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North Coast System Engineer

THE PRESIDENT'S CORNER



Tony Johnson

This is election time for the chapter. We will be electing a new Secretary, Treasurer, and Vice President. Per our charter, our current Vice President, Dennis Rohn, will become the next President of the Chapter. This is to ensure continuity in operations. We will also be looking to add new members to our various committees, both at Chair level and at the support level.

I encourage everyone who wants to get more involved with the chapter to run for an office or consider joining a committee. Holding one of these positions allows individuals to get a much better appreciation for the mechanics of running the chapter and provides the structure for your good ideas to be heard, considered and implemented. As I have mentioned before, the strength of our chapter lies in the collective experience and intellect of its total membership. But, we need to be tapping into all of it!

I know that our members have good, innovative ideas that can benefit the membership at large. And, we want to hear them! We are “brainstorming” strategies to get membership input out into the open. We do not want our Chapter to become stagnant and not provide the Systems Engineering benefits that members are looking for. I want members to be on the lookout for these new strategies as they are implemented. And I want members to push and pull on them and add input on how they can be improved and expanded to provide maximum benefit.

We do not plan on becoming complacent or mechanical in the development of our chapter. And, I do not want you to either! I am challenging everyone to get involved and share their vision, ideas and experience. I know that we have only scratched the surface of our collective potential as a chapter. Let’s move this chapter to the next level. I know we can do it!

INTERNATIONAL SYMPOSIUM 2010 IN CHICAGO



The 20th Anniversary INCOSE
International Symposium was



conducted in the city of Chicago on July 12-15, 2010. The Cleveland-Northern Ohio Chapter was represented by eight members at the Symposium. The Symposium included four Plenary Keynote Speakers, almost 100 papers, several panels, a number of free tutorials, including a two-day Certification preparation tutorial, business meetings, and exhibits. This Symposium also saw the inclusion of a new thrust: Youth Engineering Education. The Banquet, which celebrated the 20th Anniversary of INCOSE, was held in downtown Chicago at the Navy Pier. A 20th Anniversary was produced, highlighting the history of INCOSE and its vision for the future. It was distributed at the Banquet, but an electronic copy will be made available on the INCOSE web site in the near future. After a reception outside on the Pier, participants were served an excellent meal and were entertained by a Blues Brothers Band. The evening was topped off by fireworks out over Lake Michigan. The Friday following the Symposium, two technical tours were held, a biomedical tour at Northwestern University and a tour of Fermilab.

Cleveland-Northern Ohio Receives Silver Chapter Circle Award

The Cleveland-Northern Ohio Chapter of INCOSE received a Silver Chapter Circle Award at the 20th Anniversary INCOSE International Symposium Banquet on July 14, 2010. The Circle Awards are presented to chapters who perform to the highest goals and standards of the organization. Shown in the photo is Dennis Rohn, Chapter Vice-President, accepting the award on behalf of the chapter from INCOSE President Samantha Brown. This award recognizes the efforts of the chapter during 2009. One of the significant activities during 2009 was the Fall Regional Conference. This award

follows the receipt of a Bronze level award the year before.



Dennis Rohn receiving Silver Circle Award

IW2011 Contest

The Cleveland-Northern Ohio (C-NO) Board of Directors (BOD) has authorized the reimbursement of \$400 to one C-NO Chapter member who goes to the 2011 International Workshop, January 29 - February 01, 2011, to aid them in paying for registration and/or travel costs. The Workshop will be held in Phoenix, Arizona. The Workshop focuses on the business aspects of INCOSE and is a primary time for working groups to meet and plan activities for the year. Entries are due to Dennis Rohn by October 31, 2010. More details can be found on the Chapter Website (<http://www.incose.org/cleveland/>).

Help needed for Chapter elections

Election of the 2011 officers will happen in November and we need people to help with the nominating committee. If you are interested please contact Mr. Dan Gaunter daniel.gaunter@incose.org.

Did You Know ...

Did you know that the Chapter has an e-mail reflector list? This list is used by Chapter officers to get information out to Chapter members, but can also be used to share appropriate technical information among members. Be aware that in order to use this list, your e-mail address from which you are sending, must be in it. The Chapter officers attempt to keep this up to date based on your INCOSE profile, so make sure you keep your profile up to date. If you have any questions, feel free to contact one of the Chapter officers.

INCOSE and the Cleveland Engineering Society

Once again, your INCOSE C-NO chapter has affiliated with the local Cleveland Engineering Society. This means you are entitled to Member rates at any CES function. Currently we are forwarding the CES announcements to the C_NO members through the INCOSE list. CES will publicize our activities, and we will do the same for theirs. Their upcoming Engineering Extravaganza (4th CES Engineering Conference) will occur this October 20 at La Centre in Westlake, Ohio. C-NO has agreed to be a sponsor, set up and staff an INCOSE booth, and receive two free admissions for folks to staff the booth and attend the technical tracks and plenary sessions. See www.cesnet.org for more info on that

event. See an INCOSE C-NO officer if you are interested in the admissions and booth staffing opportunity.

Report of the Bylaws Revision Committee

The Revision Committee recently proposed a number of changes to the Bylaws for the INCOSE Cleveland-Northern Ohio Chapter. The major changes include clarifications for the duties of President and Treasurer, changes in voting rights for student members and Committee Chairs(who aren't also Officers), clarification on the beginning time for office terms, and a new section that explicitly authorizes the Awards reimbursement (for IW and IS attendance)competition. The proposed changes were submitted to and approved by the C-NO Board of Directors. As required by the Bylaws, these changes were sent to Chapter Members (please recall that a Member in good standing is who has paid the current year dues) for review and approval. The changes were summarized by the Revision Committee Chair, Dan Gauntner, at the September 2010 General Chapter meeting. As a result of early voting and in person voting at the chapter meeting, the revisions passed unanimously. The final approved Bylaws will be posted on our chapter website.

Annual C-NO Elections of Officers (2011)

Elections for the INCOSE Cleveland – Northern Ohio Chapter will be held in the month of October. According to our Bylaws, the Officers and Directors shall serve for one year, the term of office to begin at the end of the first CHAPTER meeting held after 1 January and ending at the end of the first meeting of the next year with the transfer of authority

to the new officers. Each elected officer shall serve for one full year. The following are brief bios for the candidates to date.

Candidate(s) for President: Dennis Rohn is Chief of the Systems Verification and Operations Branch at the NASA Glenn Research Center and has served as a systems engineer for the past 20 years. He is a member of the NASA Systems Engineering Working Group and is leading its Model Based Systems Engineering (MBSE) sub-team. Dennis has been a member of INCOSE since 2000. In 2006 he became the Chair of the INCOSE Space Systems Working Group and filled that role for two and a half years, overseeing the group's entry in to the MBSE Challenge. He was one of the founders of the Cleveland-Northern Ohio Chapter and has served as its Secretary and Treasurer in past years. He is currently serving as the Chapter's Vice President/President Elect. (Mr. Dennis Rohn, having been elected as Vice-president of the Chapter last year, will succeed to the position of President, as called for in the Chapter bylaws.)

Candidate(s) for Vice-President: Joel Knapp: I have worked at Glenn Research Center for 20 years engaged in a wide variety of systems engineering and project management tasks from process development and systems integration to space flight systems operations. I hold an undergraduate degree in Aeronautics and a Masters of Science in Mechanical Engineering. I have been a member of INCOSE and assisted in the CNO chapter formation and have served as the Program Committee Chairperson for the previous two years bringing in guest speakers and programs to benefit the chapter. If elected I will continue to support the overall chapter strategy to grow the chapter and find ways to make the chapter and INCOSE more appealing to the greater Cleveland Area by reaching out to other professional organizations and working groups.

Candidate(s) for Secretary: Cody Farinacci: Cody is an electrical design engineer working for Parker

Aerospace in Elyria, Ohio. A commercial aerospace perspective provides Cody with ample opprotunites to use System Engineering principles, and Cody looks forward to contributing to the chapter and the advancement of SE. In his spare time Cody enjoys an excellent right brain/left brain balance by performing improvisational comedy in downtown Cleveland.

Candidate(s) for Treasurer: Alan Richard: Alan Richard, is the current treasurer of INCOSE North Ohio chapter (2009-2010). Alan is the Systems Engineering Manager for QinetiQ North America. He has worked for QNA (formerly known as Analex) at NASA GRC for 21 years. Alan began his SE career in the Space Station Freedom Power Management and Distribution (PMAD) branch, where he oversaw Command and Control, Operations, and Caution & Warning requirements. On Combustion Module 1, Alan was responsible for the system requirements for software control and end-to-end, air-to-ground command and data handling requirements and design, system level end-to-end testing, and flight operations. His most recent SE work has been management of Constellation and Orion system to system Interface Requirements Documents (IRDs). He is committed to seeing systems engineering mature at NASA GRC.

About SysML by Paul DeSantis

This article briefly introduces the Systems Modeling Language (SysML) from the perspective of the Unified Modeling Language (UML).

Approximately fifteen years ago, the software engineering industry standardized semantics and notation for use in graphical modeling of software systems. This standard is known as UML. Several years ago the systems engineering industry created and standardized its own modeling language for general-purpose modeling of

systems—known as SysML. SysML reuses many UML concepts and introduces new ones. The table below shows common diagrams between the two languages.

UML diagrams unique to software programming were removed and replaced with general purpose ones. These are: Block, Internal Block, Parametric and Requirement.

- Although requirements are applicable to all systems regardless of technological platform, SysML is the first to introduce this diagram type, which brings text-based requirements into the model repository (via diagrams) and then adds relationships. Hence, enabling requirements management within the model.
- The Block and Internal Block Diagrams show system structure, with blocks representing modular units. The Block Diagram shows blocks, their attributes (e.g. values types), structure hierarchy (using whole-part, associations, etc. relationships) and interfaces (input output flows). A block’s internal workings are defined in the Internal Block Diagram.
- The Parametric Diagram adds equations to the system structure represented in the Block Diagram. Example: A modeler could constrain the properties of an analog electronics circuit with Kirchoff’s Current Law that state: The sum of currents entering and leaving a node must equal zero.

Diagram Name	Used by SysML?	Used by UML?
Use Case	Yes	Yes
Activity	Yes	Yes
State Machine	Yes	Yes
Sequence	Yes	Yes
Communications	No	Yes
Interaction Overview	No	Yes
Timing	No	Yes
Class	No	Yes
Component	No	Yes
Composite Structure	No	Yes
Package	Yes	Yes

Deployment	No	Yes
Object	No	Yes
Block	Yes	No
Internal Block	Yes	No
Parametric	Yes	No
Requirement	Yes	No

Models may be organized in various manners, such as system hierarchy, development teams, life cycle process or diagram type (behavior, structure, interaction).

In model-based systems engineering, SysML is used in all life cycle stages starting with requirements definition. Some heuristics to help decide which diagrams are used to flush out or flesh out requirements (including requirements types) are:

- To identify what the system needs to do (verbs) and who or what will either invoke the verb or benefit from it, use Use Case Diagrams
- To identify control logic, flow of inputs and outputs, transform data, use Activity Diagrams
- To identify interaction with messages between or among participants (e.g. sub-systems), use Sequence Diagrams

SysML as a Certification

The standardizing organization behind UML is the Object Management Group (OMG), making it logical for INCOSE to work with OMG on a SysML certification program. Certification examinations test a modeler’s ability to read and write SysML models. This program is called OMG Certified Systems Modeling Professional (OCSMP) with certification at four levels—Model User, Model Builder Fundamental, Intermediate and Advanced. Beta testing of all four examinations started in May 2010 and should be completed by year end. The first level exam, Model User, is open to the public effective September.

According to the OMG website, “OCSMP will cover SysML and its application to Model-Based Systems Engineering (MBSE), making it complementary to INCOSE’s

comprehensive SE certification program CSEP.”

Summary

The INCOSE SE Handbook provides reasons for modeling, and this article would like to add a reason for using standardized modeling languages, which is: To use a limited set of semantics and notation each having a precise meaning regardless of context so that the reader is not dependent upon the author for instructions how to interpret their diagrams.

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