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July 2015

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President's Point of View



*Mr. George Anderson
INCOSE CC President*

george.anderson@incose.org

The best events of the year are yet to come!

July marks the midpoint of our chapter programs. Moving forward from the date of this writing, I am pleased to announce that the IBM System Architect with DoDAF class is beginning on Monday June 29 with 8 students. This course is hands-on and is the best chance to actually become proficient in producing DoDAF, DM2 data models. The course and instructor

are the best available and we hope to fit in a repeat performance in the fall or early spring. We also plan to schedule an updated DODAF 2.02, (change 1) course in October. Dr. Drew Hamilton of Auburn University and TTC Seminars taught the class in August 2012. [\[1\]](#) We had a record enrollment (31) on this first event and many of these students are today employed as successful DoDAF architects. It would be a misfortune to miss out on training that would enhance your ability to qualify for a new SE position.

This month's membership meeting has been postponed from July 15th to July 22nd to allow for the return of the 30 or so members who are attending the International Symposium in Seattle, WA. The meeting will feature a "Meet the Board of Directors" panel discussion. This is in anticipation of our fall elections and will, at minimum, address the challenges facing the chapter as we move forward into 2016. To set the tone for this event, I can share with you the results of our latest survey that shows increased demand for our training offerings and little interest in running for chapter offices. This is a great opportunity to help shape our future by listening, learning and participating- hopefully in that order.

The 2015 Elections for the Board of Directors (BOD) will be held in September and the call for nominations is open until August 30, 2015. This year, we will vote to fill the programs and membership chairs as well as the new president elect. To volunteer or recommend a colleague, please contact the elections committee via the election page on the web site or email John Boccio, Kent de Jong or Erik Devito.

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This is the monthly newsletter for INCOSE Chesapeake, a local chapter of INCOSE International. We are a not-for-profit organization dedicated to providing a forum for professionals practicing the art and science of Systems Engineering in the Northern & Central Maryland & Southern Pennsylvania area.

**Join
INCOSE
Today**

The Chesapeake Chapter is always looking for volunteers to speak at our upcoming meetings! Please contact our 2015 Programs Director, [Glenn Townson](#), if you would like the opportunity to speak or can recommend someone.

The August meeting will feature an invited panel of International Symposium participants who will discuss selected topics from this event. Membership Director, Gundars Osvalds, is organizing and moderating this event.

September will find us listening to a human factors engineering presentation by Dr. Amy Bayes and other faculty members from Johns Hopkins University. The presentation will be a preamble to a Saturday tutorial that will be scheduled soon after. They also have formal course offerings in the fall and hope to interest systems engineers in enrolling. We will announce the tutorial as soon as a venue is established.

Dr. Howard Eisner's tutorial will be held on September 19, 2015, after being a weather casualty in February. A flyer will be coming out next month giving the time and location. He will continue his lecture series entitled: Thinking Outside the Box. View his last year's tutorial at: <https://www.youtube.com/watch?v=BUX4JUs5MdA>

The October and November meetings are reserved for large events. In October we are planning to have a joint PMI-INCOSE meeting featuring the Study on Improving Integration of Program Management and Systems Engineering. [2] The November meeting will focus on Systems Engineering Standards to include the DoD addendums to ISO 15288.

Mark your calendars for August 26, 2015. Our 6th annual SEP reception will take place at the Engineers Club of Baltimore. Honored guests include Ms. Courtney Wright, INCOSE Certification Chairman, Mr. Robert A. Gold, Director of the Engineering Enterprise within the Office of the Deputy Assistant Secretary of Defense for Systems Engineering (DASD(SE)) and Mike McNamee, Chief Systems Engineer, NSA/CSS. To promote broader participation, we are inviting SEPs from MD, VA, District of Columbia, DE, and Southern PA. Locally, we will again be pleased to invite our employers, CAB members and associate engineering societies. [3]

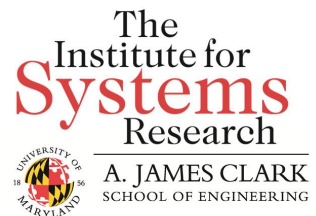
Another program being planned for August is a tour of the Smithsonian's Udvar-Hazy Air and Space Museum near Dulles Airport. This is a family activity involving chartered buses, docents, and box lunches. What could go wrong! If you are interested, please make your comments on a blog sheet that Communications Director, Pat Williams, will put up on the Chapter Web site so we can gauge the level of interest and establish the resources needed.

I now want to discuss the health of the Chapter at mid-year. Kent de Jong our treasurer will present the results of our audit committee's work at the July Membership meeting. We continue to do well, if somewhat behind schedule, and I want to remind the membership to attend and review our "report card" on how the BOD is executing the Chapter's financial program. This is a one-time event as we do not publish or release our audit results. Another important area is membership.

Membership Director, Gundars Osvalds, is attempting to gauge the trend of our retention and new member statistics. We know that other chapters are having difficulties maintaining their memberships but our chapter last year had more new members than departures (or non-retentions). In mid-June we noted a report in the INCOSE International Connect site that showed 348 members in the Chesapeake Chapter. This would be an attention getting number given our January strength of

The Chesapeake Chapter of INCOSE is proud to recognize the following organizations for sponsoring our endeavours to expanding the understanding and appreciation of Systems Engineering in the local area:

Booz | Allen | Hamilton



402 until we realize that last year we had a similar dip going into the summer. We really cannot say how we are doing with membership until we see how the number trends over several months.

Numbers represent only the measurement side of managing our membership. What are we currently doing about retaining and attracting new members? The answer is in two parts. First, when it comes to retention, I personally believe that the primary method of retaining members is to provide professional training and a forum for expanding professional presence and perhaps leadership opportunities in the engineering community. The second part is our efforts to bring in new members: Here, the BOD as a team carefully updates the Chapter TriFold each year to provide the best possible recruiting tool. We believe this handout describes our chapter, its goals, purpose and programs. If we could only get these into the hands of potential members all would be well. Each year, however, it appears as if our members consider distributing Trifolds as somebody else's business. I frequently notice that many Trifolds are left behind after an event and end up being deposited into the garbage often by our own members.

I ask all of you to think twice before abandoning the TriFold as our recruiting medium. Handing a brochure to a colleague is absolutely the least that you can do to promote our chapter and the practice of systems engineering. Certainly we do more by manning booths at conferences, speaking engagements to other engineering societies and so on, but, these opportunities cannot have a significant impact given the very few individuals that are available or willing to support these opportunities.

I could get into the impact of declining membership on our services but with the increased awareness and cooperation of our current members, I believe that we can avoid or at least delay the contraction that appears to be affecting INCOSE International at large.

This has been a long missive but it covers only the highlights of what we are doing. It's all very complicated - even for systems engineers. Please make a commitment to attend our July 22nd meeting and help plan our future.

[1]See After Action Report at: <http://www.incose-cc.org/13-14-aug-understanding-and-using-the-new-dodaf-v-2-02/>

[2]White Paper Presented at the 23rd INCOSE Annual International Symposium, Philadelphia, 2013.

[3]Associate societies include: AOC, AIAA, IEEE, SAE and SES. Association of Old Crows (AOC), American Institute of Aeronautics and Astronautics (AIAA), Institute of Electrical and Electronics Engineers (IEEE), Society of Automotive Engineers (SAE), and the Standards Engineering Society (SES).

George Anderson - INCOSE Chesapeake Chapter President

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22 July, 2015 (6:00pm - 8:00pm): A Panel Discussion with the INCOSE-Chesapeake Chapter Board of Directors



Note, this is not a typo. Our regular monthly meeting will be on the 4th Wednesday of July (the 22nd) to accommodate our members who are travelling to the INCOSE International Symposium in Seattle, Washington. Join us at 6PM on the 22nd for some good food and fellowship, followed by a panel discussion with your board of directors.

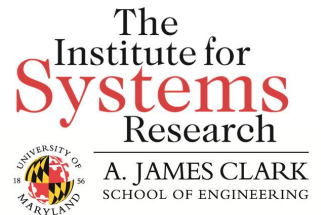
Click here for more details: (www.incose-cc.org)

Go to www.incose-cc.org/registration/ to register

Parsons Auditorium, Bldg 1
 Johns Hopkins University Applied Physics Laboratory
 11100 Johns Hopkins Road
 Laurel, MD

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INCOSE Chesapeake Chapter
 International Council on Systems Engineering
6th Annual Systems Engineering Professionals Gala



Wednesday, August 26, 2015

Every year our Chapter puts on a dinner and reception to honor those who recently received a Systems Engineering Professional (SEP) certification from INCOSE. Join us at:

[THE ENGINEERS CLUB AT THE GARRETT-JACOBS MANSION](#)

11 West Mount Vernon Place; Baltimore, MD 21201

Speakers and VIP guests include: Robert Gold, Director, Deputy Assistant Secretary of Defense for Systems Engineering DASD(SE); Mike McNamee, Chief Systems Engineer, NSA/CSS; and Courtney Wright, Program Manager, INCOSE Certification Program

Wright, Program Manager, INCOSE Certification Program



Cost: \$45 per person. Pay online with PayPal: Go to our [Registration Page](#) where you can pay on line via credit card.

[>>Download the Flyer Here<<](#)



Robert A. Gold
Director, [DASD\(SE\)](#)



Courtney Wright
Program Manager,
INCOSE Certification
Program

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The Definition of a True "Systems Engineering Professional" as Intended for INCOSE's Multi-Level Certification Program

John A. Thomas, ESEP
INCOSE Past President – 2012 & 2013
Senior Vice President & Chief System Engineer Booz Allen Hamilton
(Retired)

A Systems Engineering Professional*, as it is intended for INCOSE's multi-level certification program, refers to someone who has done more than simply pass a test. It is someone who is seen by others as an experienced individual who finds a way to get the job done—no matter what obstacles and complications may arise. This is the expectation of someone who has earned an INCOSE certification. And the expectation is not one that can be taken lightly.

This reputation for "getting the job done" is precisely how the Systems Engineering Professional (SEP) should be perceived by fellow leaders and staff on a project. The program manager and other members of the leadership team facing a problem don't have to ask, "Where's the systems engineer?" Because the systems engineer—the SEP—has already come to them and said, "Here's the problem, and here's how I'm solving it." That is the standard the SEP is held to—by INCOSE, by the program leadership team, by all program participants.

Systems Engineering Professionals (SEPs) can break down barriers. They have a sense of empowerment—and the good judgement to know exactly where and how far they can push. Members of the leadership team know that a SEP will not be intimidated



This Newsletter is to serve our members and is open to all for contributions. Do you have an interesting idea for an article? A review of a new book related to engineering? [Let us know.](#) We'd love to hear about it. It may wind up in a future issue of our Newsletter.

by certain barriers—such as the belief that they are somehow crippled by the contract, by organizational policies, by technology, perhaps even by the leadership team itself. At the same time, the leadership team also knows that the SEP will not push hard in inappropriate places, like a bull in a china shop. A SEP is clear about what it means to be empowered, and how that power should be exercised.

Systems Engineering Professionals get the job done because they focus on outcome, not process.

The program manager and other members of the leadership team know that when problems arise, SEPs will not retreat into strict compliance with checklists, or see the mere delivery of documents as a measure of success. As SEPs, they know that they can step out of the process role and tackle the larger problem—such as unexpected technology issues, flaws in acquisition strategy, or contradictory policies.

Systems Engineering Professionals are collaborative, not competitive.

They recognize that program success is relevant to the program manager as well as the systems engineer, and cannot be achieved without an equal contribution from both. Collaboration means working together with others – even stakeholders from firms that normally are viewed as the competition. The SEP knows how to facilitate the delicate negotiations between program participants that determine the success or failure of a project.

Systems Engineering Professionals can solve problems because they understand the nuances and complex interrelationships inherent in a given situation.

Some systems engineers tend to see problems through only one lens, such as a technical perspective. Members of the leadership team know that the SEP has the ability to view problems through multiple lenses simultaneously—to see, for example, how what outwardly looks like a mechanical engineering problem might be related to other issues such as training, policy, doctrine and organizational culture. The SEP also fully considers the perspectives of the program manager and the other members of the leadership team, so that the solution works on all levels. Each of these complexities and nuances must be understood and fully integrated, and the leadership team knows that the SEP can and will take the lead in resolving problems.

Systems Engineering Professionals get the job done because they embrace responsibility.

When problems arise, it is often not clear who has the responsibility to solve them, making it easy to stand aside. Program managers and other members of the leadership team know that the SEP, rather than saying -- “It’s not my job,” instead will say, “I don’t know whether I’m the one to fix it or not, but I’m going to step in and try.” The leadership team is confident that the SEP will say, “It is my responsibility. It is my job.”

Systems Engineering Professionals solve problems because their skills and knowledge are both deep and broad.

Some systems engineers may be reluctant to confront a problem, fearing they will be unable to work with others who have more knowledge and experience in a particular area. But even if SEPs lack certain expertise, they are able to ask the questions that uncover the fundamental nature of the problem. When dealing with others on a project, SEPs can push through technical details, cost and schedule

constraints—even the inevitable office politics—to grasp the larger issues. The leadership team counts on SEPs to have this ability.

Although some SEPs may not feel confident that they can meet all of these expectations, they need to know that this is how they are perceived—and they should use every opportunity to fully develop each capability I've shared above. INCOSE strongly believes that certification carries with it an exceptionally high standard of performance. A SEP should be seen as the kind of individual who can be counted on to get the job done, and who will meet whatever challenge comes their way to make the project a success. Program managers and other members of the leadership team—and INCOSE—expect nothing less.

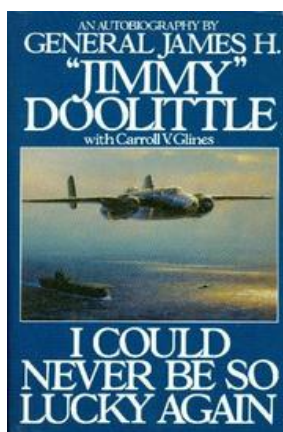
John Thomas is the Past President of the International Council on Systems Engineering, an organization for systems engineers and the dissemination of systems engineering practices. He can be reached at president@incose.org.

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Introducing Systems Engineering in the United States Air Force

by George Anderson

I have always felt that some INCOSE descriptions surrounding the origins of systems engineering (SE) were incomplete and there was more to say on the subject. Attributing systems thinking to ancient engineering achievements is fine but the relevant historical record does not, as not as far as I am able to learn, have any mention of a branch of learning, a discipline or a division of engineering effort concerned uniquely with the SE processes as we know them today. As we get into recent history, however, we do find documented evidence of modern SE practices dating back to at least 1948.



One example may be worth discussing to better understand some of the precedents to our present concepts of SE. This is General Jimmy Doolittle's remarks in his autobiography entitled, "I Could Never Be So Lucky Again. [1] General Doolittle was a member of the USAF Scientific Advisory Board (SAB) at its inception in 1948 upon the USAF becoming a separate Military Service. In describing his experiences with the SAB, he dedicates several paragraphs to SE. He begins his explanation of the impact of SE in AF aircraft and missile programs by stating

"Introducing systems engineering was one of the SAB's more far-reaching and successful recommendations." (1:475)

A brief summary of his explanation is that SE was an important managerial concept that got the process of designing aircraft out of the serial design process of building an airframe, then mating it to an engine and then testing to see how the whole performed. If it performed well

then the plane went into production without considering the intended payload requirements. The result was an aircraft that often failed to meet performance requirements after being loaded with bombs, bullets and electronic equipment. (1:475)

General Doolittle sums up his discussion with words that I think speak to us directly in 2015:

“This (pre SE) process was the absolute opposite of systems engineering, which enabled us to start many things at the same time and have them all come to the stage where they could be introduced into the complete vehicle ready to go at just the right time. Of course, this concept was a tremendous gamble and it took people with courage to pull it off.” (1:475)

Here we have the mention of courage in conjunction with the successful outcome of an SE process. I do not recall seeing that personal attribute mentioned so directly in any of my current SE reading. General Doolittle is probably speaking mainly of the managers and not the engineers when he talks about courage, but it clearly seems to be an attribute that applies and perhaps is essential to the practice of SE in general.

It is one thing to receive a set of instructions and proceed to create a product, and quite another to oversee the parallel development of several products that must work together. If the integration has not been done before, there is no “blueprint” and the systems engineer must provide a plan that is as yet untried and must be based on a general as well as specific technical understanding of all the systems involved.

I submit that it takes courage to actually perform SE in today’s development or operational environment. We are typically faced with a shortage of adequately trained technical personnel and managers who too often collect deliverables with little concern for actual technical progress. In this setting, courage is a personal attribute that may enable or at least support the ability to manage uncertainty and provide confidence that the right technical courses of action are being identified and followed.

I enjoyed reading about many of the other events that General Doolittle described in his autobiography. Taken as a whole, he had many accomplishments that make him stand out as a spokesman for technical as well as operational achievement. He received the Congressional Medal of Honor in 1942 for leading the first bombing raid on Tokyo at a time when the Nation’s morale was at its lowest.

He was a race pilot in the 1930’s, received one of the



Figure 1, Lt. Col. Doolittle, Army Air Corps (second from left) with his B-25 crew just prior to launching from the aircraft carrier Hornet to bomb Tokyo on April 18, 1942. His crew members are: (l. to r.) Lt. H.A. Potter, Navigator; SSgt P.J. Leonard,

first doctorates in aeronautical engineering from MIT and in WWII rose to the rank of Lt. General as a Bomber Group Commander in the famous 8th Air Force. He also had many technical achievements in aircraft development such as blind flying systems. He has received much recognition for many of these, but I believe his remarks about systems engineering has not received the attention it deserves.

*Engineer/Gunner; Lt. R.E. Cole, copilot;
R.A Braemer, Bombardier.*

[1] I Could Never Be So Lucky Again, Gen. James H. "Jimmy" Doolittle with Carroll V. Glines, Bantam Books, New York, 1991.

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Upcoming Events and Announcements

- **July 22, 2015:** Dinner Meeting - Panel Discussion with INCOSE-CC Board of Directors
- **August 19, 2015:** Dinner Meeting - Panel of International Symposium Participants; moderated by Gundars Osvalds
- **August 26, 2015:** Systems Engineering Professionals (SEP) Reception
- **September 16, 2015:** Dinner Meeting - Human Factors Engineering; by Dr. Amy Bayes and other faculty members from Johns Hopkins University
- **September 19, 2015:** Tutorial - A continuation of Dr. Howard Eisner's "Thinking Outside the Box"
- **October 21, 2015:** Combined PMI-INCOSE Dinner Meeting - Study on Improving Integration of Program Management and Systems Engineering
- **November 18, 2015:** Dinner Meeting - Systems Engineering Standards to include the DoD addendums to ISO 15288
- Interested in Jobs Networking? Contact Mark Kaczmarek at mkaczmarekengr@comcast.net



Keep up with the latest news and events. Find out about our new Board of Directors. Explore our extensive library of previous lectures from our Monthly Dinner Meetings. Learn of the Benefits of Joining INCOSE. Check out Systems Engineering education in the local area. All this and more awaits you at our [INCOSE Chesapeake Chapter Website](#). For any comments or suggestions about this newsletter please e-mail our [President, George Anderson](#) or our [Communications Director, Pat Williams](#). We value your feedback.

Board of Director Officers, 2015

- President: Mr. George Anderson
- Past President: Mr. Erik DeVito
- President Elect: Mr. John Bocco
- Treasurer: Mr. Kent DeJong
- Secretary: Mr. Mark Kaczmarek

Directors at Large

- Communications: Mr. Pat Williams
- Programs: Mr. Glenn Townson
- Membership Committee: Gundars Osvalds

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