INCOSE Chesapeake Chapter
International Council on Systems Engineering

INCOSE Chesapeake Chapter
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E-Newsletter

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President's Point of View

Mike Pafford
President

This month I'd like to pass along some information about a successful 'Systems Engineering Experiment' I conducted in March. My Hypothesis was, "I can sneak systems engineering processes into a Middle School/High School (MS/HS) Science, Technology, Engineering, and Math (STEM) event—without the participants even realizing they're doing real systems engineering".

The Chapter supported no less than three STEM-related events in Maryland and Virginia in March. The events on the 4th and 25th were Maryland Science & Engineering Fairs the Chapter had successfully supported over the past several years, and were well-planned far in advance. As in the past, the Chapter was invited to have teams of volunteer judges assess many STEM-related presentations and projects at each event. Both events were well-attended, and the Chapter judging teams once again gave out awards to several deserving MS/HS students.

The third event was actually a MS/HS STEM—with 'the Arts' integrated—or, STEAM Conference being held at a Middle School in Virginia. A member of the Chapter Women in Systems Engineering (WISE) Special Interest Group (SIG) had received an email invitation to the Conference. The invitation was made available to the full Chapter—and I saw an opportunity to test my hypothesis. I had been looking for a way to add additional systems engineering value to STEM events, along with the volunteer judging teams that Systems Engineers are known for. I wanted to see if there might be a way to interactively introduce actual systems engineering processes to STEM event participants. I thought I could leverage something I learned at the INCOSE International Workshop 2017 (IW17) to do this.

While at the IW17, I attended four daily sessions of a "Systems Thinking Roundtable" facilitated by Dr. Susan Gabriele as part of her Systems Thinking research and work with Dr. James Martin and the INCOSE Systems Science Working Group.

Each morning Dr. Gabriele and her colleagues led 20-30 participants (it varied each day) in a Systems Thinking "Structured Brainstorming" session using a scripted Roundtable Guide handout. Each of the sessions, by design, lasted exactly 60 minutes, during which time every person was allotted 1-2 minutes (on a timer) to give remarks about the day's chosen subject. The sessions resembled the Structured Brainstorming and Feedback sessions that we Systems Engineers routinely use in the earliest Needs, Problems, and

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.

Requirements Elicitation phases of Systems Analysis and Requirements Engineering. No Science, Technology, or Math involved, however, some genuine Systems Engineering analysis.

When I received the notice about the Virginia STEAM event, and after I gave the Roundtable idea some more thought, I contacted the STEAM conference coordinator and gave her my thoughts. She seemed very excited about the idea, and immediately sent me the Sponsor and Presenter information. I talked to the Chapter Board of Directors, and they all immediately agreed to the Chapter being a Corporate Sponsor for the event. I next reached out for additional Chapter volunteers to be event Presenters. A WISE member, Michelle Douglass-Butler, stepped forward right away.

Dr. Susan Gabriele (left at the head of the table)
Leads an IW17 Systems Thinking Roundtable session

The two of us then got back in contact with Dr. Gabriele. She was also excited about introducing the idea to the STEAM event, as the bulk of her research and work has been in the education arena. Through a series of INCOSE WebEx collaborative online meetings, Michelle and I worked with Dr. Gabriele, who led us in tailoring her IW17 Roundtable Guide into two separate Guides for the expected sets of STEAM conference participants; Adults involved in STEAM (i.e., Teachers and Parents) and Students involved in STEAM-related studies or projects. The results of our coordination were a two-sided Adults Guide handout that I used to lead two Adult 45-minute Systems Thinking Structured Brainstorming sessions, using the methods I learned from Dr. Gabriele at IW17, and a Student Guide handout that Michelle used to lead three 30-minute Student sessions, using the methods Dr. Gabriele employs in her educational settings. Each Guide handout had on one side a Script for leading a single session, always with different participants, and on the other side a Script for using the Guide handout with the same participants who meet on a regular recurring basis.

At the beginning of each session Michelle and I let everyone know that we were from an international systems engineering organization, and that we were going to introduce them to an actual process used routinely by practicing Systems Engineers during the initial analysis phase of many engineering projects. We both stuck to our scripts, using our smartphone timer apps to make sure every person got the same allotted time to give their insights on the subject areas we chose. My Adult sessions question was, "How do you think the idea of STEAM is going, now that it's been around in use for a while"? The kind of question we practicing Systems Engineers might ask at a Stakeholders Feedback Session during the early stages of a product or service improvement project.

Each session was well-attended, with lots of good thoughtful insights. The two main areas of feedback I received were, "Before, I didn't know what Systems Engineers did. Now I know a lot more", and, "Thanks for this useful Adult Guide Handout. Now, how can I get a copy of the Student Guide, too?" Feedback from the conference coordinator was also very positive.

Now that this Systems Engineering 'experiment' has been successful, the plan is to offer these Adult and Student Systems Thinking Roundtable sessions at other STEM/STEAM-related events, to interactively introduce Students, Parents, and Teachers to systems engineering processes.

Programs Update

Last month the dinner presentation was by Mr. Jim Armstrong, ESEP, Industry Professor at Stevens Institute, on the results of his research of systems engineers on how they obtained their technical experiences, "Developing Systems Engineering Expertise: Actions You Can Take". I was among others in our chapter interviewed by Jim to support his research. The presentation is available via youtu.be/lt0E9OaqNwI or Search for "INCOSE Chesapeake".

Gundars Osvalds
ESEP
Programs Director

Once an engineer achieves technical skills they must also have other skills to support their interaction with the world around them. This month there will be a presentation on, "Introduction to "Soft Skills" Leadership & Professional Derailment: Lessons for staying on the track", and a workshop, "Leadership & Professional Derailment: Improve "Soft Skills" to Support Your Career Goals".

Soft Skills include: Communications, Creativity, Adaptability, Collab-oration, and Leadership; some of the high-level categories that one can acquire while working on programs, projects, tasks, and while obtaining training to enhance one's value to the organization that one supports. Over the last 20 years Ms. Teresa Armstrong has presented this subject at various national conferences including the Women of Color (WOC), Black Engineer of the Year Awards (BEYA), and National Society of Black Engineers (NSBE). Her current and past consulting/coaching clients include AHC Inc., Maryland Paving, Northrop Grumman Corporation, Marriott International, and the USO. The Soft Skills concepts, acquisition, and execution will be covered following the Chapter dinner and Networking meeting on April 19, and in more detail at the workshop on Saturday April 22. Sign up for these events at incose-cc.org.

Teresa Armstrong

SEPTEMBER – We have two training courses planned for this fall. One is a week long trainig on the appliction of SysML modeling language to the updated DoDAF 2 architecture models with the use of UPDM 2. This course will be given by a senior trainer from No Magic on their Magic Draw modeling tool. Over 40 models will be described and you will have time to try them yourself under professional guidance. I understand that some have aleady or soon will be trying out the tool without the advantage of trainng other than some help for your coworkwers. I found that it is best to try the tool on your own for a few months before one attends formal training. The reason is: you gain a overall understanding of the basic functions, not having to take valuble trainig time, once you take formal training you can take full advantage of it and you will be better prepared to ask questions.

We also have a week long repeat of the "CSEP Certification Training Course" to support those aspiring to became certified and are ready to prepare for the ASEP and CSEP Certification Exam. More details are provided in the *Upcoming Events* and on our website incose-cc.org.