Form 42 – Instructions for Completing Form 41 (Application for INCOSE ESEP)

General Instructions

1. An electronic submission via email is preferred. If you are submitting a paper application, type or print neatly and legibly on this application. You will be requested to resubmit information that is illegible and incomplete on your original application.

2. The shaded areas in the form are for you to type or paste inputs. 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 boxes. **Please submit this form when completed in its current Microsoft Word format; do not convert it to any other format, such as PDF, for submittal. Forms not submitted in the original Microsoft Word format will be returned to the applicant.**

3. **The applicant is responsible for providing the information requested on the application, and for providing Form 44 "Instruction Letter to ESEP References" and Form 43 "ESEP Reference's Comments and Recommendations" to his or her qualified references for their use in submitting their endorsements.** The applicant is responsible for following up with his or her references to ensure that they have submitted their recommendations in a timely manner, preferably within two weeks, to the INCOSE Certification Office.

4. The application may be submitted electronically at secert@incose.org.

5. If submitting a paper application, send it with the application fee to:
   Certification Program Office
   INCOSE
   7670 Opportunity Road, Suite 220
   San Diego, CA 92111

6. The non-refundable fees in United States dollars that must accompany certification applications are listed on the INCOSE Certification web site at :
   https://www.incose.org/cc_orders/incosecertpayment.asp

   The fee may be paid with a credit card through the secure INCOSE web site listed above or by submitting a check or money order made payable to INCOSE. The application will not be processed if the fee is not received.

7. A standard acknowledgement of receipt of application will be sent electronically. Any questions can be directed to the INCOSE Certification Program Office at the Email and address listed above.

8. **All supporting documentation and information must be received before an application is considered complete.** If the application is incomplete or one of your items is missing, you will be notified of the corrective actions that you must take. If you are requested to submit additional information, you will have three months from the time of notification to provide this additional information. Failure to do so will result in your application for certification being denied and your fees will not be refunded.

Note: Applicants have one year from the date of your application and payment to complete the entire certification process. The applicant is responsible for any delays in application or reference submittals, delays due to incomplete or insufficient information, time for INCOSE to review the submittal, and successfully passing the oral review. Failure to do so will result in your application for certification being denied and your fees will not be refunded.

Section 1: General Information
Name: Family (Last) Name, Given (First) Name(s), Middle Initial.
Year and Place of Birth (City, State, and Country): This is needed to help verify education and experience and to distinguish between people with the same names
Address: Preferred **permanent** complete mailing address.
Current e-mail address and phone numbers
Present organization and address (indicate "None" if applicable)

Section 2: INCOSE Membership & Certification Interest
Please indicate if you are an INCOSE individual, senior, or student member and provide your membership number and years of membership. **If you are not an INCOSE member, STOP!** ESEP certification is available only to INCOSE members.

Please indicate if you currently possess any level of INCOSE systems engineering certification. If you do, please provide your certification number, the date attained, and the expiration date.

Section 3: Fee Payment
Please indicate the applicable fee and method of payment. Your application will not be processed until the non-refundable fee is received.

Section 4: Education
You must submit a **copy** of your college transcript(s) or diploma(s) to receive credit for having a degree(s). If submitting your application electronically, you may submit a scanned copy of your transcript(s) or diploma(s). Please do not submit your actual diploma; we will not return it to you.

EXCEPTION: Submittal of proof of education is not required for ESEP applicants that are a current INCOSE Certified Systems Engineering Professional (CSEP).

Section 5: Experience

For applicants possessing a technical Bachelor's degree, or equivalent, and currently recognized as INCOSE Certified Systems Engineering Professionals, the minimum required amount of systems engineering experience to be considered for ESEP certification is twenty (20) years.

For applicants possessing a technical Bachelor's degree and NOT currently recognized as INCOSE Certified Systems Engineering Professionals, the minimum required amount of systems engineering experience to be considered for ESEP certification is twenty-five (25) years.

Technical Bachelor's degrees include BS or BSE (or international equivalents through such mechanisms as the Washington Accord or the Bologna Agreement) in engineering or other technical fields. 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. The acceptability of other degrees outside this guideline is subject to the decision of the Certification Program Office.

Applicants who lack a technical Bachelor's degree, or equivalent, must submit an additional five (5) years of engineering experience with a non-technical Bachelor's degree, or an additional ten (10) years of engineering experience in lieu of no Bachelor's degree. The additional years of engineering experience required to compensate for lack of a technical degree may be in any engineering field, including systems engineering.

In the response to the question about certification and degree status, please check your certification status (currently a CSEP or not a CSEP) and technical degree status with the corresponding minimum number of years of systems engineering experience that is required. **Note: INCOSE is the final authority on degree applicability.**

List your experience. Please start with your current position for P1 and continue in reverse chronological order. Add extra pages/space if needed.

Provide the dates of experience (from/to month & year), organization name, the name of your immediate supervisor/peer and how he/she may be contacted, your title/position, and a description of your job duties and responsibilities. Describe at least the requisite minimum number of years (20 if CSEP, 25 if not CSEP) of relevant systems engineering experience performing tasks defined in Attachment A to these Instructions. If you choose to use the "Other" area, please ensure the claimed experience relates to SE and include a definition of why it should be allowed.

Under "Your Duties and Responsibilities" include the full depth of detail typically provided on a job resume about the SE tasks/functions you performed, the SE leadership you demonstrated, and the products you produced. Describe in detail your role in leading/performing systems engineering tasks, the products produced, and the duration of your efforts in producing those products. The Certification Application Review Team makes its assessments based on the

information provided in the application and is looking for your direct contributions to a work effort. For example:

- Identify and describe the products or services for which SE was applied.
- Describe the sub-level activities performed in SE functional areas, such as what parts of requirements engineering were done – requirements elicitation, definition, decomposition, allocation, control, management, etc. It is too vague to just state "I worked on requirements for the system."

Describe your qualifications in more detail than just saying that you were involved with an effort, led an effort, or contributed to an effort. Simply stating a job title or position is not a description of experience. Non-technical roles/tasks in program management, resource management and business development are not SE functions and do not count as the experience and leadership desired. Also, describe additional years of engineering experience required due to your educational situation. Applications with insufficient detail may result in denial.

Please identify employment periods at different organizations, or **significant** changes of responsibilities within the same organization. Do not differentiate between different projects or various placements within the same organization unless there was a significant change in responsibility. Also, time in school as a student does not count as experience.

For each position, include the names of your reference (or references) that will cover this position and substantiate your experience claims. Use the same name(s) that you provide in Section 7 below. If you do not have any references for a given position, state "None." The reference may or may not be the same as the immediate supervisor for the position.

An Expert Systems Engineering Professional must have a demonstrated breadth and depth of systems engineering experience. In order to ensure a sound systems engineering technical foundation, the systems engineering experience is to be in two-year or greater increments in at least six of the following systems engineering functions defined further in Attachment A:

- Requirements Engineering;
- Risk and Opportunity Management;
- Baseline Control;
- Technical Planning;
- Technical Effort Assessment;
- Architecture/Design Development;
- Qualification, Verification, and Validation;
- Process Definition;
- Tool Support;
- Training;
- Systems Integration;
- Quality Assurance;
- Specialty Engineering; and
- Other.

A summary table has been provided for the applicant to identify that he or she has the required breadth and depth of systems engineering experience. This required summary table is broken down by the 14 SE experience areas listed in Attachment A to this form. Please indicate the number of full-time equivalent calendar months (rounded to the nearest whole month and no credit for overtime work/penalty for vacation time) worked in each of the system engineering areas at each position. You may list the months of experience gained for each SE work area for up to ten job positions (P1 to P10).

The time for each period of performance in the summary table must not exceed the respective period of performance calendar time claimed on your application. As an example, assume you worked in 4 different SE functional work areas in a 7 year period and the total of all your SE experience amounted to 5 years. The summary table breakout should reflect your equivalent full-time experience, such as: Requirements Engineering for 18 months; Systems Integration for 15 months; Baseline Control for 15 months; and Technical Planning for 12 months; thus equaling 60 months of SE experience for the 7 year period. As another check, the total amount of SE experience in the summary table cannot exceed the calendar time of your claimed periods of performance on the application.

All of the cells in the table that allow input by the applicant have been pre-populated with a zero (0) to support embedded formulas used to determine the values in the right-hand column and the bottom row. To update the automatically calculated values after completing your entries, place your computer cursor on the desired cell (in the right-hand column or the bottom row), right click your cursor, and then select the menu option "Update Field."

Section 6: Professional Development & Contribution to Systems Engineering Profession
In addition to on-the-job experience, the ESEP is expected to have demonstrated a minimum of five (5) years of post-Bachelor's leadership and continued professional development contributions to the systems engineering profession. These five (5) years of leadership and professional development contributions to the systems engineering profession may have been acquired concurrent with, or in addition to, the years of on-the-job systems engineering experience. Qualifying activities in this category include:

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

Provide a list of SE-related publications and SE-related honors or other examples of you sharing knowledge and having an influence. Include the Titles of publications and publication dates and the names of the honors and the dates bestowed.

Leadership is a position or function of going before, showing the way, leading, guiding, directing, managing, escorting, coaching, influencing or directing others to follow. Without followers, there is no leadership. Only include the type of assignments that count as systems engineering leadership. For example, 1-2 person tasks or assignments shortly after earning your Bachelor's degree are highly unlikely to satisfy these requirements.

Detailed Guidance for Product Development or Technical Service Leadership

Indicate the amount of time spent in systems engineering leadership positions for product development or technical services, such as a program vice-president, chief engineer, chief systems engineer, director, or equivalent. Include the names of the positions held, the products or service programs, the time period of each position, and the total years in each position. All of the cells in the column for "Years in Position" have been pre-populated with a zero (0) to support embedded formulas used to determine the total value for the "Total Years of Service." After inserting your values in place of the zeros, update the automatically calculated "Total Years of Service" by placing your computer cursor on the desired cell, right clicking your cursor, and then selecting the menu option "Update Field."

Detailed Guidance for Technical Society Leadership

Indicate the contribution to furthering the systems engineering profession through participation in technical society leadership at any level (local, national, or international). Provide the names of the technical societies, the positions held, the time periods of the positions, and the number of years in each position. All of the cells in the column for "Number of Years" have been pre-populated with a zero (0) to support embedded formulas used to determine the values in the column for "Equivalent Years of Service" column. After inserting your values in place of the zeros, update the automatically calculated "Equivalent Years of Service" by placing your computer cursor on the desired cell, right clicking your cursor, and then selecting the menu option "Update Field." The embedded formula that gives the "Equivalent Years of Service" provides an automatic adjustment that gives credit for Technical Society Leadership as a half time endeavor.

Detailed Guidance for Advanced Academics Inputs

If advanced technical degrees have been earned, indicate the types of degrees and be sure that Section 4 contains information on the institution awarding the degrees, the dates the degrees were awarded, and the technical disciplines of the degrees. Credit is given for at most one Master's degree and one Doctoral degree.

If graduate level SE courses have been developed/taught, insert the information requested in the table provided. These courses must be SE related and may be for internal organizational use or public offerings at universities and colleges. The requested information includes the names of the institutions, the names of the courses, the time periods when the courses were taught, and the course class hours. All of the cells in the column for "Course Class Hours" have been pre-

populated with a zero (0) to support embedded formulas used to determine the values in the column for "Equivalent Years per Class." After inserting your values in place of the zeros, update the automatically calculated "Equivalent Years per Class" by placing your computer cursor on the desired cell, right clicking your cursor, and then selecting the menu option "Update Field." As an example of an entry to make for a course, if a course is taught for three one-hour time periods over ten weeks, the number of course class hours to be entered is thirty. The embedded formula that gives the equivalent years for the course in the right-hand column provides an automatic adjustment that allows three hours of preparation for each hour in class.

Section 7: References

Identify at least three qualified references who can verify your experience to meet the certification requirements and recommend you for certification. A qualified reference is a supervisor or associate fellow worker with at least ten (10) years of systems engineering experience who is equal or at a higher level in abilities and qualifications "systems engineering wise," and, because of that can attest to the applicant's systems engineering knowledge and past experience in successfully performing systems engineering tasks. Include current addresses and telephone numbers (preferably day time numbers) so that your references may be contacted if necessary. See Attachment B to these Instructions for guidance on colleagues/peers who may serve as references to confirm your experience. Also note the work relationship between your reference and you, such as manager, supervisor, co-worker, etc.

References should:

- Not be related to the applicant by blood or marriage
- Have personal knowledge of applicant's professional reputation and accomplishments
- Be knowledgeable of the discipline of systems engineering

At least one reference should be a current or former supervisor**.** The applicant's experience reported and confirmed by the references must cover at least ten (10) years of the applicant's experience. Confirmation by the references of more than ten (10) years of the applicant's experience is highly desired. Each individual reference does not have to confirm the entire period of the applicant's experience, but the collective set of references must confirm at least ten years of the applicant's experience. At least two of the references must be available to participate in an individual oral review with the certification assessment review team. The oral reviews will typically be via telephone conference calls lasting not more than one hour each.

For each reference, indicate the position (or positions) for which they will substantiate your experience claims. List all of the applicable positions separated by commas (e.g., P1, P3, P4).

Section 8: Affidavit

Read, check, sign, and date your decision on accepting the affidavit. Your typed name is accepted as a signature on an electronically submitted application.

If you decline to accept the affidavit, your application will not be processed.

If recognized as an INCOSE Systems Engineering Professional, your name along with your organization/division, city, state, and country will be posted on the INCOSE public web site and may be otherwise communicated by INCOSE.

Attachment A - Experience Applicable for Certification

Applicants for certification as an Expert Systems Engineering Professional, who possess a technical Bachelor's degree, or equivalent, and are currently recognized as INCOSE Certified Systems Engineering Professionals, are required to submit evidence of a minimum of twenty (20) years of systems engineering experience.

Applicants for certification as an Expert Systems Engineering Professional, who possess a technical Bachelor's degree and are NOT currently recognized as INCOSE Certified Systems Engineering Professionals, are required to submit evidence of a minimum of twenty-five (25) years of systems engineering experience.

Systems engineering experience to satisfy the minimum requirements for initial certification includes performing systems engineering functions, but does not include time spent in receiving a technical education, or teaching full time. (Teaching experience may be included to satisfy re-certification requirements.)

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

1. **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
2. **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
3. **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
4. **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
5. **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 improvements
6. **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

7. **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
8. **Process Definition**: define enterprise processes and best practices, tailor enterprise processes for program/project applications
9. **Tool Support**: specify requirements for, evaluate, select, acquire, and install SE computer programs/tools
10. **Training**: develop and implement Training Plans, develop and give training courses on processes and tools
11. **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
12. **Quality Assurance**: develop and implement a Quality Assurance Plan, perform quality audits, report quality audits, define and track quality corrective actions
13. **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.
14. **Other**: describe other functions that you have performed and can justify as system engineering activities.

Certification at the senior level will indicate that the individual has a balance between the depth and breadth of SE experience in performing most, but not all, SE functions. To achieve the desired depth and breadth in the minimum 20/25 years of SE experience, the ESEP candidate must have at least two years of SE experience in each of six or more of the 14 systems engineering functional areas listed above. The acceptability of experience distributions outside these guidelines is subject to the decision of the Certification Program Office.

Applicants who lack a technical Bachelor's degree, or equivalent, must submit an additional five (5) years of engineering experience with a non-technical Bachelor's degree, or an additional ten (10) years of engineering experience in lieu of no Bachelor's degree. The additional years of engineering experience required to compensate for lack of a technical degree may be in any engineering field, including systems engineering.

Attachment B - Colleagues/Peers Used for References

A "Colleague/Peer" used as a reference is a supervisor, associate, or fellow worker who is equal or at a higher level in abilities and qualifications "systems engineering wise," and because of that can attest to your "systems engineering knowledge" and past experience in successfully performing "systems engineering tasks."

Part of the process in certifying an applicant as an Expert Systems Engineering Professional is to obtain data from qualified references that the applicant performed the tasks as described in the application. A qualified reference is an associate or fellow worker with at least ten (10) years of systems engineering experience who is equal or at a higher level in abilities and qualifications "systems engineering wise," and, because of that can attest to the applicant's systems engineering knowledge and past experience in successfully performing systems engineering tasks.

All of the following categories of people should qualify as credible references:

- Supervisors for whom you work and/or who provide your systems engineering performance rating
- Program Managers/Task Leaders for whom you work and/or who provide input for your systems engineering performance rating
- INCOSE CSEPs and ESEPs who are acquainted with your work (experience), knowledge, leadership, and contributions to systems engineering
- INCOSE Fellows who are acquainted with your work (experience), knowledge, leadership, and contributions to systems engineering
- INCOSE Leadership who are acquainted with your work (experience), knowledge, leadership, and contributions to systems engineering
- Customers for whom you have provided systems engineering services or products who are familiar with the quality of your work.

An applicant should provide references from a mixture of these categories. Thus, an applicant should limit references to two from any one category. References provide information to support an applicant and their reasons for the recommendation and will be requested to submit information on their own work experience, knowledge, leadership, and contributions to systems engineering.

At least two of your references must be willing to participate in a telephone interview with the INCOSE review panel, if required.