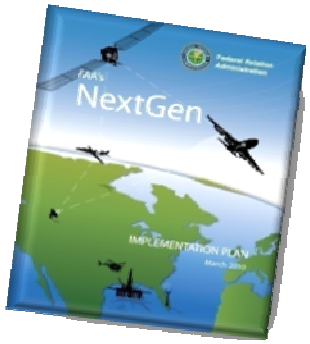
Source: http://money.cnn.com/magazines/moneymag/bestjobs/2009/snapshots/1.html

FAA SE-2020 RFP
US Federal Aviation Administration (FAA)

L.19.2 Staffing and Recruitment

(b) The Offeror must also provide the following statistics indicating total number of employees and:

- Percentage of employees with four year degrees from a nationally accredited college;
- Percentage of employees with four year technical or scientific degrees (e.g. mathematics, biology, chemistry, human factors, engineering, physics, and computer science) from nationally accredited colleges;
- Percentage of employees with advanced degrees from a nationally accredited college;
- Percentage of engineering employees with Professional Engineering (PE) licensing;
- Percentage of technical employees with International Council on Systems Engineering (INCOSE) certification;
- Percentage of employees with Project Management Professional (PMP) certification; and
- List other accreditations and other corporate accomplishments.



M.4.2.8 Management Approach Factor (Volume V)

(b) Staffing and Recruitment

…

Degree to which Offeror demonstrates through statistical data their corporate ability to recruit a talented workforce:

- Percentage of employees with four year degrees from a nationally accredited college;
- Percentage of employees with four year technical or scientific degrees (e.g. mathematics, biology, chemistry, human factors, engineering, physics, and computer science) from nationally accredited colleges;
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- Percentage of employees with Project Management Professional (PMP) certification; and
- List other accreditations and other corporate accomplishments;

Source: US FAA, November 2009

INCOSE offers organizations the opportunity to partner on SEP while still maintaining the quality and integrity of the credentials.

- Industry agreements
  - EADS
  - Booz Allen Hamilton
  - ManTech
  - MITRE
  - Lockheed Martin
  - TASC
  - BAE Systems
  - Jacobs Technology
  - ASTER Technology & Engineering
  - LinQuest

- University agreements
  - Stevens Institute of Technology, USA
  - University of Texas – El Paso, USA
  - École Polytechnique, France
  - ISAE/Supaero, France
- Other "special" agreements
  - USA Defense Acquisition University (DAU)
  - Object Management Group (OMG) OCSMP collaboration
  - Institution of Engineers, Singapore (IES), INCOSE German Chapter (GfSE), and Korean Council on Systems Engineering (KCOSE) certification framework

Certification Agreements - Industry

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

- EADS (June 2008)
- Booz Allen Hamilton (May 2009)
- ManTech (Aug 2009)
- MITRE (Jul 2010)
- Lockheed Martin (December 2010)
- TASC (June 2011)
- BAE Systems (June 2011)
- Jacobs Technology (October 2011)
- ASTER Technology & Engineering (January 2012)
- LinQuest (April 2012)

Certification Agreements - Academia

INCOSE has formed agreements with the following universities to collaborate in offering Systems Engineering Professional status to qualifying students:

- Stevens Institute of Technology, NJ, USA (January 2009)
- University of Texas – El Paso, USA (March 2010)
- École Polytechnique, Paris, France (December 2011)
- Institut Supérieur de l'Aéronautique et de l'Espace (ISAE)/Supaero, Toulouse, France (April 2012)

Certification Agreements - Special

- DAU Equivalency (February 2009) - Defense Acquisition University (DAU) recognizes INCOSE CSEP-Acq 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 are collaborating on mutually promoting the SEP and OMG OCSMP certification programs.
- INCOSE has entered agreements to jointly develop a certification recognition scheme by which national/local certification programs can be internationally recognized through INCOSE.
  - IES – The Institution of Engineers, Singapore (July 2010)
  - GfSE – The German Chapter of INCOSE (June 2011)
  - KCOSE – The Korean Council on Systems Engineering (October 2011)

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INCOSE SEP Architecture

For wherever you are in your career

Multi-Level Base Credentials

The base ASEP, CSEP, and ESEP credentials cover the breadth of systems engineering at increasing levels of leadership, accomplishments, and experience.

Entry Level

Foundation Level

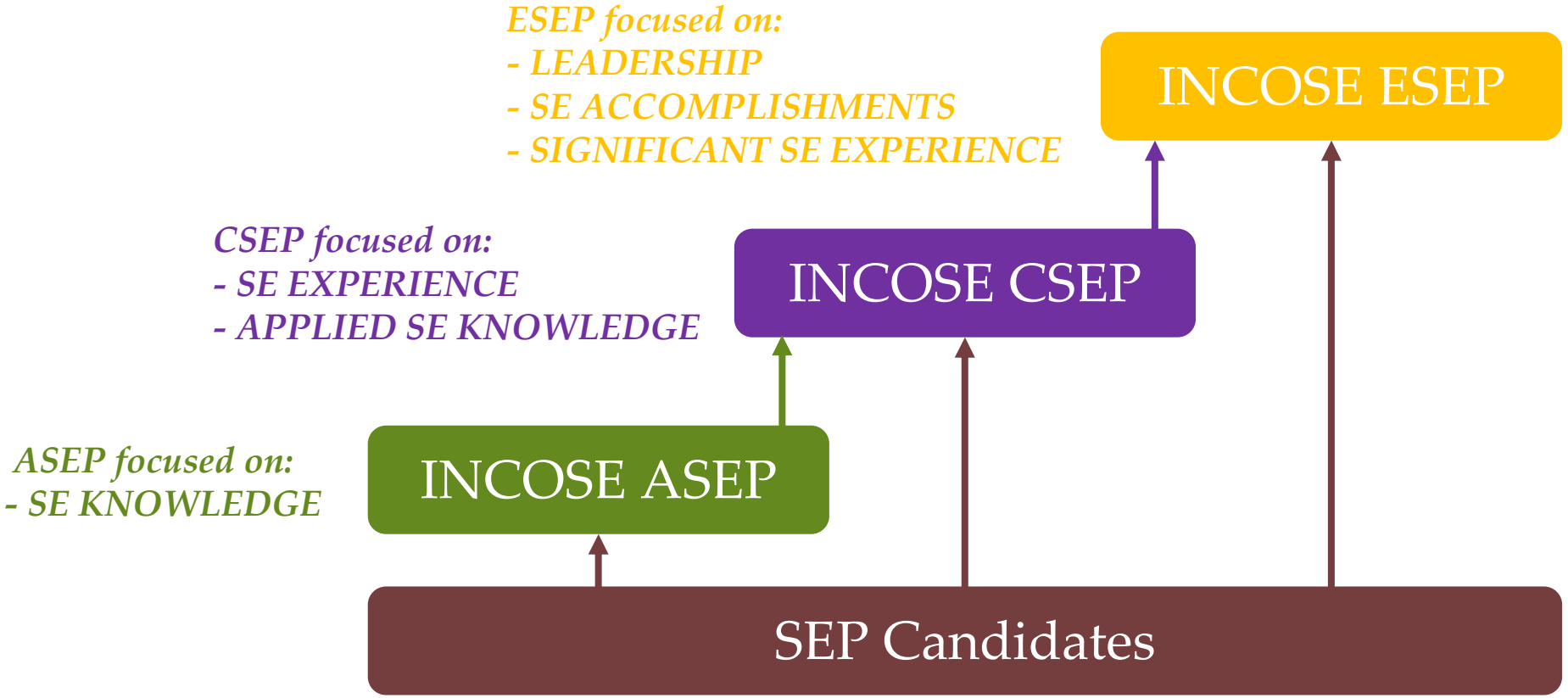
Senior Level

Extensions

Extensions focus on knowledge of a specific domain or subset of systems engineering and can only be earned after a base credential.

INCOSE ACQ™

The SEP Aligns with the Typical Levels of a Systems Engineering Career



You can enter at whatever SEP level is appropriate and can seamlessly transition between levels when ready.

Entry Level ASEP

Associate Systems Engineering Professional

- Targeted towards junior/maturing systems engineers and recent college graduates with limited systems engineering work experience
- ASEPs are certified against knowledge requirements
- Knowledge confirmed through an exam based on the INCOSE SE Handbook
- ASEPs must be, and remain, INCOSE members
- Renewal every 5 years through ongoing professional development, maximum duration of 15 years
- Available since 2008

Foundation Level CSEP

Certified Systems Engineering Professional

- Targeted towards systems engineers with five or more years of systems engineering work experience
- CSEPs are certified against substantiated experience, education, and knowledge requirements
- Experience must be substantiated by 3-5 work-related references
- Knowledge confirmed through an exam based on the INCOSE SE Handbook
- INCOSE membership not required
- Renewal every 3 years through ongoing professional development
- Available since 2004

Senior Level ESEP

Expert Systems Engineering Professional

- Targeted towards senior systems engineering leaders with recognized systems accomplishments, who have many years of systems engineering work experience
- ESEPs are certified against substantiated professional leadership, systems engineering accomplishments, experience, and education requirements
- At least 10 years of 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

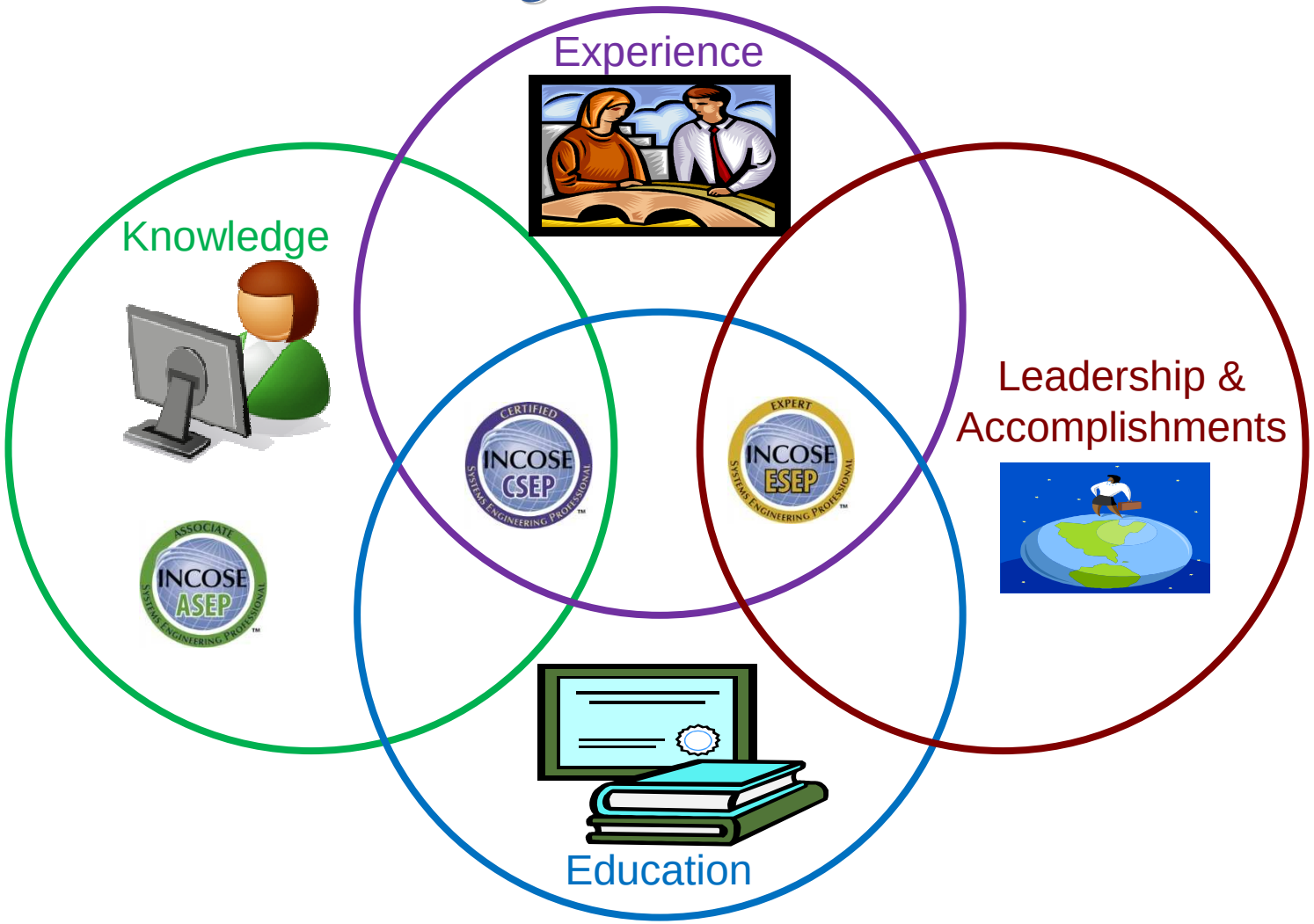
Acq Extension

US DoD Acquisition Extension

- 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 tested through both the core ASEP/CSEP exam and an additional Acq exam (Note: ESEPs must also take both exams)
- Extension renewed concurrently with the corresponding base certification
- Available since 2008

INCOSE ACQ™

INCOSE provides a measurable standard of certification consistent with ISO guidelines.



CSEP/ASEP Certification Knowledge Requirements

- CSEP/ASEP Exam Basis
  - INCOSE SE Handbook v3.2.2 (or 3.2.1, 3.2)
  - 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.

Acq Extension Knowledge Requirements

- Acq Extension Exam Basis
  - Defense Acquisition Guidebook (DAG) Chapter 4 on "Systems Engineering"
  - Always use reference version on INCOSE website
- Acq Extension Exam is
  - 1 hour in length
  - 60 questions
  - You must pass the core CSEP/ASEP exam before taking the Acq extension (even if an ESEP)
  - 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 version of the DAG Chapter 4 on the INCOSE Website is the basis for the acquisition extension exam.

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.*

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CSEP/ESEP Certification Education Requirements

- Education
  - Technical Bachelor's Degree (or international equivalent)
    - Acceptable engineering fields of study include: aeronautics, biomedical, chemical, civil, computer, electrical, environmental, mechanical, nuclear, software, systems
    - Acceptable other fields of study include: chemistry, computer science, mathematics, physics
    - If the Bachelor's degree does not come from the above fields, then a Masters or Doctorate degree (or international equivalent) in those fields is acceptable
    - INCOSE is the final authority on degree applicability
- Additional Experience Can be Substituted
  - Minimum of 5 additional years of general engineering experience for non-technical Bachelor's degree
    - Minimum of 10 years (with at least 5 in SE) for CSEP
    - Minimum of 25 years (with at least 20 in SE) for ESEP w/ CSEP
    - Minimum of 30 years (with at least 25 in SE) for ESEP w/o CSEP
  - Minimum of 10 additional years of general engineering experience if no Bachelor's degree
    - Minimum of 15 years (with at least 5 in SE) for CSEP
    - Minimum of 30 years (with at least 20 in SE) for ESEP w/ CSEP
    - Minimum of 35 years (with at least 25 in SE) for ESEP w/o CSEP

14 SE Functional Areas Recognized for Experience

- SE Technical Areas
  - Requirements Engineering
  - Design Development
  - System Integration
  - Qualification, Verification, and Validation
- SE Management Areas
  - Technical Planning
  - Technical Effort Assessment
  - Risk and Opportunity Management
  - Baseline Control
- SE Support Areas
  - Specialty Engineering
  - Process Definition
  - Training
  - Tool Support
  - Quality Assurance
- Plus "Other"
  - To allow for the variety of SE across domains
  - Applicants should describe what they are claiming as other experience

Successful candidates must have balanced experience across multiple areas

CSEP Certification Experience Requirements

- CSEP Systems Engineering Experience
  - Minimum 5 years of professional level experience in multiple SE functional areas (and any additional general years of experience necessary due to education status)
  - Minimum of at least 1 year of professional level SE experience in each of 3 or more of the 14 SE functional areas
  - Must be documented on the INCOSE application form
- Experience Confirmation
  - Recommendations from at least 3 colleagues / peers / managers
  - References must cover at least 5 years and 3 areas of SE experience claimed by the applicant (including any additional years)
  - References must be knowledgeable in Systems Engineering (or general engineering for any additional years)
  - Must be documented on the INCOSE reference form

CSEPs should have experience in performing some, but not necessarily all, of the SE functional areas

ESEP Certification Experience Requirements

- ESEP Systems Engineering Experience
  - Minimum 25 years (20 if already a CSEP) of professional level experience in multiple SE functional areas (and any additional general years of experience necessary due to education status)
  - Minimum of at least 2 years of professional level SE experience in each of 6 or more of the 14 SE functional areas
  - Must be documented on the INCOSE application form
- Experience Confirmation
  - Recommendations from at least 3 colleagues / peers / managers
  - References must cover at least 10 years of SE experience claimed by the applicant
  - References must be knowledgeable in Systems Engineering
  - Must be documented on the INCOSE reference form

ESEPs should have experience in performing most, but not necessarily all, of the SE functional areas

ESEP Professional Leadership Requirements

- Minimum of 5 years of professional leadership.
  - Product Development Leadership Years
    - Years of leadership in a product development position, such as chief engineer or development team lead
    - 1 year credit for each year in a leadership position - no limit
  - Technical Society Leadership Years
    - Leadership of a professional technical society, such as elected officer, appointed committee chair, editor, or thought leader
    - 0.5 year credit for each year of service – no limit
  - Advanced Academics Years
    - Technical Master's degree (or international equivalent)
      - 1 year credit
    - Technical Doctoral degree (or international equivalent)
      - 2 years credit if separate credit is given for a Master's degree
      - 3 years credit if separate credit is not given for a Master's degree
    - Systems engineering graduate-level teaching
      - 1 year of credit for each 500 hours of classroom instruction spread over a 3 year time period, limited to a maximum of 3 years
    - Category limited to a maximum of 4 years credit

ESEPs must show a history of professional leadership

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 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 reviews
  - Are done via phone
  - Typically do not exceeding 60 minutes (30 minutes for references)
  - Are in the English language
  - Are conducted by an evaluation panel consisting of INCOSE ESEPs trained as Certification Application Reviewers (CARs)

The oral reviews focus on verifying the applicant's leadership, accomplishments, and experience.

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




	SE Knowledge	Education	SE Experience	SE Leadership & Accomplishments
ASEP	Via an exam based on the INCOSE SE Handbook			
CSEP	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	
ESEP		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 (knowledge, education, experience, and leadership & accomplishments) allow for a variety of SE certifications to be earned.

So What Certification is Right for You?

- If you have just started (or plan to start) practicing systems engineering or have recently graduated and are interested in systems engineering

- If you are a practicing Systems Engineer with more than five years of systems engineering professional work experience

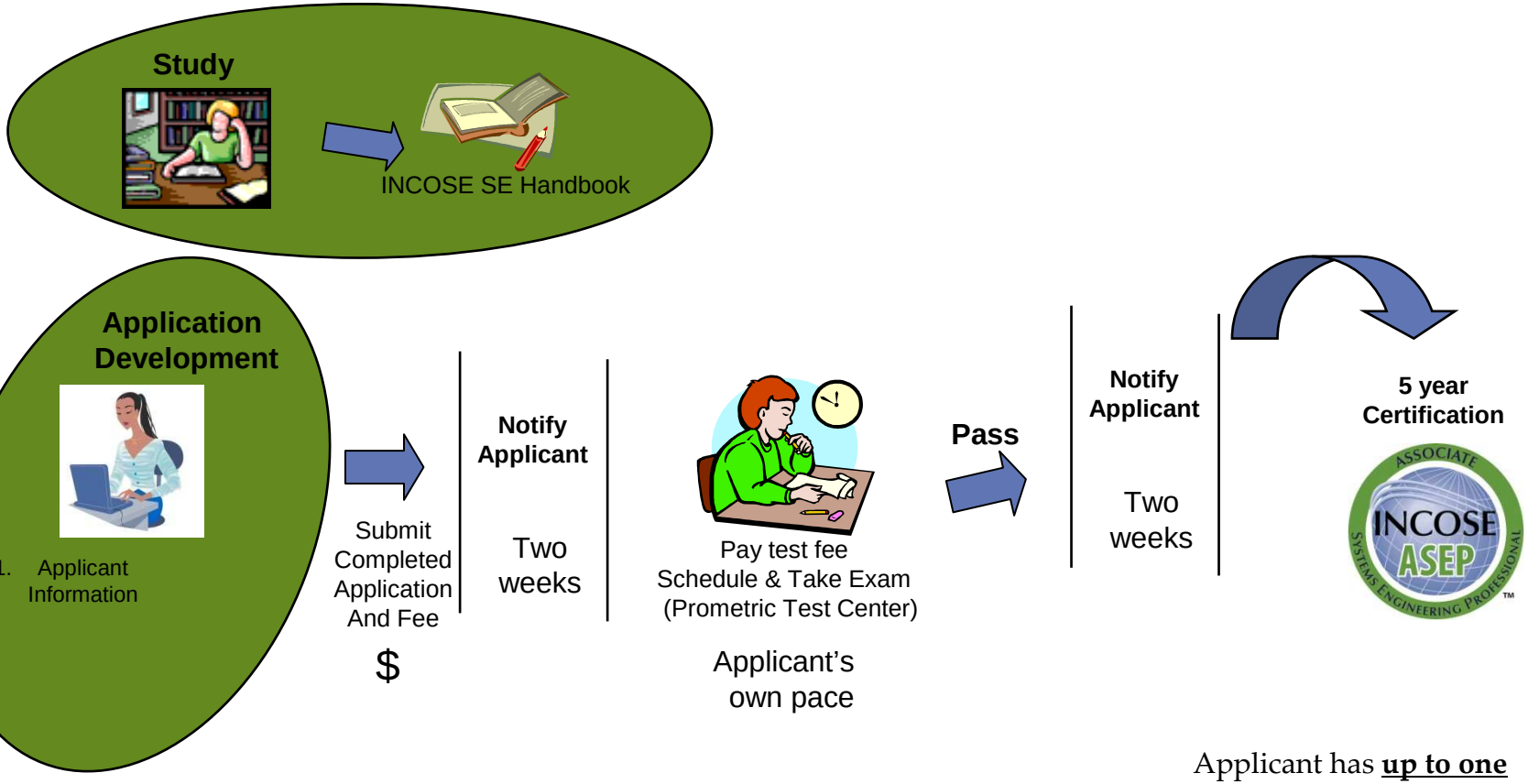
- If you are a systems engineering leader with recognized systems accomplishments and have many years of systems engineering professional work experience

- If you support or are working in a US DoD acquisition environment

Topics

- What is certification and why is it important?
- Who is recognizing and supporting certification?
- What level of certification is right for me?
- How do I apply for certification?
- How do I renew my certification?
- Where can I find more information?

ASEP Application Process



CSEP Application Process

Review First Option

Study

INCOSE SE Handbook

Application Development

1. Verifiable Education

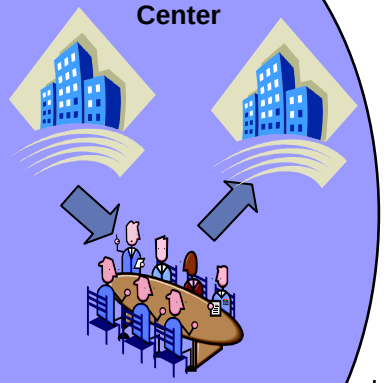
2. Verifiable Experience

3. Applicant's Advocates (three references knowledgeable about SE)

Submit Completed Application And Fee

$

INCOSE Application Center



INCOSE Evaluation

Pass

Notify Applicant

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

Notify Applicant

3 year Certification

Applicant has **up to one year** to pass the test. **Test is scheduled directly** with Prometric.

Applicant's own pace

Four to six weeks

Two weeks

Applicant's own pace

Timeline

CSEP Application Process

Exam First Option

Study

INCOSE SE Handbook

Application Development

1. Verifiable Education

2. Verifiable Experience

Applicant's own pace

Submit Completed Application And Fee

$

Notify Applicant

Two weeks

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

Applicant's own pace

Reference Submittal

3. Applicant's Advocates (three references knowledgeable about SE)

References' own pace

Pass

INCOSE Application Center

INCOSE Evaluation

Four to six weeks

Pass

Notify Applicant

Two weeks

3 year Certification

Applicant has **up to one year** to pass the test. **Test is scheduled directly** with Prometric.

Timeline

ESEP Application Process

Application Development

1. Verifiable Education

2. Verifiable Experience

3. Applicant's Advocates (three references knowledgeable about SE)

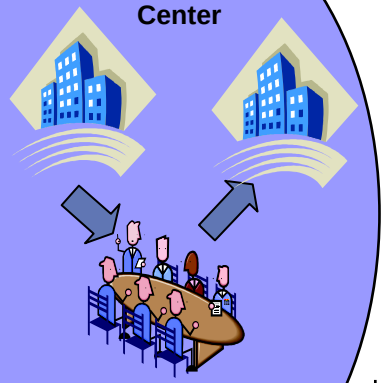
4. Verifiable Professional Development

Applicant's own pace

Submit Completed Application And Fee

$

INCOSE Application Center



INCOSE Evaluation

Four to six weeks

Two weeks

Notify Applicant

Pass

Notify Applicant

Conduct Oral Review with Applicant and Up to Two References (Via telephone conference)

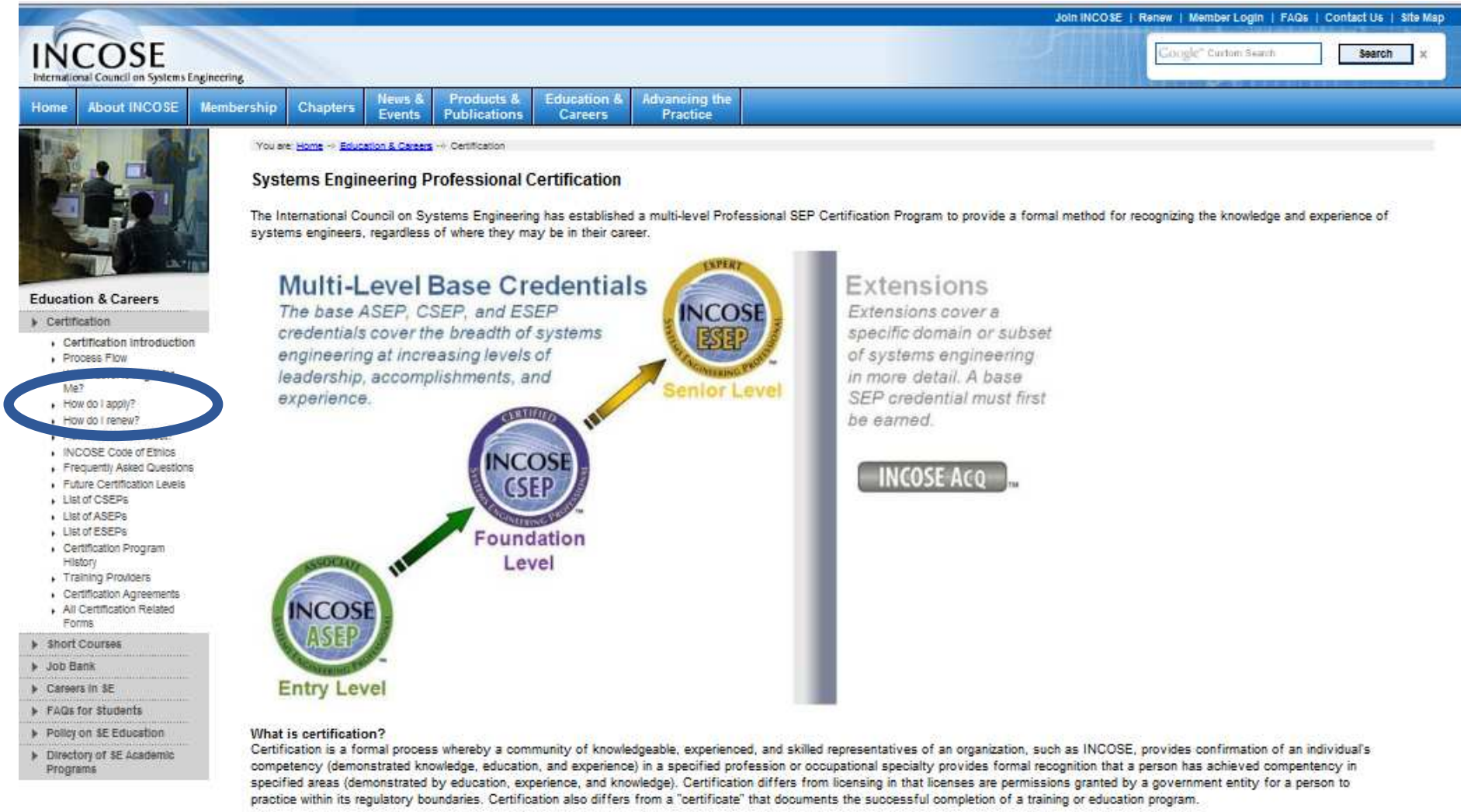
Mutual Agreement

Certification

Applicant has **up to one year** to complete the entire process.

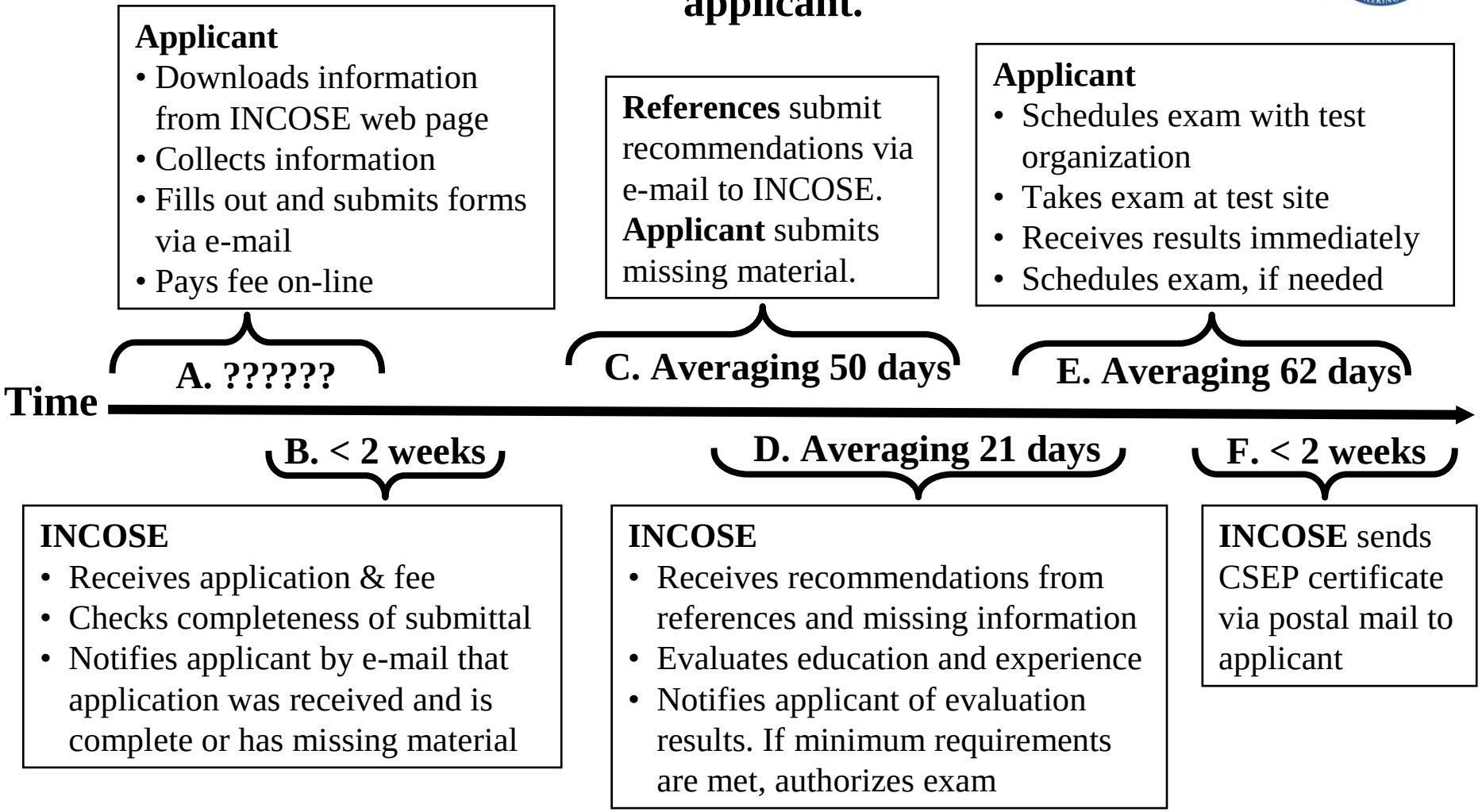
Timeline

All of the Application Material is Available On-line



How Long Will It Take to Get CSEP?

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



While the times vary, the average time for CSEP is ~200 days.

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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

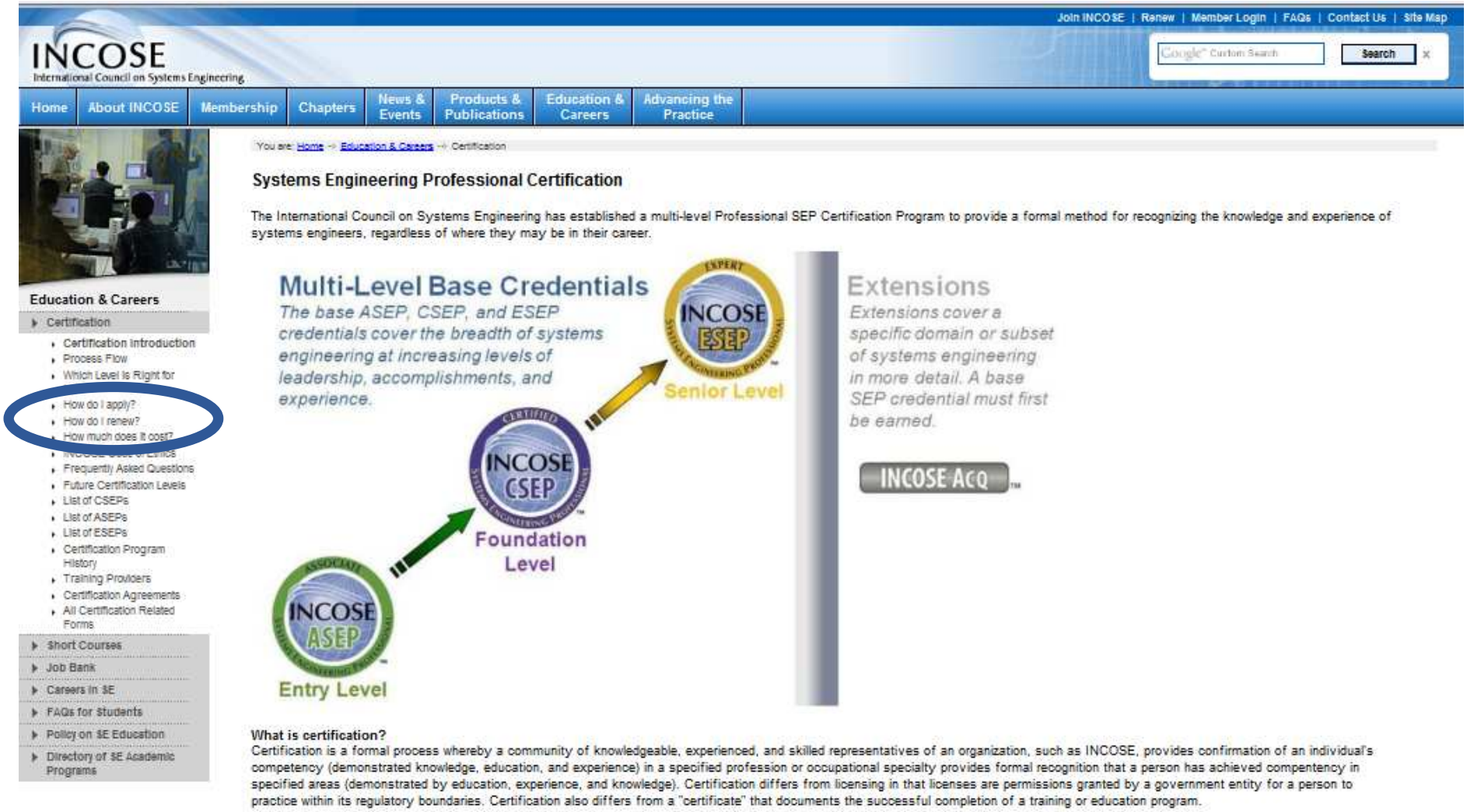
PDUs for Certification Renewal (1 of 2)

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 individual, senior, or student 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
Volunteer activities with youth in schools or community related to science, technology, engineering, and math (STEM)	1 PDU/hour of effort (24 PDU/year limit)	72 PDU
Volunteer activities with community, school, or non-profit organizations that help them accomplish their technical needs	1 PDU/hour of effort (10 PDU/year limit)	30 PDU
Earn an SE-relevant, exam-based, professional certification other than INCOSE SEP	5 PDU/certification (Up to 2 per renewal period)	10 PDU

PDUs for Certification Renewal (2 of 2)

Professional Development Activities (All must be relevant to the practice of systems engineering)	Credit	3/5 Year 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 (contrib. 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
Volunteer (i.e., non-compensated) activities within your organization related to engineering and science	1 PDU/hour of effort (10 PDU/year limit)	30 PDU

All of the Renewal Material is Available On-line



Topics

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Where Do I Find More Information?

INCOSE Certification web site at

http://www.incose.org

Where Do I Find More Information? (cont.)

INCOSE Certification Advisory Group (CAG)

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

The INCOSE Certification Advisory Group is responsible for the oversight & governance of the Systems Engineering Professional program.

Any Questions?

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For more information visit:
www.incose.org/educationcareers/certification/

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