INCOSE Chesapeake Chapter
International Council on Systems Engineering

INCOSE Chesapeake Chapter
P.O. Box 535
Laurel, MD 20725-0535

E-Newsletter

February 2017

President's Point of View

Mike Pafford

As expected, the Chapter has really 'hit the ground running' here at the start of 2017; in many instances continuing excellent initiatives started in 2016. On January 8, INCOSE Chesapeake Chapter Members served as Judges for the annual Science Fair at the Chesapeake Science Point Public Charter School of Hanover, Maryland. For its regular monthly meeting Speaker on January 18, the Chapter welcomed Mr. Leonard F. Levine; Co-Chair OMG Liaison Subcommittee, who gave a well-attended talk on, "Transitioning OMG UPDM to ISO Unified Architecture Framework (UAF)". Immediately following the Speaker, Chapter Past President Erik DeVito facilitated the Installation of Chapter Officers and Directors for 2017. In January the Chapter Communications Director assembled a team to update the Chapter Website. The Chapter Secretary brought Member Volunteers together to start design of a new Chapter Operations and Archival File Storage Methodology. The Chapter Membership Director began reviewing and renewing Chapter Sponsor Agreements. And, the Chapter Treasurer started leading the Annual Financial Reporting and Auditing efforts.

When this February Newsletter is published, several Chapter Members will have just returned from representing the Chapter, as well as multiple INCOSE International Working Groups, Boards, and Committees at the INCOSE International Workshop 2017 (IW17) January 28-31 in Torrance, California. In early February, the Chapter in coordination with the Johns Hopkins University Applied Physics Laboratory (JHU/APL), will once again host (in the JHU/APL Kossiakoff Center) a 5-day INCOSE Certification Preparation Course, presented by Certification Training International (CTI). The Chapter Past President has already started coordinating with CTI to again host a Certification Preparation course at JHU/APL in June 2017. February also means Abstract Deadlines for Chapter Members proposing Papers, Panels, or Tutorials for upcoming Systems Engineering-related events. February 15 is the Abstract Deadline for the May 5, 2017 INCOSE TGCC one-day Conference, "Systems Engineering in Aerospace and Oil & Gas—Opportunities for Collaboration", in Houston, TX.

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.

Programs Update

**Gundars Osvalds
Programs Director
ESEP**

At last month's dinner meeting we were briefed by the Co-Chair of the Object Management Group (OMG) Liaison Subcommittee on the future Unified Architecture Framework that will become an international standard for use in the modeling of enterprise and systems architectures. If you missed Len Levine's presentation we have recorded it and made available via YouTube, *youtube/Gf3z7u4ia48.*

This Month's Highlights: For this month's network and dinner meeting we have timely information on the threats to our nation's electric power supply via the "Electric Grid". There are risks that have been identified for the last 50 years but until recently their threat has not been realized and faced up to as being real in this era of international attacks via the Internet. Mark Walker, ESEP, will provide us with the activities that the INCOSE Critical Infrastructure Protection and Recovery (CIPR) Working Group has completed and planned in the Protecting our Nation's Infrastructure. We will be briefed on the WG plans to provide expert advice to local, state, and federal government emergency organizations and others, so that they can prepare for this very real threat to our electric grid.

The meeting will be held on February 15th with dinner beginning at 6pm and the lecture at 7pm. Please register at *incose-cc.org/registration*. **NOTE:** *Due to construction, the meeting will be held in JHU/APL Building 200 for this month.*

Another event for this month is the chapter's Women in Systems Engineering (WISE) initiative to increase participation of women in Systems Engineering. The meeting will be held at the Howard County Library, Savage Branch in Laurel on February 22nd, at 5pm with Monica Mathern, CDR USN (Ret), CSEP, discussing lessons learned in the use of Systems Engineering processes in support of DoD programs. Please visit our web site to register for the FREE event: *incose-cc.org/registration*.

We welcome your ideas and recommendations for future 2017 monthly dinner Presentations, Tutorials, Lectures, Training, or Workshops. Please send your ideas and proposals to: programs@incose-cc.org.

Announcements and Events

2017 Chapter Meetings and Lectures
Scheduled Chapter Dinner Meetings are held at the Johns Hopkins University Applied Physics Lab on the third Wednesday of each month unless otherwise noted. The Meeting starts at 6pm (Dinner $20 for Members, $25 Non-Members, $5 extra at the door), and the Free Lecture starts at 7pm. Please complete your Registration at *incose-cc.org/registration.*

- 15 February, Building 200 Cafeteria & Auditorium
- 15 March, Building 1 Cafeteria and Parsons Auditorium
- 19 April
- 17 May

- 21 June
- 19 July
- 20 September
- 18 October
- 15 November

Monthly BOD Meetings

Monthly Board of Directors (BOD) Meetings are held at JHU/APL in Building 1, Barton Conference Room the second Wednesday of every month beginning at 6pm and ending at 8pm. The March BOD meeting will be held in the JHU/APL Kossiakoff Center.

Communications Committee Meetings

Communications Meetings are held the first Wednesday of every month beginning at 6:30pm and ending at 7:30pm. Please contact the Communications Director for more details: communications@incos-cc.org

Upcoming Events

- **22 February, Free WISE Event:** Guest Speaker - Monica Mathern, CDR USN (Ret), CSEP; Systems Engineering Technical Processes: Lessons Learned, Howard County Library System, Savage Branch, 5-6pm, please register for FREE event: *incose-cc.org/registration*
- **4 March (Snow Date 11 March) Anne Arundel County Public Schools Regional Science and Engineering Fair.** For details: Don Gantzer, dongantzer@comcast.net
- **23 – 25 March, CSER 2017 15th Annual Conference on System Engineering Research:** Disciplinary Convergence: Implications for Systems Engineering Research, Refer to the CSER website for details: *incose.org/newsevents/currentevents*
- **25 – 26 March, Baltimore Science Fair.** For details contact Charlie Welch, beekeepr@comcast.net
- **24 – 27 April, 11th Annual IEEE International Systems Conference,** Montréal, Québec, INCOSE Track. Details at: *incose.org/newsevents/currentevents*
- **5 May, INCOSE Texas Gulf Coast Chapter Systems Engineering Conference**. One-page **Abstracts Due 15 Feb 17**. Details at: *incose.org/ChaptersGroups/ Chapters/ChapterSites/texas-gulf-coast/chapter-events/conferences/tgcc-2017-conference*
- **16 – 18 May, INCOSE Healthcare Working Group Conference:** "Agile Methods for the Development of Healthcare Systems 2017". Visit the Conference Website for more details: *incose.org/ChaptersGroups/WorkingGroups/Application /healthcare/ agile-healthcare-conference-2017*
- **20 May, Free INCOSE Systems Engineering Professional (SEP) Exam:** Held at JHU/APL, Laurel, MD, Saturday, 9:30am -11:30am, arrival by 9:00am. More details and instructions on how to register for this Exam are available at: *incose-cc.org/registration*
- **17 – 20 July, INCOSE International Symposium (IS 2017):** Each year, INCOSE hosts the International Symposium as its flagship event for Systems Engineers world-wide. Keynote Speakers on topics reflecting not just Systems Engineering relevancy, but also issues with global currency are presented during this annual gathering. Panels, papers and presentations fill four days of opportunities.   INCOSE's most prestigious awards are bestowed during IS. Industry, government, and academic exhibitors fill the Exhibit Hall to share information about new developments. Students display

award-winning engineering projects. Mentors and mentees are introduced to each other. Social activities – formal and informal – bring people together in a highly energized and productive atmosphere. Visit the IS 2017 Website for more details: *incose.org/symp2017/home/when-where*

- **Friday 18 August**, **INCOSE Chesapeake Chapter 8th Annual SEP Gala**
- **Wednesday 6 December**, **INCOSE Chesapeake Chapter Holiday Party and Awards Ceremony**

Systems Engineering Professional (SEP) Exam

The Chesapeake Chapter is pleased to offer a FREE Systems Engineering Professional (SEP) Exam at the Johns Hopkins Applied Physics Laboratory in Laurel Maryland. In October 2016, a number of our members were interested in taking the free SEP Exam offered by the INCOSE Washington Metro Area Chapter. We supported our members by offering a free chartered bus to Virginia along with a light breakfast and lunch.

In response to interest expressed by our members to host an exam more local to our Chapter, we successfully arranged for the INCOSE Certification Program Manager, Ms. Courtney Wright, to travel to the Baltimore area to support our members to administer this exam. This Exam will again be a joint sponsored event with the support of the INCOSE Washington Metropolitan Area Chapter.

This paper-based SEP Exam will be held on Saturday, May 20th at 9:30am -11:30am, arrival by 9:00am, and is open to INCOSE members and non-members. Visit *incose-cc.org* for more information and to register. NOTE: After passing the exam, you must submit your complete application with the required fees and join INCOSE to be considered for certification.

Science Fairs - Volunteer Opportunities

Anne Arundel County Public Schools – Regional Science and Engineering Fair
North County High School 10 E First St, Glen Burnie, MD
aacps.org/science/secondscifair.asp 4 March 2017 (Snow Date 11 March)
11:00 - 1:00pm, Optional preview of projects by judges
 1:15 - 1:30pm, Judges' orientation, old gym
 1:15 - 5:00pm, Student Researchers present at projects

INCOSE Chesapeake Chapter POC – Don Gantzer, dongantzer@comcast.net

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Baltimore Science Fair, Towson University, Union Building - Chesapeake Room
25-26 March 2017
9-4 pm 25 March 2017
1-3pm 26 March 2017

The fair is broken into two divisions (I & II). Divisions I students in grades 9 - 12 and Division II is for grades 6 - 8.

INCOSE Chesapeake Chapter POC – Charlie Welch, beekeepr@comcast.net

Communications Corner

Myra Parsons Gross, ESEP
Communications Director

IN THE SPOTLIGHT MICHAEL E. (MIKE) PAFFORD
PRESIDENT, INCOSE CHESAPEAKE CHAPTER
l*inkedin.com/in/mikepafford*

INCOSE Object-Oriented Systems Engineering Method (OOSEM)Working Group, Co-Chairman
INCOSE Member Since 1998

Mike Pafford has a BS in Business and Management from the University of Maryland University College (UMUC) and an MS in Information Systems from the Naval Postgraduate School (NPS). He has forty-five years of USAF and USN Active Duty Military, FFRDC, Commercial Industry, UARC, and Academic experience in complex sociotechnical system concept, analysis, design, development, procurement, test, deployment, operations, management, education, training, and assessment.

INCOSE talk, "Systems Engineers Surviving in the Agile Scrum" (2010)

Mike also has ten years as a Course Developer and Instructor (Software Systems Engineering) in the Johns Hopkins University (JHU) Engineering for Professionals (EP) MS in Systems Engineering curriculum.

In addition to his JHU EP Instructor work, Mike has also developed and taught Professional Development classes and workshops in Model Based Systems Engineering (MBSE), Multi-User Virtual Environments (MUVEs), and Lean Startup Methods for Agile Application Lifecycle Management (ALM) Project Planning.

Teacher, Inside a Multi-User Virtual Environment (MUVE) (2011)

Special Interests

International Workshop (IW) 2017 Recap
Ellie Gianni, ESEP
Myra Parsons Gross, ESEP

INCOSE IW 2017 Torrance, CA

Chesapeake Chapter was well represented at the International Council on Systems Engineering (INCOSE) International Workshop (IW) 2017 held in Torrance, California, with 17 members in attendance. This year's IW experienced the largest attendance in the history of INCOSE with over 500 registrants. The conference spanned 6 days, beginning with Impactful Forum Leadership Strategy Sessions on Friday, January 28th and culminating on January 31st.

During the Opening Plenary Remarks, the President of INCOSE, Alan Harding, recognized Chesapeake Chapter members for their contributions. Mark Walker, ESEP, and Mike deLamare were cited for their efforts with the Critical Infrastructure Protection and

Recovery (CIPR) Working Group. Ken Zemrowski, ESEP and Engility Technical Fellow, was recognized for his contributions as the Associate Director for Standards. We wish to congratulate our chapter members for their dedication and efforts to promote and advance the knowledge of systems engineering.

During the workshop INCOSE leaders met to discuss opportunities for improvement for the future of the International Symposium (IS) and IW events with the objective of "… producing and supporting the most impactful forums in the world on systems engineering practice, policy, education and research". A session offering, "Good Neighbor! – Chapter Collaboration", covered best practices for improving chapter collaboration among all chapters, from large to small, vibrant to struggling, across the globe. INCOSE is considering creating an award for this category of contribution in the future. A Professional Development Initiative session was also offered where the INCOSE SE Vision was discussed in terms of the Professional Development of Systems Engineers being the core of INCOSE operations. The goal of this session was to develop a strategy of support for systems engineers at all stages of their career from college coursework, apprenticeships, and through a systems engineer's career. The output from this meeting will be used by the INCOSE Professional Development Steering Group who is chartered with coordinating the rich and growing range of relevant activities in the education areas.

A session, "Modeling INCOSE", was co-led by the Americas Sector and addressed the INCOSE vision, mission, and the strategy we are following to progress towards that vision. The group discussed INCOSE being viewed as a System. Thus, we can apply Systems Thinking and engineering approaches to the evolving the organization. As Systems Engineers we all understand the importance of model-based approaches to ensure shared understanding, and to enable us to make effective decisions. The intended output of this session was to find the most feasible approach to developing a model for INCOSE and the factors needed to be considered to meet the needs of INCOSE now and into the future.

The Empowering Women as Leaders in Systems Engineering (EWLSE) working group met to discuss strategic plans including how to encourage more women to consider being an elected officer of INCOSE. It continues to remain true that there are more of our male counterparts that actually serve in leadership roles in INCOSE and elsewhere. As many of you may know, INCOSE has a strategic initiative, Empowering Women as Leaders in Systems Engineering (EWLSE). EWLSE, launched at the International Symposium (IS) in 2015, closely emulates the mission of Chesapeake Chapter's Women in Systems Engineering (WISE) which was initiated in early 2014. The WISE leadership team supports EWLSE by providing guidance, lessons learned, and support as needed. Specifically, our WISE Past President, Myra Parsons Gross is a member of the EWLSE working group.

These are just a few of the sessions held at the IW. Proceedings from the workshops are located on the https://connect.incose.org/WorkingGroups/Pages/default.aspx in the CONNECT Share Point Working Group collaboration area. You will need to use your
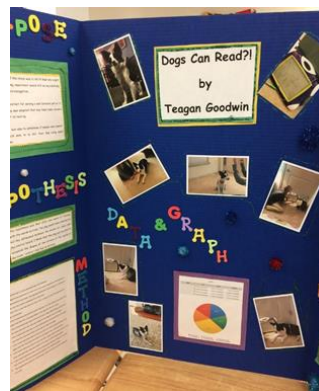
INCOSE member login in order to access this information. The following groups and working groups (WG) held meetings at the conference:

- Academic Council
- Agile Systems and Systems Engineering WG
- Ambassadors
- Americas, EMEA and Asia Oceana Chapter and Sector Leaders
- Anti-terrorism International
- Architecture
- Automotive
- Awards Committees
- BKCASE
- CAMSS Function/Chapter Awards Review
- Certification and Certification Advisory Group
- Chapter Awards Program and Award Program Improvements
- Competency Framework
- Complex Systems
- Corporate Advisory Board
- Critical Infrastructure
- Decision Analysis
- DOD Digital Engineering Efforts
- Empowering Women as Leaders in Systems Engineering
- Engineering Education
- Events
- Fellows

- GLRC11 Planning
- Healthcare MBSE
- Human Systems Integration
- INCOSE-PMI Alliance
- INCOSE BOD
- INCOSE Foundation
- INCOSE Professional Training Initiative
- Industry Outreach
- Infrastructure
- Integration, Verification and Validation
- IOB Industry Ambassadors
- IS2017 Planning
- ISO19450 Object Process
- Agile SE and System Sciences
- MBSE Initiatives
- Measurement
- Membership Recruitment/Retention
- Model Based Conceptual Design
- NAFEMS-INCOSE Systems Modeling and Simulation
- Natural Systems
- Nominations and Elections
- Oil and Gas
- Ontology
- Patterns and Working Group

- PM-SE
- Process Improvement
- Product Lines
- Quality Management
- Requirements
- Resilient Systems
- Risk Management
- SE Maturity Model
- Space Systems
- Standards Initiative
- Student Division
- SysML v2
- System of Systems
- Systems Security Engineering
- Systems Thinking Roundtable
- Technical Operations
- Tool Management and Model Lifecycle Management
- Town Halls for Systems Sciences and Infusing SE into General Engineering Education
- Training
- Transformation
- Transportation
- Very Small Entities
- Ways and Means

Science Fair – Chesapeake Science Point Public Charter School
Asia Morgan, CSEP

On Sunday, January 8th the Chesapeake Science Point Public Charter School of Hanover, Maryland hosted its annual science fair with students representing the 6th through 12th grades. Although originally scheduled on December 17th, and rescheduled for January 7th, this science fair suffered multiple weather sustaining cancellations but these students would not be deterred. They were excited to share their work and were well prepared.

Mr. Ashish Vadalia, Chesapeake Science Point Science Department Chair, welcomed all judges with and without prior judging experience. He expressed his appreciation for those willing to share their time and support for the students who had worked hard to prepare for this day. Although Chesapeake Science Point consists of a small but diverse student body, there were over 200 projects presented.

The students have been preparing for this fair since September 2016. Listening to the students speak with a high level of enthusiasm about their projects was impressive. Each student was responsible for introducing their project, delivering their hypothesis, explaining the various steps used to test their project, their conclusion, and other supporting information. From testing the hypothesis of whether or not dogs can read,

Mrs. Asia Morgan, CSEP, Mr. Vadalia, Science Department Chair, Chesapeake Science Point

using tea for plant growth, or the "keys" to relaxation based on music, the judges were treated to an eclectic selection of projects.

The INCOSE Chesapeake Chapter had the privilege of judging the various experiments on display, interacting with the talented students and allowing them to present their projects. Each judge was given an iPad showing the details for the various categories and projects. Judges were able to ask questions about the individual projects and were given the opportunity to provide constructive feedback.

When asked how their projects were chosen, a student shared that his hearing-impaired brother was the inspiration for his project.

For our participation, each judge received a gift bag including a brain teaser game. However, in my opinion the judges should have thanked the Chesapeake Science Point Public Charter School for the opportunity to judge such enthusiastic and creative students who one day just might become a *Systems Engineer*.

Editorial
Myra Parsons Gross, Communications Director

There can be many ways a student can become inspired to pursue engineering as a profession. There is no doubt that Science Fairs are just one of many opportunities for our youth to become more interested in science, technology, engineering, and math (STEM). Science projects are typically chosen based on the student's natural interest and allows them to use critical thinking skills to derive answers and conclusions to questions. The formulation of conclusions and the satisfaction of answers give the student a sense of satisfaction and a feeling of accomplishment and can be a powerful moment of discovery for the student. Perhaps the student will be inspired enough to pursue a career in systems engineering. **Help develop the next generation of technology innovators – Volunteer and Support our Youth!**
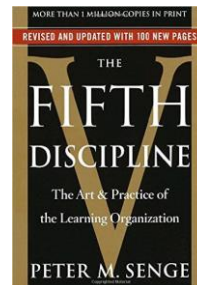

Book Report
Mark Kaczmarek

The Fifth Discipline: The Art and Practice of the Learning Organization
By Peter M. Senge, 2nd Ed. 2006, 445 pages

Psst. Don't tell the management types that this is an engineering book. Honest. This can be used to help solve problems that businesses and organizations have and bring them into the 21st century and beyond. The author has latched onto the W. Edwards Deming (1900 – 1993) method for organizational improvement through continuous process improvement by being a learning organization. The author outlines the 5 disciplines and a perspective to use these disciplines within your organization to weed out unused and unproductive processes and methods.

His 5 disciplines are:

1) Personal Mastery
2) Mental Models
3) Building Shared Vision
4) Team Learning
5) Systems Thinking, the 5th Discipline

I find that Systems Thinking, as the author notes, is the most important of these disciplines. Many people, and not necessarily Systems Engineers, are capable of using Systems Thinking and analysis when solving problems of either design or organizational road blocks. Systems Engineers have made it into a science through Operations Research and mathematical modeling to find root causes and solutions. The author does not dive into these areas too deeply, but that is the beauty of this book.

The book can be used as a transition between engineers; architects, managers and even C-suite level "suits". Any book that can bridge the gap by laying out the author's methods with the non-technical reader is a plus. This book falls within the "soft" science area that many engineers find themselves often at odds with when presenting their engineered solutions only to have one or more in the room with the "deer in the headlight" look by the end of the presentation. Like most books that present transformational change, this needs ardent tenacity and long term commitment to bring about the improvements that can be yielded through these methods.

When I first heard of this book, it was during a Saturday tutorial by Zane Scott, a Chesapeake Chapter member, who included this as a reference. I exclaimed that it was a "Management Book" and to what place did it have within an engineering learning session? He pointed out that it was appropriate for the engineers' toolbox.

Though a bit lengthy, I do recommend fully this book to all that want to improve their project and internal processes.

Membership Arena

INCOSE membership is well over 12,000 world-wide. The Chesapeake Chapter of INCOSE serves the systems engineering community in Baltimore and its surrounding areas. Our Chapter is very active and prides itself in the many endeavors it has undertaken. An organization such as ours relies on the willingness of its membership to put as much effort into it as they receive in return.

Mark Kaczmarek
Membership
Director

Chesapeake Chapter's membership Includes:

- Current membership = 323
- Certification = 140
  - ASEPs = 22
  - CSEPs = 91
  - ESEPs = 27

Learn more about the *benefits of joining INCOSE* and consider being part of this thriving organization and fill out an *INCOSE Membership Application* today!

The Chesapeake Chapter proudly welcomes our new members:

January 2017
- *Azan B, CSEP* (Associate Director)
- *Morgenstern Robert*, National Aeronautics and Space Administration (NASA)
- *Topping Gary*, Smiths Detection

December 2016
- *Bjorling Terra*, ASRC Federal
- *Cates, Noble, CSEP* – Vencore (Associate Director)
- *Raub Francesca,* Capella University

November 2016
- *Lancaster, Jay*
- *Michealson, Kirk,* Tackle Solutions, LLC
- *Baker, Robert,* Colorado State University Systems Engineering Programs

Congratulations to Newly Certified SEPs since August 2016:
- *Butziger, Peter*, ESEP, Vencore
- *Dougherty, Joseph, ASEP*
- *Flanigan David, CSEP* - JHU/APL
- *Gianni, Benjamin, ASEP* - Loyola University Maryland
- *Harvey, Lance, ESEP* - Jacobs
- *Jackson, Dustin*, CSEP, Leidos
- *Lantz, Gary, CSEP* - The Boeing Company
- *Morgan, Asia*, CSEP
- *Sathi Ram, CSEP* - Northrop Grumman Corporation
- *Starkey, James, CSEP*
- *Wright, Linnea, CSEP* – Booz Allen Hamilton, Inc.