INCOSE Chesapeake Chapter
International Council on Systems Engineering

E-Newsletter

April 2014

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President's Point of View
Spring in our Step

Mr. Erik DeVito - INCOSE CC President
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Trust me, even if it may not seem 100% like Spring has arrived, it really has. I saw my tulips budding up this morning. Spring is all about rebirth, rejuvenation, renewal, and re-growth. Spring happens all around us in our outdoor world. The flowers bloom, the grass starts to turn green, and the cold recedes and gives way to warmer more pleasing outdoor temperatures. These changes we see in nature are by design (accidental or otherwise) and are necessary to keep our natural "systems" springing with new life year after year. These changes don't just occur in nature. We see changes almost everywhere within our lives even within ourselves. As humans we have biological responses that change the way we feel in both body and mind. As the days get longer and we shed our heavy outer garments, we absorb more nutrients from nature. Our bones feel stronger, our skin feels more refreshed, and our minds feel more sharp and precise. When someone says that a person has "spring in their step" it's easy to see that they don't just mean that there is simply an implied bounce as the person walks along; it's more than that. They're recognizing a global change within that person. If you will, they're seeing changes that have brought about more increased energy and ebullience.

The Chesapeake Chapter follows the same cycle, and just like in nature it's designed this way to ensure that we stay vital and renewed year after year. In November, as Winter is creeping in and the shorter days and waning sunshine become more noticeable, we adjourn our monthly member meetings and dinner lectures for the year. In December, Winter's grasp takes hold and chilly, dark, and dreary days become the norm. It's then we meet to celebrate our previous year's accomplishments and remember brighter times with our Annual Holiday and Awards Dinner. As the new calendar year begins in January, we look ahead with hope to a brighter future with the installation of our new chapter Board of Directors. Theses member volunteers who are elected in October are not unlike my tulip bulbs planted before the first winter frost. During February and March

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.

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The Chesapeake Chapter is always looking for volunteers to speak at our upcoming meetings! Please contact our 2014 Programs Director, Dr. Alex Pavlak, if you would like the opportunity to speak or can recommend someone.

the new board is hard at work trying to break through the white wonder of winter to make a new and vibrant Spring renewal for the Chapter.

As Spring begins we see a good news story…All of our green shoots are budding!!!

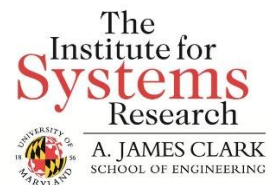Which is why right no one can deny that this Chapter definitely has a "Spring in our Step".

Last month was particularly exciting and provides further evidence that our efforts in the dark months have ensured a successful year. INCOSE Chesapeake Chapter participated as judges in two student Science & Engineering Fairs in the area. There were about 500 projects on display at these fairs. You can read more on our main page but a great thanks to Don Gantzer for arranging our support and to George Anderson, Bob Berkovitz, and Kent de Jong for volunteering as judges. For our 3rd Wednesday dinner Lecture we had a great turnout for acclaimed SE practitioner and author Mark Maier where he discussed lessons learned from revolutionary systems. Mark discussed at length the trials and tribulations surrounding the development of both the the DC-3 and the Global Positioning System. The WISE (Women in Systems Engineering) team was hard at work to put together a draft charter to finalize and make official this new chapter initiative. Kim Bowmaster of Proteus Technologies led the efforts and provided meeting space at her company for the team to meet. This team included: Tiffany Amos, Rochelle Bibbs, Michelle Douglas-Butler, Myra Gross, Suzette Johnson, Linda Pitelli, and Joanne Serelis. They all worked very hard and briefed the outcomes to their group at the WISE Luncheon on 28 March. The Board of Directors will be reviewing this draft and it will be an agenda item for discussion at our April BOD Meeting.

Like bees in a hive getting ready for flowers to bloom, people were all a buzz over the JHU/INCOSE CC Joint Symposium on Model Based Systems Engineering. This event which took place on 29 March did not disappoint. With over 70 in attendance to hear five speakers talking about this cutting edge SE focus area I'm proud of the efforts of our Programs Team led by Director, Alex Pavlak as well as our JHU partner leads Sean McGervey and Terri Wolfrom. Sean and Terri brought this to us and were the driving force behind making this happen…it was definitely a great success…Kudos well earned!!!

As spring moves into full bloom, then as do we. As a Chapter we're promised a great year with lots of growth in our garden. April kicks off with a great number of our of chapter members attending and working as volunteers for the Washington Metro Area Chapter's SEDC event. This event will take place between April 3rd and 5th in Chantilly, Virginia. If you want to learn more we have a link on our homepage. Also in April we have Dick Taylor as our dinner speaker talking about the "Architectural Roots of Large Systems Failures". Dick has been is a previous speaker and workshop lead for Chesapeake. He delivers quality discussions. You shouldn't miss this one. May offers both a lecture and workshop on Agile Systems Engineering. Gundars Osvalds of Praxis will be giving our 3rd Wednesday lecture and Suzette Johnson of Northrop Grumman will be leading the workshop. Both are old friends of the Chapter and both offer thoughtful and informative content. Later in the spring, we'll also be starting to expand our outreach to areas to our north. Members of the INCOSE Board are going to be working to expand our influence and perform site surveys and

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

customer visits to both Aberdeen Proving Grounds and East Baltimore/Woodlawn areas to engage interested parties in those areas with the goal of establishing satellite locations so we can reach more people interested in Systems Engineering.

If you'd like to get some spring in your step and join us on our journey instead of just tiptoeing through the tulips or you simply want to share your thoughts with me please contact me by email erik.devito@incose.org

Regards.
Erik DeVito - INCOSE Chesapeake Chapter President

16 April, 2014 (6:00 - 8:00 PM): The Architectural Roots of Failures of Large Systems

Mr. Richard Taylor, Sr. System Architect, Evolver, INC

Presentation: This presentation addresses the three most common causes of large system failures. Those causes are that the systems architecture (1) is not designed to support scalability, (2) does not support incremental performance testing, and (3) increases complexity in system applications by failing to isolate them from the specific characteristics of external systems. We will discuss:

• Why do so many large systems fail to perform as required?
• What are the specific common causes that make large systems more prone to performance failure?
• How can these roots of failure be avoided or overcome?

Bio: Mr. Taylor is an experienced systems architect who has designed many large, complex systems in highly diverse domains, including banking systems, the GPS ground system, the 2000 and 2010 Decennial Censuses, and Classified Intelligence Systems. He has made numerous presentations on systems architecting at international conferences and has published several articles on systems architecting in trade journals. Mr. Taylor presently works for Evolver Inc. in Reston, Virginia and is also an Adjunct Professor for the UMBC College of Engineering and Information Technology, where he teaches Systems Architecture and Design.

>>Check out the Event Flyer Here<<

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

10 May, 2014 (8:30 AM - 12:30 PM): Exploring the Role of Systems Engineering in an Agile Environment

Presentation: Systems engineering plays a critical role in product and systems development. This role becomes increasingly important as we strive to effectively respond to change and manage uncertainty during the development of software-intensive systems. Through interactive exercises participants explore systems engineering as an integrated component within an Agile framework and the importance of these practices in supporting Agile-at-Scale. Tutorial topics include:

Dr. Suzette Johnson

- An overview of Agile principles and basic Scrum Framework and systems engineering as an integrated component.
- Systems engineering practices within the levels of planning including requirements analysis and design, the product roadmap, and release planning.
- Systems engineering and the agile team with a discussion on team development and components of a high performing team
- A comparison of validation and verification practices between traditional and agile practices.

Participants are requested to read the Scrum Guide at www.scrum.org. This guide defines some of the concepts used during this workshop.

Bio: Dr. Suzette Johnson works for Northrop Grumman Information Systems. As a systems engineer and Certified Scrum Coach she has a passion for promoting Agile engineering in large-scale systems environments. Her experience with Agile-related practices began over 15 years ago for a commercial company where rapid delivery was the norm. She has spent over 10 years streamlining systems engineering and Agile practices on government programs. Dr. Johnson works with programs and organizations as they seek to transition to or mature their Agile practices. She leads Northrop Grumman's Agile Center of Excellence and speaks at multiple conference engagements each year. She received a Doctorate of Management at the University of Maryland with a dissertation focused on investigating the impact of leadership styles on software project outcomes in traditional and agile environments.

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21 May, 2014 (6:00 - 8:00 PM): The Role of Systems Engineering in Large Scale Agile Software Development Teams

Presentation: Traditional systems engineering coordination is challenged when software development teams apply agile software methodologies such as Scrum, test driven development and continuous integration. This talk presents an Agile SE Framework that scales agile from individual agile software teams with a few members to large projects that require a planned architecture and coordinated efforts and is based on the paper *Systems Engineering for Software Intensive Projects Using Agile Methods*. The Framework describes the role of the Systems Engineer in aligning agile software development with traditional systems engineering methodology. The Framework involves an iterative approach to development aspects that are relevant to systems engineering practices including frequent releasable products that result in ability to absorb changes in mission requirements.

Mr. Gundars Osvalds, CSEP, Principal Systems Engineer, Praxis Engineering

Bio: Gundars Osvalds, CSEP and Certified Scrum Master is a Principal Systems Engineer at Praxis providing systems engineering support to DoD programs ranging from Research and Development to large scale reengineering and transformation programs. As a member of the INCOSE Agile Systems Engineering Working Group he is the co-author of the paper, *Systems Engineering for Software Intensive Projects Using Agile Methods*. This paper was accepted by SEDC, IS 2014, and the INSIGHT magazine.

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Chesapeake Chapter Judges 2 Science & Engineering Fairs

The INCOSE Chesapeake Chapter (INCOSE-CC) provided four volunteer judges at 2 Science and Engineering Fairs in Anne Arundel County and Baltimore. Science fairs are great opportunities for INCOSE members to give back to the community by encouraging and supporting our local schools in the Science, Technology, Engineering, and Math (STEM) areas.

The science fairs also help advance INCOSE to a broader community including the parents, students, sponsors, and other judges.

Some Observations:

- Some high school students are working at levels far higher than their peers
- One of our colleagues from the Army Research Laboratory volunteered that one or two students are already working at the PhD level.
- As a whole, students are enthusiastic and address the basics of conducting a science & engineering project….we need to encourage and support these efforts.
- Several high school students would be very good interns in a company with a science or engineering environments.

- At the award ceremonies, and during our judging of selected student projects, we have an opportunity to briefly summarize what INCOSE is about.
- The grand prize winner will travel to the INTEL International Science fair in Los Angeles (all expenses paid) in May.

The specifics for each fair are:

A. Anne Arundel County Regional Science & Engineering Fair

Date & Location: March 8, North County HS
INCOSE-CC Judges: Don Gantzer, George Anderson, Bob Berkovits
Projects attending: 300 projects in 17 categories
Projects evaluated: 10 projects in 3 categories with precursors to SE-like activities.
Winners selected:

- 1st [$125] - Elena Downs Perez, Latitude with Attitude: a Mathematical Model [Energy category]
- 2nd [$100] - Jason Kahn, Aerodynamics of Winglets [Physics category]
- 3rd [$75] – Determining the Type of Rock Form [Physics category]

Other good projects reviewed included: "Does Bridge Design Effect Load Bearing Capacity?", "Bristle Bots", "Effect of Mass on Glide Ratio", "What Happened to The Wi- Fi?", and "How Does Prop Pitch Affect Speed?"

B. Baltimore Science Fair

Date & Location: March 22, Towson U. [includes Baltimore, Harford, Carroll, Howard counties]
INCOSE – CC Judges: Don Gantzer, Kent de Jong
Projects attending: 200 projects in 2 categories [Physical and Biological].
Projects evaluated: 15 projects in the Physical category.

There were 2 types of Judging: Sponsored [e.g., Northrop Grumman, ASQ, AIAA] and Independent judges [e.g., INCOSE-CC, JHU/APL, UMD, UMBC, U.S. Army, Raytheon, NSA, NIH]

Winners selected:

- 1st [$125] Elyse Guttuk, Fan Effects on Smoke Detectors
- 2nd [$100] Caroline Boone, Harnessing Wave Power
  •Ms. Boone appeared to win the most awards!
- 3rd [$75] Sabahat Fatima, Catching the Sun with an Azimuth Solar Tracker
  • Ms. Fatima also won many awards
- Honorable Mention Charles Cannon, Solar Energy

Upcoming Events

- **April 16** Architectural Roots of Large System Failures, *Mr. Richard Taylor, Sr. System Architect, Evolver, INC*
- **May 10** Exploring the Role of Systems Engineering in an Agile Environment, *Dr. Suzette Johnson*
- **May 21** The Role of Systems Engineering in Large Agile Software Development Teams *Gundars Osvalds, CSEP, Principal Systems Engineer, Praxis Engineering*
- **April 16** The Architectural Roots of Failures of Large Systems*Mr. Richard Taylor, Sr. System Architect, Evolver, Inc*