INCOSE Chesapeake Chapter
International Council on Systems Engineering
E-Newsletter

September 2013
• **Back Issues**
• **Forward to Friend**

President's Point of View
And the Beat Goes On ...

Dr. William Ewald - INCOSE CC President
wewald@jhu.edu

You would think that the summer months would witness a slowdown in our Chapter activities. Not so. The pace of events has remained just about steady throughout the year – a solid testament to our resiliency and commitment to sponsor high quality events to our members. Last month, I provided a sample of our accomplishments during the past year – which produced our latest INCOSE Gold Chapter Award. Here are a few more that occurred this summer.

- Many may not realize it, but we will be celebrating our 20th anniversary as an INCOSE Chapter this coming year. We are collecting archival material to include in our electronic files. If some of our "plank owners" have some interesting items, get in touch with any Board member. Stay tuned for further information on our celebration plans. I'm hopeful that we can schedule a real "bash" with lots of invited guests from the INCOSE family.
- Attendance continues to be consistently high for our technical events. Just this month, we registered one of our highest count totals. 72 colleagues attended Stephen Smalley's presentation on Laying a Secure Foundation for Mobile Devices. Check out our Web site for a preview of upcoming technical events scheduled well into next year.
- We sponsored our fourth annual CSEP Gala – inviting all Maryland certified engineers to attend an honorary dinner to celebrate their achievements. Over 60 people joined our Chapter Board at the Engineers Club of Baltimore for networking, catching up with colleagues, and general good cheer. A major highlight of the evening was the presentation of three Expert Systems Engineering Professional (ESEP) awards. We were also very fortunate to hear three key note speakers. David Walden, past INCOSE CSEP Program Manager highlighted the role that our Chapter has played in facilitating the certification of engineers – with Maryland having the second most certified engineers of all the states and non-U.S countries. Barclay Brown, Chair of the INCOSE America's Sector provided an engaging picture of the value of systems engineering. The evening was capped with an insightful talk on the pervasive influence

In Vol. 4 Issue 9

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.

The Chesapeake Chapter is always looking for volunteers to speak at our upcoming meetings! Please contact our 2013 Programs Director, Dr. Alex Pavlak, if you would like the

of systems engineers by Stephen Welby, Deputy Assistant Secretary of Defense for Systems Engineering.

- We have initiated the review process of applications for our undergraduate engineering scholarship awards for deserving students from UMD and UMBC. The awards in support of tuition expenses are expected to be announced in early fall. The successful candidates will be honored at our holiday dinner in December. This will be the third contiguous year in which our Chapter has teamed with the INCOSE Foundation to sponsor the awards. We are planning to offer a third and perhaps a fourth award as our corpus increases. Every year, the Chapter makes a contribution to this fund. If you would like to augment the Chapter's efforts with a tax deductible contribution, please contact me for details.
- In an exciting development, we conducted a beta test during our last dinner lecture (Secure Foundation for Mobile Devices) to enable remote sites to tap into a video broadcast. Although there were some initial glitches in syncing the video and audio portions of our broadcast, we got it right after about 20 minutes enabling a clear delivery both to Aberdeen and viewers on Goggle+ and YouTube. When fully operational, we will be able to transmit lectures and other events to members who are not able to attend in person. This will greatly expand the Chapter's ability to serve our members – and from my perspective perhaps those others in the greater INCOSE system including abroad.
- Last month, I mentioned that we are exploring the viability of supporting engineering students interested in a systems engineering career. The norm within INCOSE (including the Chesapeake Chapter) has been the sponsorship of a student division. In this regard, our track record across all of INCOSE has not been very good. We need to seek alternative means of supporting the students other than through a formal stand-up of a Division. In the last month, I met with Steve Sutton to discuss ways in which our chapter and the UMD Institute for Systems Research (ISR) could collaborate on this and other issues. Some good ideas emerged that will need to be shared with our Board and other interested Chapter members. One promising strategy would be to create a pool of available Chapter members who would be on call to support students who need a sounding board or mentor for academic, professional and career decisions. This model worked very well at the IS where long term seasoned members volunteered to serve as mentors to new members or those who were unfamiliar with how to gain the most from the symposium. By all accounts, the experiment was very successful. Perhaps we can build on this concept in support of engineering students. After some more discussion and analysis, I anticipate presenting a draft approach to the Board and members sometime this fall.

Definitely a busy summer! Thanks to all of our members who support the Chapter and our activities. We continue to seek ways to add value to you our members. In this regard, my closing comment is to alert you that we have sent an electronic program survey to all members asking for guidance on what technical programs would interest you the most. To date, we have received 40 replies – given that the Chapter has hundreds of members, we would hope for many more. The more responses, the better able we will be to field a strong, relevant, and interesting technical program. Thanks in advance for filling out the survey. Best regards.

Bill Ewald - INCOSE Chesapeake Chapter President

opportunity to speak or can recommend someone.

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

Booz | Allen | Hamilton

The Institute for Systems Research
A. JAMES CLARK SCHOOL OF ENGINEERING

clovis
A Division of Eliassen Group

serco
Bringing service to life

Camber
Customer Focused, Employee Driven

CyberCore TECHNOLOGIES

APL
The Johns Hopkins University

Return to top

18 September 2013, Dinner/Lecture (6:00 – 8:00 pm)

The AP1000™, A Third Generation Nuclear Reactor

Mr. Andrew Drake, AP1000 Engineering Completion Project

Presentation: Since the first nuclear powered submarine (USS Nautilus - 1954) and first commercial nuclear power electrical generation station (Shippingport, PA – 1957) Westinghouse has been the industry leader in the development/evolution of larger and safer commercial nuclear power electrical generation stations. The early commercial nuclear power plants were typically less than 600 Megawatt electric two-loop plants that were "upsized" to 3-loop and then to 4-loop plants. As plants were "upsized" the size and complexity of the structures, components and instrumentation grew. In the late 80s Westinghouse recognized that a different "simplified" design was needed if nuclear power was to remain an economical source of electricity. This presentation will cover major differences between the previous generation of plant designs and the Westinghouse AP1000™ and the status of AP100™ plants currently under construction. **Speaker:** Andrew Drake has thirty-two years' experience in nuclear industry. Eight years of experience in commercial Pressurized Water Reactor operations, training and training material development including Senior Reactor Operator (SRO) Certification, SRO Instructor Certification. Fifteen years of experience in project management including resource planning, program/project scheduling, cost management and invoicing. Sixteen years in various management/senior management positions related to major new plant construction/startup projects. Andrew has a BS in Physics and a MS in Nuclear Engineering. He is a certified Project Management Profession (PMP) and currently President of the Plum Borough School Board.

Location: **Applied Physics Laboratory, Johns Hopkins University**; 11100 Johns Hopkins Rd Laurel MD 20723 (Main Entrance – Lobby 1)

>>Download the Meeting Flyer Here<<

Return to top

21 September 2013, Workshop: (9:00 - 5:00) Mr. Sanford Friedenthal

An Introduction to Model-Based Systems Engineeering (MBSE) with SysML™

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 may wind up in a future issue of our Newsletter.

Return to top.

Mr. Sanford Friedenthal

Description: Model-based systems engineering (MBSE) formalizes the practice of systems engineering through the use of models. This tutorial describes what MBSE is and the motivation for transitioning to MBSE from a document centric approach. The tutorial introduces the OMG Systems Modeling Language (OMG SysML™) and some of the key language concepts needed to represent the system requirements, behavior, structure and parametrics. The tutorial also includes a short introduction to an MBSE method called OOSEM that leverages SysML™ to support the specification, architecture design, and analysis of systems. The tutorial format is a slide presentation. A SysML™ tool is demonstrated by the instructor but is not the focus of the tutorial. The book entitled "A Practical Guide to SysML™ provides a detailed reference for people who choose to learn more about MBSE using SysML™.

>>Download the Tutorial Flyer Here<<

Return to top

Don't Miss October's Dinner/Lecture, 16 October 2013

Cyber and Physical Threats to the Electric Power Grid

Mr. Steve McElwee

Presentation: The electric power grid is a synchronized system of interdependent physical generators, transmission lines, transformers, and protective equipment that is owned by a wide variety of utilities. Operating this complex system requires large volumes of data and information systems that enable accurate decision-making to optimize the balance of reliability and economics. The reliance of society on electricity requires critical infrastructure owners and operators to reduce the risk of power outages despite a growing list of evolving threats. This presentation will provide an overview of cyber and physical threats to the power grid, such as nation-state threats, cybercrime, hacktivism, insider threats, solar flares, and EMP. It will also review leading approaches to resilient operation in the face of these threats.

Bio: Steven McElwee oversees a variety of cyber security functions at PJM Interconnection, a regional transmission organization responsible for managing the high-voltage electric power system serving 13 states plus the District of Columbia. He is responsible for cyber threat and risk analysis, security policy, vulnerability management, security monitoring, incident response, cyber forensics, and security assessments. He has over 25 years of experience in a variety of information technology and cybersecurity roles. He has a BA in Computer Science, an MBA, and an MS in Computer Information Systems and holds CISSP certification.

>>Check out the Event Flyer Here<<

Return to top

---

26 October 2013: Mr. Richard de Neufville

Increasing System Value through Flexibility in Design

Mr. Richard de Neufville

Description: This course shows how Flexibility in Design can increase the expected value of a system by 10 to 30%. Flexibility adds value because it simultaneously allows the system to avoid worst outcomes, while enabling it to seize good opportunities – a "win-win" approach. The Flexibility Model recognizes that the future is uncertain. The fact is that forecasts – such as of the level of traffic at an airport, or the quantity of oil and its price – are "always wrong". What actually happens over the lifetime of a project almost never corresponds to the initial forecasts. This reality means that evaluations based on fixed forecasts are unrealistic and lead to the choice of inferior designs. The Flexibility Model evaluates alternative possible designs over the wide range of futures that could occur. It does this by using simulation processes, basically the 'Monte Carlo' methods properly adapted to the actual conditions. The course presents the essential concepts and methods for flexibility in design, illustrates them by example, and works with participants to assist them in applying the concepts to design problems that interest them. The course distributes signed copies of text "Flexibility in Engineering Design" [MIT Press, 2011].

>>Download the Tutorial Flyer Here<<

Return to top

Did you miss last month's lecture?

Laying a Secure Foundation for Mobile Devices

Mr. Stephen Smalley

Modern mobile devices such as smartphones and tablets have become fully general computing systems with a rich third party application ecosystem and user experience. As such, the same security problems that have long plagued the personal computer (PC) industry are becoming increasingly evident on mobile devices. Addressing these threats effectively requires a secure foundation, including both hardware and software mechanisms. In this talk, Stephen will lay out a vision for secure mobile computing, including a discussion of the roles that virtualization, trusted computing, and secure operating systems play in an overall security architecture

Download Presentation Here

>>View the After Action Report Here<<

The Future of Energy Initiative

Alex.Pavlak@INCOSE.org

Chartered by the Chesapeake Chapter, The Future of Energy Initiative has the goal of identifying concepts for powering the planet without fossil fuel. We have established two working groups and we are looking for interested volunteers. System implications of intermittent generators – While intermittent generators can be easily integrated for small penetration, large emission reductions will require engineered electric power systems. This task will compare concepts and tradeoff wind vs. storage vs. solar and fossil fuel. A primary metric will be a plot of the system cost of electricity as a function of renewable penetration (emissions). Neutron economy study – This group is directed at identifying alternative system concepts for sustainable civilian nuclear power; that is, nuclear fission systems without long-lived nuclear waste. Ignoring legacy constraints, which concepts work best? A first design driver is the efficient use of neutrons. This task will compare alternative fuel cycle and waste management concepts including various uranium and thorium breeder fuel cycles under various operating conditions.

Alex.Pavlak@INCOSE.org
Alex Pavlak - *INCOSE Chesapeake Programs Director*

Upcoming Events

- September 18: The AP1000, A Third Generation Nuclear Reactor, *Mr. Andrew Drake, AP1000 Engineering Completion Project*
- September 21: Workshop: An Introduction to Model-Based Systems Engineering (MBSE) with SysML™, *Mr. Sanford Friedenthal*
- October 16: Cyber and Pysical Threats to the Electric Power Grid, *Steve McElwee, Corporate information security*
- October 26: Tutorial: Flexibility in Design Engineering, *Richard de Neufville*

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, William Ewald or our Communications Officer, Oren Eisner. We value your feedback.

Board of Director Officers, 2013

-President: Dr. William Ewald
- Past President: Dr. Don York
- President Elect: Dr. William Ewald
- Treasurer: Mr. Richard Bentley
- Secretary: Mr. Mark Kaczmarek

Directors at Large

- Communications: Mr. Oren Eisner
- Programs: Dr. Alex Pavlak
- Membership Committee: Mr. Bob Lecorchick