



The NorthCoast Interfacier



<http://www.incose.org/cleveland/index.htm>

President's Corner

Bill Klinger: C-NO President (2014)



The last two months were particularly busy, as the Cleveland-Northern Ohio Chapter prepared for the 2014 INCOSE Great Lakes Regional Conference and our own MBSE Workshop.

I congratulate and thank everyone who contributed to the great success of those landmark events.

If you did not attend IS2014, GLRC8, or the MBSE Workshop, please read the reports in this newsletter, to glimpse what you missed. We hope to see you next year, if not sooner!

Highlights of the 24th Annual INCOSE International Symposium

Part I

Karen Weiland

The 24th annual INCOSE international symposium was held at the Green Valley Ranch Resort in Henderson, Nevada from June 30 through July 3, 2014. There was a plenary talk held each morning, followed by multiple parallel sessions. Although I did not receive a participants list, there looked to be 800 to 1000 attendees. There were many academic, tool, and other vendors at the exhibits. This report presents some of the highlights of the sessions I attended. Certainly representing the Cleveland-Northern Ohio chapter to receive the chapter award is also a highlight; this was reported in a previous newsletter. INCOSE published *Systems Engineering Vision 2025* and provided hard copies at the conference. It is a "prescription for the evolution of systems engineering to meet the needs and challenges of an evolving global environment." The INCOSE 25th Annual International Symposium, July 13 to 16, 2015, is in Seattle, Washington. The paper submission is due November 9, 2014.

The Monday Keynote talk was "Revolution in Unmanned Systems and Robotics," by Grant A. Begley, Concepts to Capabilities Consulting, LLC. He provided a brief history of these

systems; I took notes during his talk, so the numbers may not be entirely what he stated, but the trend is apparent. In the 1980's, Yamaha in Japan for agriculture and Israel began development efforts. In 1993, the US DoD budget for UAVs was \$250 M and they had 33 UAVs from Israel. Grant was involved in this work. Ten years later, the US DoD had 167 UAVs and robotics world-wide was a \$9B industry. In 2013, robotics is now a \$29B industry; US DoD has over 12,000 UAVs (more than half the DoD vehicles are UAVs for recon and moving loads). This year, the UAV exhibition in Orlando had 8000 participants and 600 exhibits. Grant stated that it is a question of when, not if, drones are allowed in US airspace. There was a lively question and answer session at the end of his talk.

The Tuesday Keynote talk was "Thinking differently about systems engineering change programmes – dogs, bears and magic numbers," by Scott McArthur, Director Sculpture Consulting Ltd. His talk was very entertaining and dealt with systems engineering change. He pointed out some things that we already know, but tend to forget. Some of his points: Practice "thinking out of the Inbox;" everyone on the project needs to see the same "dog in the yard" – communicate; it's easy to miss something you're not looking for; it is more than words and numbers – get to feelings; successful organizations start with why, not how or what; go from nouns to verbs in your mission and values: it's not "integrity", it's "always do the right thing"; and identify the key decision makers that you have to influence.

The Wednesday Keynote talk was "Experiences Teaching a Massively Open Online Course," by Chuck Severance, U. of Michigan. He has taught several MOOCs, to over 200,000 students. Most of his students have been at bachelor's level or beyond. He gave some statistics: for every 100 students who register, 50 show up, and 10 finish the course. The high drop-out rate didn't concern him; he viewed this as student-controlled learning. He wanted to teach a freshman class, where students learn how to behave, write, use the software, figure out technical issues, and learn from and help others. He meets face-to-face around the country at Starbucks, where students can drop in and decide if they want to interact or not. He uses Coursera. It has about 60 employees; has had over 6 million students. The question is: Is this the end of higher education? Schools will have to change, to figure out what to do in residential education. My thought is that residential education may turn to what I term "high-value" courses with experts in subjects that cannot be taught well with on-line technology. He stated MOOCs may be useful for remedial education; community colleges should consider local MOOCs.

The Human Systems talk in Session 1.3.2 by Barclay Brown, IBM, was "Behavioral Economics and the Design of Systems Engineering Measures." He stated that there is a need to measure to manage, but it is hard to do. You want to measure in an automated way and derive measures from data. Watch out for unintended consequences: getting the opposite behavior of what you want (Cobra effect, call center measuring the number of completed calls). A perfect measure drives the right behavior; use game theory to predict what will happen for a measure, consider balancing measures (revenue/profit, defect density/number corrected). He recommended the book *How to Measure Anything*, by Douglas Hubbard.

The Systems Integration session 2.2.1 was "Systems Integration: He Who Hesitates is Lost," by James Armstrong, Stevens Institute of Technology. He showed examples of problems, like

fire trucks that don't fit in the fire house. Notable quote: "It's not that we shoot ourselves in the foot that surprises us; it's how fast we reload...." He recommended starting on Day 1 to plan for integration. Identify integration and deployment risks and mitigate in advance, like the physical box for shipping. Recognize that not all requirements are in ICDs; you may need access to measurements at interfaces during integration for test points. We think in terms of 1 each, what happens when you have many copies (big data)? He recommends an Interface Design review at or between PDR and CDR.

Stay tuned for Part II in the next edition of The NorthCoast Interfacer.

Eighth Annual INCOSE Great Lakes Regional Conference:

"Systems Engineering Across the Lifecycle"

Marian Cronin: C-NO Treasurer

The 2014 Great Lakes Regional Conference was held in Schaumburg, Illinois, October 10-11. It was by far the most successful GLRC yet.

More than 107 people attended, representing the Chicagoland, Cleveland-Northern Ohio, Crossroads of America, Michigan, North Star, and Wright Brothers chapters of INCOSE. Seven members of the C-NO Chapter attended, two of whom participated as presenters during the conference. Charles Wasson's presentation, "Advancing SE Practice: Shifting Current SE Paradigms that Contribute to System Failures," garnered a large attendance during its timeslot.

The C-NO Chapter participated in the conference planning activities as well as providing financial support, in the form of a \$1,000 sponsorship. Both Cody Farinacci and Marian Cronin served as Proposal & Presentation Reviewers, giving feedback to assist presenters in refining their content.



C-NO Chapter "Delegates" at GLRC8. (Left to Right): Carl Dister, Sean Beckman, Bill Klinger, Katie Trase, Marian Cronin, and John Juhasz.

We wanted to treat attendees to something fun, associated with Ohio, so we brought trays of Chocolate Buckeyes. All of the chocolate-dipped, peanut-butter fudge confections had disappeared by mid-afternoon of the first day!

In this photo, Katie and Marian hold bowls of Lemonheads and Grapeheads—candies developed by Chicago's Ferrara Candy Co., which we chose to honor the conference venue.



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A unique feature of this year's conference was that a beta version of the INCOSE SEP Exam was offered to conference attendees. Throughout the spring and summer of 2014, volunteer INCOSE members developed exam questions based on the latest *INCOSE SE Handbook* (Version 4), and this was an opportunity for both conference attendees and INCOSE to benefit. In addition to the myriad presentations covering topics ranging from the systems engineering aspects of cybersecurity risk to identifying systems competencies for leaders, GLRC8 also included a Project Management Institute (PMI) – SE Integration Track for cross-pollination of ideas and challenges common to both disciplines.

MBSE Workshop a success!

Dennis W. Rohn and Bill Klinger

The C-NO Chapter presented its first daylong workshop on Saturday, October 25, 2014.

Ms. Katie Trase, Chapter Secretary, conducted an intensive tutorial on Model-Based Systems Engineering (MBSE).

Eighteen registrants attended—a mix of C-NO Chapter Members and non-members. Participants learned what MBSE is, studied proven approaches to implementing MBSE, and were introduced to the SysML Modeling Language.



The scene at ReliabilityFirst, in Independence, Ohio, on October 25.

Katie's slides and narrative were wonderfully clear, informative, and often quite entertaining. It seemed as if she had been teaching MBSE for many years.

Katie expertly described each of the common SysML Diagrams and demonstrated them in No Magic, Inc.'s *Cameo System Modeler* (an outgrowth of *MagicDraw*), before giving attendees opportunities to practice applying the tool.



Katie Trase (stooping, left) and Edie Parrot (stooping, center) providing personal guidance to workshop participants.

The workshop included a presentation by Scott B. Norin, showing how SysML can be used to implement an axiomatic design approach.

The day concluded after breakout groups each modeled a simple system—creating various views into the model, while maintaining a single source of truth.

Participants enjoyed a light breakfast and box lunch, and received a copy of *A Practical Guide to SysML: The Systems Modeling Language*, by Sanford Friedenthal, Alan Moore, and Rick Steiner. This book is one recommended reference on SysML.

Many thanks to:

- Katie Trase for all her hard work, developing the tutorial content and speaking for eight hours.
- Carl Dister for supporting Katie in the event planning and registration processes; arranging our use of ReliabilityFirst's training facility; making lots of strong coffee; and handling the lunch orders and pickup.
- Charles Murman and Ernest Ansu-Gyeabour for helping Katie refine her tutorial approach and test the content.
- Scott Norin for advising Katie and delivering his slideshow.
- Marian Cronin for supplying the breakfast bagels, muffins, and fruit tray.
- Edie Parrot for assisting Katie, in the hands-on exercises.

Upcoming Events

November 18, 2014: Social and Networking, with a brief recap of GLRC8 and the C-NO MBSE Workshop

December 16, 2014: World Cafe style discussion on Stakeholder Definition

Chapter meeting held at:

[Moosehead Hoof and Ladder](#)
7989 Columbia Rd
Olmsted Falls, OH 44138
440-235-5511

New Chapter Member

We heartily welcome Ashlei C. Beiswenger of Philips Medical Systems, who joined the C-NO Chapter in September and John Collins who joined in June and works for Philips Healthcare.

Ashlei and John, the C-NO Board of Directors hopes to greet you in person, soon. Please join us, at an upcoming Chapter Meeting!

Bill Klinger
C-NO President

Employment connections

Job Seekers

Sean Beckman - I am currently seeking employment as a systems engineer so in the North East Ohio area. I have been a systems engineer for over 13 years mostly in the area of government contracting in aerospace with some in commercial aircraft. Most of the time has been at NASA but also subcontracting to Boeing on the 747-8 commercial aircraft and most recently supporting the Army with trade studies. I hold an active secret clearance. I have experience in requirements management, risk managements, model based systems engineering, trade studies, systems architecture, interface definition and integration and verification. sean.beckman@incose.org

Consulting Services

TBD

Job Openings

TBD

Did you know?

Today in the US, 77 universities offer undergraduate or graduate level degree programs in Systems Engineering.

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