



**March 2016**

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## President's POV - March 2016



Ellie Gianni, ESEP

During the month of February the INCOSE Chesapeake Chapter Officers and Board of Directors reviewed our operating documents for the chapter. These documents include: (1) Constitution and Bylaws; (2) Strategic Plan; (3) Operating Plan; (4) Membership Plan; (5) Communications Plan; and (6) Business Plan (New this year). These documents govern our chapter and hold its officers and board members to

standards agreed to by our Chapter membership. Older versions of these documents are available on our website at [www.incose-cc.org](http://www.incose-cc.org). Once we have finalized our work, these documents will be updated and posted for your viewing pleasure.

The Board of Directors has discussed the need to create a position on the Board for the Director of Corporate Relations. In this position, the Director would work with other Chapters, INCOSE International, Corporate Sponsors, Corporate Advisory Board (CAB) Members associated with the chapter, and potential chapter sponsors to obtain resources that are mutually beneficial to both the corporation and our chapter and align with chapter membership, goals and objectives. During our March meeting, we will be putting forward a vote to the membership in attendance on the subject. The next membership meeting will be on March 16, 2016 at 6 PM at the Johns Hopkins University Applied Physics Lab in the Building 1 Cafeteria. I hope you can attend and participate in this important vote.

This year, the Chapter Board of Directors agreed to extract the Membership and Communications sections from the Chesapeake Chapter Operating Plan, and make them their own documents. We also are in the process of drafting a Chesapeake Chapter Business Plan that lays out our goals and objectives and how we will obtain the resources to meet those needs.

We are also in the process of performing our annual financial audit which began when I appointed the Audit Committee in February. The audit should be completed by March 30, 2016. The BOD will have the opportunity to review the findings and then the committee will present the results at a membership meeting later in the

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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**

<http://www.incose.org/about/Membership/Join>

The Chesapeake Chapter is always looking for volunteers to speak at our upcoming meetings!

Please contact our Programs Director at [programs@incose-cc.org](mailto:programs@incose-cc.org) if you would like the opportunity to speak or can recommend someone.

spring or early summer of this year. This audit is intended to provide management framework and transparency into the financial dealings of the chapter.

The Systems Engineering (SE) District of Columbia (DC) 2016 Regional Conference/SEDC 2016 Conference is scheduled to take place on March 31, 2016 – April 2, 2016. Registration is now open at <http://www.sedconference.org/>

Please consider registering for this important event and supporting our members who will be presenting papers there. The topic of the conference is Critical Infrastructure Protection (CIPR). Our members presenting papers include:

Zane Scott: *More Agile than Agile*

Mike Pafford: *Systems Engineers Collaborating with Software Engineers in Critical Infrastructure Related Software Intensive Agile Projects*

Mark Walker: *Applying the First Stage of MBSE to CIPR Infrastructure Domains*

Dave Flanigan and Steven Taylor: *Critical Infrastructure Sector Resiliency Engineering and Analysis Framework*

Finally, we are still looking for individuals interested in attending the INCOSE Institute for Technical Leadership. The cost is free. Interested applicants must be an active INCOSE Member; provide a Statement of Interest, resume, and Letter of Support from their management; and provide a nominating letter from a Chapter President or INCOSE Officer. The due date for the applications is mid-March. So please contact me at [leanoraann.gianni@jhuapl.edu](mailto:leanoraann.gianni@jhuapl.edu) if interested in applying for this great program. More information is available on the [INCOSE web site](#).

## INCOSE Chesapeake Chapter Programs Update



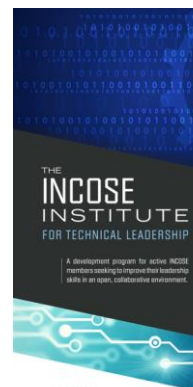
*Gundars Osvalds*

Gundars Osvalds, ESEP,  
Programs Director

In February, we received a lecture on APL's Mission to Pluto to obtain scientific evidence of Pluto. "The Adventure to Pluto" describes the spacecraft named New Horizons mission to answer the question what is Pluto made of. Mark Kochte led us through 94 slides of the past to the present in the exploration of this ice encrusted object. More than 50 individuals attended the lecture with many more watching on YouTube via our streaming application. If you missed the excellent presentation you can still view it on this direct link: [YouTube](#).



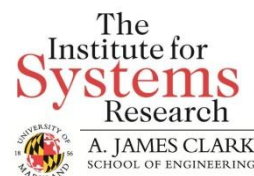
**Mike Kochte explains the details of the mission to Pluto**

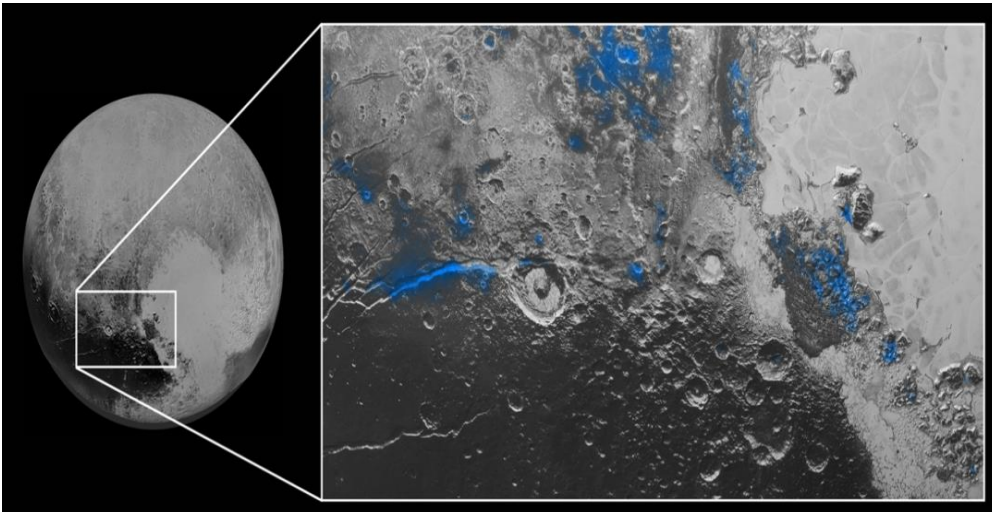


The Chesapeake Chapter of INCOSE is proud to recognize the following organizations for sponsoring our endeavors for expanding the understanding and appreciation of Systems Engineering in the local area:



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**Water Ice on Pluto: Regions with exposed water ice are highlighted in blue in this composite image from New Horizons**

**Special Announcement for Students: FREE FOOD**

2HB Incorporated has provided a donation for college students attending our Chesapeake Chapter monthly meetings to receive a dinner free of charge. The meetings are open to all free of charge. Please [register](#) on our web site before the meeting so we are sure to pre-order enough meals for all student attendees.

**WISE Monthly February Meeting**

The Women in Systems Engineering (WISE) hosted a lecture provided by the Chesapeake Chapter’s Zane Scott, of Vitech Corporation, on February 24, 2016. Zane discussed Model Based Systems Engineering (MBSE) and how it brings insight to communication between developers and end users.



**Zane Scott receiving a certificate of appreciation from WISE President Myra Gross.**

**Calendar of Events Update for March 2016**

Scheduled Chapter meetings and Monthly Dinner Lectures take place at Johns Hopkins University Applied Physics Lab (JHU APL) in the Building 1 Cafeteria and



people. technology. integrity.

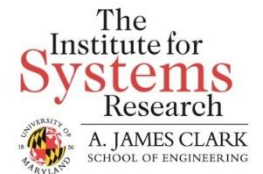


Parsons Auditorium. Monthly membership meetings are held the third Wednesday of each month excluding December. Start time @ 6:00 PM for Dinner Meeting & 7:00 PM for Lecture.

- [Register NOW](#) for the upcoming Wednesday March 16<sup>th</sup> 6:00 PM Dinner Meeting & 7:00 PM Lecture: **Making Smart Cities Smarter – Model Based System Engineering (MBSE) Driven Internet of Things (IoT), Matthew Hause, Engineering Fellow at PTC.** IoT is a system of systems that has five common characteristics: operational independence of the individual systems; managerial independence; geographical distribution; emergent behavior; and evolutionary development or independent life cycles. Typical examples include smart houses, the electric grid, complex military systems and so-called smart cities. The future of IoT success, including technology advancements and revenue generating potential across the business spectrum, is dependent on the application of solid Systems Engineering and Model Based Systems Engineering (MBSE) principals. With the potential of 28 billion “things” connected to the Internet by 2020, it’s not too difficult to envision the massive scale of social, economic, and technological changes that will need to occur to realize this prediction.
- Saturday March 19<sup>th</sup> 8:00 AM – 4:00 PM Tools and Technologies for Enabling MBSE throughout the Systems Lifecycle Tutorial at the JHU/APL Kossiakoff Center. Cost \$20 per student payable in advance or at the door. Please register at [www.incose-cc.org](http://www.incose-cc.org). See the detailed tutorial description below.
  - Registration and Breakfast: 8:00 – 9:00 AM
  - Morning Tutorial 9:00 AM – Noon: Tools and Technologies for Enabling MBSE Throughout the Systems Lifecycle, Matthew Hause, PTC Engineering Fellow, OMG UPDM Co-Chair
  - Lunch Served: Noon – 12:45 PM
  - Afternoon Tutorial 1:00 – 4:00 PM: Applying UPDM/UAF With Cameo Enterprise Architecture, Dr. Aurelijus Morkevicius, PhD, Head of Solutions Department, No Magic, Inc., OMG UPDM Co-Chair
- March 2016 – Date TBD – WISE STEM Volunteer Event.
- March 31, 2016 – April 2, 2016: SEDC 2016 Conference – [registration](#)
- Wednesday April 20<sup>th</sup> – 6:00 PM Dinner Meeting & 7:00 PM Lecture TBD
- Thursday April 21<sup>st</sup> – 5:00 PM WISE and Wine Networking Event, Jovian Concepts, Annapolis Junction, MD.
- Wednesday May 18<sup>th</sup> – 6:00 PM Dinner Meeting & 7:00 PM Lecture by Mr. Rick Dye, Administrator for the State of Maryland Coordinated Highways Action Response Team (CHART).
- Wednesday June 15<sup>th</sup> – 6:00 PM Dinner Meeting & 7:00 PM Lecture on Agile Robotics for Industrial Automation, Mr. William Harrison and Dr. Craig Schlenoff, National Institute of Standards and Technology (NIST).
- Wednesday July 27<sup>th</sup> – 6:00 PM Dinner Meeting & 7:00 PM Lecture; moved to 4<sup>th</sup> Wednesday due to IS 2016 conflict. Lecture is TBD.
- Wednesday August 17<sup>th</sup> – 6:00 PM Dinner Meeting & 7:00 PM Lecture TBD.



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- Wednesday September 21<sup>st</sup> – 6:00 PM Dinner Meeting & 7:00 PM Lecture TBD.
- Wednesday October 19<sup>th</sup> – 6:00 PM Dinner Meeting & 7:00 PM Lecture TBD.
- Wednesday November 16<sup>th</sup> – 6:00 PM Dinner Meeting & 7:00 PM Lecture TBD.

**Scheduled Chapter Special Events (Engineers Club, Garrett Jacobs Mansion Baltimore, MD)**

- August 24<sup>th</sup> – 7<sup>th</sup> Annual Systems Engineering Professionals (SEP) Gala.
- December 7<sup>th</sup> – Chesapeake Chapter Holiday Party and Awards Ceremony.

**Detailed description of March 19<sup>th</sup> Tutorial:**

**9:00 AM – Noon: Tools and Technologies for Enabling MBSE throughout the Systems Lifecycle Tutorial, by Matthew Hause, PTC Engineering Fellow, OMG UPDM Co-Chair**

Model-Based Systems Engineering (MBSE) requires an integrated approach. The INCOSE 2025 Vision states: “The systems engineering tools of 2025 will facilitate systems engineering practices as part of a fully integrated engineering environment. Systems engineering tools will support high fidelity simulation, immersive technologies to support data visualization, semantic web technologies to support data integration, search, and reasoning, and communication technologies to support collaboration.

Systems engineering tools will benefit from internet-based connectivity and knowledge representation to readily exchange information with related fields. Systems engineering tools will integrate with CAD/CAE/PLM environments, project management and workflow tools as part of a broader computer-aided engineering and enterprise management environment. The systems engineer of the future will be highly skilled in the use of IT-enabled engineering tools.” This integrated vision is being actively developed by a number of standards, industry, university, and government organizations to enable the INCOSE 2025 vision. This is also the PTC vision of capabilities delivered across devices, systems, system of systems, cloud and environment supported by closed-loop engineering and service feedback process from inception to retirement.

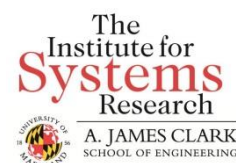
In this tutorial, we will examine the PTC implementation of these standards and technologies and how they will contribute to an integrated MBSE approach. We will also look at what is already underway such as integration of MBSE and the Internet of Things (IoT), how Open Services for Lifecycle Collaboration (OSLC) will enable traceability without synchronization, and ongoing development of integration standards. Finally, we will examine gaps in the lifecycle for an integrated and holistic view and future developments to cover the SE Lifecycle. Subjects to be covered include:

- Model-Based Systems Engineering at the center of Engineering
- DoDAF using the Unified Architecture Framework (UAF, formerly UPDM)



**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.**

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- Model-Based Product Line Engineering (MB-PLE)
- Trade-off Analysis
- OSLC
- Product Line Management (PLM) and its integration with MBSE
- MBSE and the Internet of Things (IoT)
- Through-Life Service Costs
- Requirements Engineering at the start and throughout the lifecycle
- Asset Management and Reuse
- Human Factors

### Matthew Hause

Matthew Hause is a PTC Engineering Fellow and GTM Technical Specialist, the co-chair of the UPDM group a member of the OMG Architecture Board, and a member of the OMG SysML specification team. He has been developing multi-national complex systems for over 35 years. He started out working in the power systems industry. He has experience in military command and control systems, process control, manufacturing, factory automation, communications, Supervisory Control And Data Acquisition (SCADA), distributed control, office automation and many other areas of technical and real-time systems. His roles have varied from project manager to developer. His role at PTC includes mentoring, sales presentations, standards development, presentations at conferences, specification of the UPDM profile and developing and presenting training courses. He has written over 100 technical papers on architectural modeling, project management, systems engineering, model-based engineering, human factors, safety critical systems development, virtual team management, product line engineering, systems of systems, systems and software development with UML, SysML and Architectural Frameworks such as DoDAF and MODAF. He has been a regular presenter at INCOSE, the IEEE, BCS, the IET, the OMG, AIAA, DoD Enterprise Architecture, Embedded Systems Conference and many other conferences. He was recently a keynote speaker at the Model-based Systems Engineering Symposium at the Defence Science and Technology Organisation (DSTO) in Australia. Matthew studied Electrical Engineering at the University of New Mexico and Computer Science at the University of Houston, Texas.

### 1:00 – 4:00 PM: Applying UPDM/UAF With Cameo Enterprise Architecture, Aurelijus Morkevicius, PhD, Head of Solutions Department, No Magic, Inc., OMG UPDM Co-Chair

Today's architecture modeling environment suffers from being an effort to satisfy milestone decisions. Typically the architecture effort is separated from the Systems Engineering (SE) leading to a lack of traceability from the systems requirements to the architecture resulting in inoperable systems. Due to the way that the Architecture models are created, they generally consist of static diagrams and provide limited analytical support to the decision maker.

Applying the Unified Architecture Framework (UAF), previously known as the Unified profile for MODAF and DoDAF (UPDM), using a Model-based Systems Engineering



(MBSE) approach moves the architecture modeling effort to one that is an integral part of SE, helping the systems integrator to develop interoperable systems, with traceability to requirements and across views, using one integrated architecture model that enables impact analysis, gap analysis, trade studies, simulations (what-if scenarios), and engineering analysis.

This tutorial explores how to leverage MBSE with architecture modeling in No Magic's toolset, enabling the modernization of complex systems (Systems of Systems, C4I systems and heavy industry systems). Attendees will have the opportunity to exchange experiences and ideas.

#### Dr. Aurelijus Morkevicius, PhD

Aurelijus is an OMG® Certified UML, Systems Modeling and BPM professional. Currently he is Head of Solutions Department at No Magic Europe. He has the expertise of Model-Based Systems Engineering (mostly based on SysML) and defense architectures (DoDAF, MODAF, NAF). Aurelijus is working with companies such as Kongsberg Defence & Aerospace, General Electric, Bombardier Transportation, Deutsche Bahn, ZF, Ford, SKA, SIEMENS, BMW, etc. He is also a chairman and one of the leading architects for the current OMG UAF (previously known as UPDM) standards development group. In addition, Aurelijus is actively involved in educational activities. He received a PhD in Informatics Engineering from the Kaunas University of Technology in 2013. Aurelijus is also a lecturer, author of multiple articles, and conference speaker.

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### Standards Corner – The New Home for INCOSE Chesapeake Chapter Monthly Standards Updates!

#### Systems and Software Engineering Standards



**Mike Pafford,**  
**President-Elect**  
*M E Pafford*

This month's Standards Corner highlights an ISO/IEC Standard gaining importance as more and more Systems Engineers find themselves fulfilling their roles and responsibilities while members of project teams developing software-intensive system solutions.

The Standard, ISO/IEC 12207:2008 (Last Reviewed in 2013), "Systems and Software Engineering – Software Life Cycle Processes", establishes a common framework for software life cycle processes. It contains processes, activities, and tasks conducted during acquisition of a software product or service, and during supply, development, operation, maintenance, termination, and disposal of software products, including firmware. The Standard also provides a process that can be employed for defining, controlling, and improving software life cycle processes. The ISO/IEC 12207:2008 Standard is identical to IEEE Std 12207-2008 and AS/NZS ISO/IEC 12207:2013.



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**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.**

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The Chesapeake Chapter of INCOSE is proud to recognize the following partner organizations and upcoming conferences that may be of interest to our membership.

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Of special importance to Systems Engineers is ISO/IEC 12207:2008 Annex D (informative). It describes the alignment of the processes of ISO/IEC 12207 and ISO/IEC 15288. The latter Standard (ISO/IEC 15288:2015, “Systems and Software Engineering – System Life Cycle Processes”), has always been considered a preeminent Systems Engineering Standard, and was just recently updated (and sure to be the subject of a future article).

The first version of ISO/IEC 12207 was published in August 1995. It was the first International Standard to provide a comprehensive set of Software Life Cycle Processes for software elements of a system solution, and for standalone software products and services. That International Standard was followed in November 2002 by ISO/IEC 15288, which addressed System Life Cycle Processes. The thinking was that software processes should not be considered separately. Rather, they should be considered as an integral part of systems and system design processes.

### Upcoming Events and Announcements

- March 9, 2016: INCOSE Chesapeake Chapter Board of Directors Meeting <sup>1</sup>
- March 16, 2016: INCOSE Chesapeake Chapter Dinner Meeting <sup>2,3</sup> Making Smart Cities Smarter – Model Based System Engineering (MBSE) Driven Internet of Things (IoT), Matthew Hause, Engineering Fellow at PTC.
- March 19, 2016: INCOSE Chesapeake Tutorial: Tools and Technologies for Enabling MBSE throughout the Systems Lifecycle Tutorial at JHU/APL Kossiakoff Center.
- March 31, 2016 – April 2, 2016: SEDC 2016 Conference  
<http://www.sedconference.org/>
- April 13, 2016: INCOSE Chesapeake Chapter Board of Directors Meeting <sup>1</sup>
- April 20, 2016: INCOSE Chesapeake Chapter Dinner Meeting <sup>2,3</sup> TBD.
- April 27, 2016: WISE and Wine Networking Event, Jovian Concepts, Annapolis Junction, MD.

1 = Johns Hopkins University (JHU) Applied Physics Lab (APL) Building 1 Barton Conference Room 5:30 – 8:30 PM (Free)

2 = Dinner at JHU APL Building 1 Cafeteria (Last Room on the Left) 6:00 – 7:00 PM (\$25)

3 = Lecture at JHU APL Building 1 Parsons Auditorium 7:00 – 8:00 PM (Free)

4 = JHU APL Building 1 Barton Conference Room 08:00 – 11:00 AM (Free – ESEPs Only)

### Interested in Jobs & Networking?

Contact Mark Kaczmarek at [mkaczmarekengr@comcast.net](mailto:mkaczmarekengr@comcast.net)



What people are saying about Chesapeake Chapter in 2015:

*“... What a wonderful, innovative, and impactful year for the Chesapeake Chapter. I hope you, your board, and the entire chapter is proud of what you have accomplished...”*

Past President,  
INCOSE



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, Ellie Gianni](#) or our [Communications Director, Pat Williams](#). We value your feedback.

#### Board of Director Officers, 2016

- President: Mrs. EleanoraAnn "Ellie" Gianni, ESEP
- Past President: Mr. George Anderson, ESEP
- President Elect: Mr. Michael Pafford
- Treasurer: Mr. Kent de Jong, CSEP

- Secretary: Mr. Craig Tyler, ESEP
- Communications: Mr. Pat Williams, CSEP
- Programs: Mr. Gundars Osvalds, ESEP
- Membership Committee: Mr. Mark Kaczmarek

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