

**The Official News Letter of the Washington Metropolitan Area (WMA)
chapter of the International Council on Systems Engineering (INCOSE)**

President's Message



Dear WMA members:

As we move into the wonderful humid days of summer, I look back on a pretty successful first six months of the year. In January, the WMA Chapter received a Platinum Chapter achievement award, followed the next day by receiving the INCOSE Outstanding Chapter of 2016 award. In July, several members of the WMA INCOSE Board will be traveling to the INCOSE IS 2017 in Adelaide, Australia to receive these awards. Past President Dr. Muhammad Islam will accept on behalf of the Chapter.

These two awards would not have happened without all the support and effort by all the WMA Chapter members, so I thank you again for your support. Speaking of which, the Chapter always needs volunteers and Chapter elections will be this fall, so if you have some time, and interest, we'll find a job for you.

The Chapter has had several very good monthly dinner meetings this year, with excellent speakers. Thanks to Ruchira Puri for her coordination efforts. The meetings are usually held in McLean, but beginning this fall, we will be trying to host the meetings at other locations, keeping our satellite sites but expanding our streaming and remote meeting capabilities so more members can attend the meetings. Hopefully too, we can start an annual "big bash" meeting in an attempt to get as many members as we can to attend one meeting (with dinner provided) every year. I'm hoping we can do the first one later this year.

The WMA Chapter, along with the Chesapeake Chapter, hosted an ASEP/CSEP testing event last month. It was very successful, and we hope do another in the fall. The idea is to get as many SE practitioners to take the exam and especially those just out school. An ASEP or CSEP after your name looks pretty neat, and you cannot beat the price. If you need more education check out Shakila Khan's report on upcoming tutorial classes.

The WMA Chapter is the largest in the US and, as I've mentioned before, we pretty much know the world of Government and Industry SE. We also know its problems and issues. Along with President Elect/VP Subash Kafle, I will be attending IS 2017, and we'd very much like to take WMA member issues, problems, complaints and even compliments to the INCOSE management team and collaboration groups at IS 2017. Just send us a short email and we'll try to carry the message.

Sincerely,
William (Bill) Scheible
WMA President

Chapter Happenings



Smithsonian Air and Space Museum Tour and Tutorial at Udvar-Hazy Center

INCOSE WMA and STEMKIDZ members and their children and attended the April tour and tutorial event held at the Air and Space Museum at the Udvar-Hazy Center in Chantilly VA on April 29, 2017. This FREE event sponsored

The group was led by our docent, Mr. Fred Zuniga, who was a former Fairfax County teacher and U.S. Navy veteran. The Udvar Hazy Air and Space Museum from floor to top is like a 10-story building and houses 195 airplanes and space aircraft. Below are some of the planes our tour group was educated on. The entire presentation was exciting, informative and valuable for current and future systems engineers. Look for communication on forthcoming tutorials on the www.incosewema.org website, Facebook page and by direct email to INCOSE WMA members.



The INCOSE WMA tour group listening intently to Mr. Zuniga's introduction of early flyers that were made from wood and fabric.

The SR-71A was the first stealth plane that allowed for successful reconnaissance with one pilot and a second crew member conducting surveillance. The stealth capability was due to the special material that eluded radar detection.



INCOSE Chesapeake and WMA Chapters SEP Test Collaboration

INCOSE Chesapeake and Washington Metro Area chapters jointly hosted a paper based SEP exam session for CSEP and ASEP certifications at Johns Hopkins University Applied Physics Lab (JHU-APL) on Saturday May 20th. 65 candidates took the exam and more than 15 volunteers from INCOSE Chesapeake and Washington Metro Area chapters worked to arrange and proctor the test session. The following Chesapeake Chapter (CC) and WMA Volunteers supported the event (pictured left to right): George Anderson (CC), Dr. Muhammad Islam (WMA), Mark Kaczmarek (CC), Raji Ganesan (WMA), David Alldredge (CC), Courtney Wright, Mike Pafford (CC), Greg Barton (WMA), and Jeff Banks (WMA). Missing from photo: Vantresa Scott (CC), Myra Gross (CC) and Ellie Gianni (CC).



IISE National Capital Chapter presents check to the GMU Student INCOSE Chapter

Officers and members of the IISE National Capital Chapter took the opportunity at the 2017 IISE Annual Conference & Expo in May in Pittsburgh to present Ariela Sofer with a check for the INCOSE GMU Chapter of INCOSE. Contribution funds were raised by the IISE National Capital Chapter during a joint event of the IISE National Capital Chapter, INCOSE WMA Chapter, and the Washington DC Chapter of INFORMS held last fall at George Mason University. Dr. Sofer who is Professor and Chair of the Systems Engineering and Operations Research Department at Mason spoke about "Optimization in Medicine" to a crowded room of professionals and students at GMU.



Shown in the picture from left to right are Joseph Scheibeler, Richard Sowdon, Ariela Sofer, Neal Schmeidler, Sean Gahagan, Daniel Hoffman, and William Liu.

The 4th edition of the George Mason University Laboratory for IT Entrepreneurship Pitch IT competition

The 4th edition of the George Mason University Laboratory for IT Entrepreneurship Pitch IT competition was held on April 22. Students present their business ideas to a panel that includes faculty, entrepreneurs and other business experts. The students obtain valuable feedback and enhance their ability to market their ideas to investors. Information about the competition can be found at <http://lite.gmu.edu/pitch-it.html>.

This year, a record number of presentations (11) was selected out of a pool of about 20 teams who expressed interest in participating.

The Systems Engineering Senior Design Capstone Teams took 1st Place (\$1000) and Audience Award (\$200)

George Mason Systems Engineering seniors won first place in the "Systems Design" track at the prestigious General Donald R. Keith Memorial Capstone Conference held at the U.S. Military Academy at West Point, May 4, 2017 for their project "Design of an Enhanced Defect Identification System for Commercial Building Construction."

The team, Ju Yeon Park, James Lange, Okan Koc, and Firas Al-Bakhat, designed a system to help building inspectors with their jobs. Currently, when a building is under construction it must be inspected every day by human inspectors. These individuals must climb every floor of a building and look out of the windows to spot defects such as structural cracks, loose nuts and bolts, inadequate sealant application, and water damage. In some cases, the inspectors must put on a harness and rappel down the face of the building. When inspectors find defects the only archive of the defect is the inspector's written report.

The students' proposed system combines image-processing software to a small drone, which allows the inspector to examine the exterior of the building from several angles and to archive the inspection from safe location on the ground. A stochastic simulation of the process showed a 44 percent reduction in time and cost of the inspection, and 36 percent improvement in accuracy.

The students' next step will be to find venture capital funding to complete testing of the product and provide commercial services.



(Press release <https://volgenau.gmu.edu/news/424346>)

The 4th edition of the George Mason University Laboratory for IT Entrepreneurship Pitch IT competition (cont.)

George Mason Systems Engineering seniors won first place in the 2017 GMU Pitch IT Venture Capital Competition for their project “Knee Motion sensor.” The team, Taban Yazdani, Anthony Petro, Anas Alharbi, and Salima Sekandari, built on last year’s award-winning project to develop a knee motion sensor to prevent injury to the Anterior Cruciate Ligament (ACL).

ACL injury is one of the most common traumatic sport-related injuries with potential short and long-term morbidities. More than 200,000 people sustain ACL injuries each year in the United States alone. Additionally, female NCAA athletes are 2 to 8 times more likely to sustain an ACL injury than male NCAA athletes. Surgical treatment can cost on average \$16,000 and requires 6 to 9 months of rehabilitation. A Knee Motion Sensor (KMS) has been developed to provide real-time situational awareness for athletes in a game by: (1) using inputs retrieved from sensors and converting it into usable data (2) using data along with TSF equations to calculate the strain being placed on the ACL (3) alerting the user if the TSF is approaching 2100 Newtons and (4) allowing the athlete to use situational awareness for a post-game analysis on which movements they are doing that may be harming their ACL.

George Mason Systems Engineering seniors won the audience choice award in the 2017 GMU Pitch IT Venture Capital Competition for their project "Design of a Workflow Optimization System for Urban Water Utility Maintenance." The team, Adnan Khan, Rebekah Orozco, Mohamed Khattab, and Fahad Alqahtani, used big data analytics to analyze and improve the workflow for water system repairs.

The District of Columbia has over 1,440 miles of water main pipes with approximately 40,000 valves, 9,500 fire hydrants and 130,000 service connections. With parts installed in the 1800s, the median age of pipes has reached 78 years. As water courses through these pipes at over 200 psi, ruptures can occur. These ruptures buckle roadways, flood streets, and cause widespread service disruptions. In the winter months, this can create hazardous icy conditions. The District’s water utility reports approximately 500 water main breaks per year.

“As the system ages, there are more breaks. The highest priority breaks are repaired first creating a growing backlog of low priority work orders,” explained Fahad Alqahtani. “With the same number of repair crews this backlog will keep growing.” The team performed big data analytics on the work order database and classified the low priority work orders. Then they set about detailing the workflow for each category of repair and identifying bottlenecks.

“You would be amazed how complicated it is repair a simple leak,” said Mohamed Khattab. “Before any excavation can begin crews need permission from the forestry service if a tree is nearby and from all the underground utilities such as cable, optical cable, telecom, and electric power. Equipment has to be stationed, parts need to be ordered, and crews need to be assigned.”

Team lead Adnan Khan said, “We did two things. First we designed a neural network system to forecast when main breaks would occur based on the weather forecast. Second we built a simulation of the work flow to show how process improvements can relieve bottlenecks, reduce time and cost, and improve quality.

“George Mason has an awesome System Engineering program,” said Chris Coit a manager at DC Water. “The fact that these undergraduate students could come out and help us in this way is impressive.”



(Press release <https://volgenau.gmu.edu/news/395006>)

STEM day with Cub Scouts Pack 1576

On Friday, June 30th, INCOSE WMA participated in a very successful STEM day with Cub Scouts Pack 1576 of Sterling, Va. Scouts and their siblings got a chance to experience the assembly and features of a hang glider, and then see drones fly. Dr. Walt Melo gave a demonstration of hang glider assembly and mechanics to the scouts. CJ Liu demonstrated how drones work and their safety features, then flew the drone inside the auditorium. INCOSE WMA President Bill Scheible, Past-President Dr. Muhammad F Islam and INCOSE members joined 130 scouts, parents and siblings. For their efforts in providing the demonstrations, INCOSE WMA President Bill Scheible presented Dr. Walt Melo and CJ Liu with WMA coffee mugs. INCOSE provided the after event pizza dinner.



INCOSE Technical Leadership Institute

INCOSE Technical Leadership Institute is a development program for active INCOSE members seeking to improve their leadership skills in open, collaborative environment.

Purpose:

The purpose of the Institute is to accelerate the development of systems engineering leaders who will exemplify the best of INCOSE and SE profession.

Program Overview:

The technical leadership institute is two-year program where new cohort is formed annually. There are four events per year: two face-to-face and two webcast. There are individual projects work between the events. Each cohort mentors the one following. The candidate for the cohort must be nominated by an INCOSE Chapter leader by submitting an application package and be recommended by their home organization.

The Benefits:

- Individual members will become more capable leaders within their organizations
- INCOSE will have a growing pool of capable leaders from which to draw on, filling leadership positions
- INCOSE's international reputation will be enhanced by helping to develop systems engineering leaders of the highest caliber

INCOSE Technical Leadership Institute is accepting nominations for their new cohort that is going to kick-off summer 2017. If you have a candidate you would like to nominate, please reach out to INCOSE WMA chapter BOD bodall@incosewma.org

Found on the Web!

If you are a modeler that this blog is for you! This is a really neat Model Based Systems Engineering (MBSE) and other discipline tool blog site

<https://blog.nomagic.com/category/home/>

Systems Engineering Body of Knowledge Course - IEEE Smart Tech [6 Videos]



This 4-hour course covers practical applications of systems engineering processes and methods as documented in SEBoK (the guide to the systems engineering body of knowledge) and 15288 (the ISO/IEC/IEEE standard for system engineering processes). Examples and case studies are used to illustrate processes, methods, and techniques for developing purposefully-engineered systems. Taught by Richard E. Fairley, Principal Associate of Software and Systems Engineering Associates (S2EA). Included Videos

You can purchase this [here](#)

- IEEE Member US \$39.99
- Society Member US \$39.99
- IEEE Student Member US \$39.99
- Non-IEEE Member US \$59.99

Up Coming Local Events



Our mission is to serve the systems engineering community in Washington, DC and its suburbs. INCOSE is an international professional organization dedicated to advancing the practice of Systems Engineering.

October 12th, 6pm to 6pm: Advancing the State of System Engineering Practice: Correcting Multi-Discipline SE Contributions to Project Performance Issue

Monthly meetings are typically held on the 2nd Wednesday of each month. Meetings are a combination of business, presentation and socializing. All are welcome. INCOSE membership is not required to attend.

Main Meeting Site: McCormick & Schmick's Sea-food & Steaks of Tysons, 88 Westpark Drive McLean, VA Social hour starts at 00 pm.

Cost is 15 for members, 20 for non-members, and 10 for students and there is free Valet Parking Provided
Closest METRO reensboro

Satellite Locations:

Satellite – Chantilly, VA (hosted by Vencore)

The presentation starts at 7:00 pm. U.S. citizens only.

Satellite – Fairfax, VA (hosted by George Mason University)

Social hour starts at 6:00 pm. (\$3 per hour charge to park).

Satellite – Washington, DC (hosted by Noblis)

Social hour starts at 5:30 pm at the After Hours Bar (in the building). U.S. citizens only.

Presenter: Charles Wasson

Systems Engineering & Development (SE&D) projects continue to exhibit performance issues ... despite investments over the past 30 years in Engineering education, training, Capability Maturity Model Integration (CMMI), ISO 15288, Organizational Standard Processes (OSPs), and SE certification by industry, government, academia, professional, and standards organizations.

The state of Systems Engineering today is rooted in outdated, 1980's SE practices characterized as "abstract 'brands' of SE" across academic, industry, government, professional, and standards organizations, not competency standards. Rhetorically, would you board an aircraft with a flight crew qualified on abstract philosophies of flying? Yet, contracts are released everyday to developers proposing "what they think ... they think" SE is. Then, if the project fails or has poor performance, Systems Engineering is blamed.

Most Engineers spend, on average, from 50% to 75% of their total career hours making "systems" decisions for which they have no bona fide SE courses. Yet, they graduate with hours of courses in subjectmatter that most will spend < 1% of their total career hours. Exacerbating the problem are SE courses taught by instructors who lack in-depth, industry-based, SE experience over many years of projects. Unfortunately, Systems Engineering research has largely ignored these issues, which cost industry and government billions of dollars every year applying SE practices that are typically ad hoc, ineffective, and inefficient. As Dr. Albert Einstein observed, "Insanity is continuing to do the same thing over and over expecting a different result."

Join us for an informative presentation for new and seasoned professionals – Systems, Electrical/Electronic, Mechanical, Software, et al Engineers and Managers; Project Managers (PMs); Business Analysts; and Executives – by international award winning SE textbook author, Charles S. Wasson, one of today's leading Thought Leaders in SE&D. This presentation provides insights that will enable you to "lead and shift" outdated SE paradigms in your Enterprise, organization, or project, which are often ad hoc, ineffective, and inefficient, to achieving 21st Century SE & D excellence.

What You Can Expect to Learn

1. Understand how to recognize outdated 1980's SE paradigms thriving within your SE projects.
2. Understand how these paradigms evolved and reduce SE capabilities and project performance.
3. Learn how you can "lead and shift" these outdated paradigms.

Save the Date – Sept 13

Title: TBD

Presenter: Viqar Hussain

Date: Wed Sept 13, 2017

Save the Date – Nov 8

Title: Future Diretions for SysML v2

Presenter: Sanford Friedenthal

Date: Wed Nov 8, 2017

For more details and to Register go to the INCOSE WMA web site at: www.incosewma.org

Volunteer Opportunities



2017 Tutorial Request

Looking to build your Systems Engineering eminence or looking for PDUs for your SEP certification, or just love to teach! Then you are in luck. INCOSE WMA is looking for presenters for the 2017 season. We are looking for candidates to provide tutorials on any subject but we are targeting the subject areas related to:

- Brewing System
- ATM's
- Dreamliner/ Cruise Ships
- Underwater Amphibious Vehicles (AUVs)
- Aerial Unmanned Vehicles (AUVs)
- Smart Home Systems
- Border Protection Systems
- Recycling Systems
- Security Systems

Candidates should email: tutorials@incosewma.org

STEM

Interested in STEM? Join the INCOSE STEM Committee. We are charged with advocating STEM programming across the Washington Metro Area. Click here: <https://groups.google.com/forum/#!forum/incose-wma-stem-wg> and hit "Apply for Membership"

Our vision:

Science, Technology, Engineering, and Mathematics (STEM) are at the cornerstone of being a consummate systems engineer and are vital to our future. In a world that is becoming increasingly complex, it is often through practicing STEM professionals we are able to move the needle on invention and innovation for the better good of all society. All young people should be able to think critically and reason deeply so that they have the opportunity to become scientist, innovators, educators, and researchers solving current and to-be discovered global challenges. INCOSE's mission is to "share, promote and advance the best of systems engineering from across the globe for the benefit of humanity and the planet." The best way to share, promote, and advance the SE practice is through the enablement of our future leaders, equipping them today with the skills and ability to tackle our toughest global problems of tomorrow. INCOSE WMA will be standing up a STEM working group whose purpose is to address the very issues identified above and instill the strategic long term 'systems' thinking in our young leaders. Please join our Google group for more information.



Cheasapeake Chapter Upcoming Events



Future Directions for SysML v2 – July 19 2017

Johns Hopkins University Applied Physics Laboratory Map and Directions | Register
Presentation: SysML v1 was adopted in 2006 and has been a key enabler of Model-Based Systems Engineering (MBSE). Since that time, much has been learned about applying MBSE with SysML. This presentation describes the directions and approach for the next generation of SysML (v2) [...]

[Read the full article →](#)

8th Annual SEP Gala – 18 August 2017

Map and Directions | Register 8th Annual Systems Engineering Professional (SEP) Gala Friday, August 18th Detailed Information Reception 5:30pm, Dinner 7:00pm The Engineer's Club – The Garrett-Jacobs Mansion 11 West Mount Vernon Place Baltimore, MD 21201-5190 Map and Directions Friends of INCOSE, Members and Guests, Please join us to celebrate local INCOSE members who [...]

[Read the full article →](#)

No Magic Training Sept 2017

September 18, 2017 – September 22, 2017 Map and Directions | Register Description: Applying UPDM 2 with MagicDraw Training by No Magic September 18-22, 2017 8:00am – 5:00pm Description: Applying UPDM 2/DODAF/MODAF with MagicDraw is a 5 day course for Unified Profile for DoDAF and MODAF (UPDM 2). The course focuses on implementation of UPDM 2 [...]

[Read the full article →](#)

Certification Training International Offers SEP Course Sept 25th-29th

We are pleased to announced Certification Training International (CTI) will be offering an Associate Systems Engineering Professional (ASEP) and Certified Systems Engineering Professional (CSEP) training course. The 5-day course will be held at Johns Hopkins University Applied Physics Lab, Montpelier Building (MP) 3, Room E183, September 25th through 29th (Monday through Friday), 8:00 am to [...]

[Read the full article →](#)

Get Connected

LinkedIn Groups

INCOSE's Certification Program Office oversees three groups on LinkedIn:

[INCOSE SEPs, the Official Interest Group](#) is open to all

[INCOSE SEP, the Official Group for Systems Engineering Professionals](#) is limited to those individuals who are already ASEPs, CSEPs, or ESEPs.

[INCOSE ESEP, the Official Group](#) is limited to those individuals who are already ESEPs.

Official Twitter Account for INCOSE WMA: <https://twitter.com/incosewma>

Official Facebook: <https://www.facebook.com/incosewma/>



Contact Us

General Inquiries - info@incosewma.org

INCOSE WMA Board of Directors

President - President@incosewma.org

William (Bill) Scheible

VP/President-Elect - Presidetelect@incosewma.org

Dr. Subash Kafle

Past-President - Pastpresident@incosewma.org

Dr. Muhammad Faysal Islam

Secretary - Secretary@incosewma.org

Dr. Kathryn Laskey

Treasurer - Treasurer@incosewma.org

Charlotte Farmer

Program Chair - Programs@incosewma.org

Ruchira Puri

Tutorials Chair - Tutorials@incosewma.org

Shakila Khan

Communications Chair - Communications@incosewma.org

Aujchariya (Bell) Rueangvivatanakij

Directors-at-Large - Directors@incosewma.org

Dr. Pavel Formin

DeAnthony Heart

Membership Chair

Kevin Weinstein

Ambassador Committee

Lowanda Avens Studevent

STEM Committee Marshai McIntyre

Social Media Chair

Jorge Hernandez

Newsletter

Tom Britten

George Mason University - Student Chapter

Caroline Abramson

George Washington University - Student Chapter

Alyson Fintzy - ittlefintz@gmail.com

As an INCOSE founding chapter and home to many of the Federal Departments and Independent Agencies acquiring systems for the US Government as well as many leading high-technology, commercial firms that consider systems engineering a competitive advantage, the Washington Metropolitan Area (WMA) Chapter has been a leader in the systems engineering community.

We are the largest INCOSE chapter with over 800 members. We are very active and strive to serve our membership by providing a variety of services and training opportunities. We have monthly meetings in the Northern Virginia area where we enjoy presentations on a variety of issues of interest to our membership.