



# The Integrator

## North Star Chapter of INCOSE Newsletter

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### Chapter News

#### OFFICERS FOR 2017

##### OFFICE OF PRESIDENT-ELECT:



Roz Dolid was born and raised in Minneapolis, has BSME and MSME degrees and a PMP®. She has managed engineering projects for at MTS Systems Corp, North Star Imaging Inc, and DIGI International where she is currently the Engineering Services Manager. During 12 years of project management she has learned that for projects with no official systems engineer, the tasks associated with systems engineering fall to the project manager even when those tasks are not formalized. Curious about how this could be done better eventually led her to join INCOSE to learn more. In her spare time she enjoys needle crafts and has been known to submit a finished object to the State Fair to see if it may be ribbon worthy. Roz is excited to join the INCOSE North Start chapter board to participate in growing the chapter and expanding the visibility of systems engineering methodology in the wider Twin Cities area.

##### OFFICE OF SECRETARY:

Angela Robinson is an experienced Systems Engineer with expertise in hands-on critical safety product testing for automotive, medical devices, and industrial controls. She has a proven ability to lead a project team using a unique blend of program management, business management, and systems engineering skills acquired in manufacturing industries with global teams. Angela is currently serving the NSC as the Secretary and Communications Director. Having received a BSEE from the Rutgers University in New Jersey, she went on to complete a MBA at Indiana University, Kokomo, is Lean Six Sigma Green Belt Certified, and a Project Management Professional (PMP). Angela is in the process of obtaining the INCOSE Certified Systems Engineering Professional credentials excels in Validation and Verification for highly regulated industries.



##### DIRECTOR OF INDUSTRY:



My name is Kousha Davoudi, and I am a systems engineer at St. Jude Medical. I have been working at medical device companies for 20+ years. My projects have run the gamut from requirement engineering to verification and validation and everything in between. I love the challenge of unresolved problems that need to be figured out.

At St. Jude Medical my job is to incorporate systems engineering discipline into my division. To achieve that successfully and efficiently, I want to create a vision that will drive strategy and then objectives and goals.

As a systems engineer, my interests are system structure, requirement engineering, systems engineering and ROI, and system V&V. In today's job culture, people move from company to company with more frequency. I also want to explore how to create a class of effective systems engineers who can become domain experts without being at a company for a couple of decades.

New and upcoming systems engineers can benefit greatly from seasoned system engineers in the same industry. We need to find a way to connect these two groups together. I believe communicating with other systems engineers is as beneficial (if not more than) as taking classes. I believe we can involve more engineers using more popular communication mediums.

**DIRECTOR OF ACADEMIA:**

My name is Dan Stone and I have worked as an R&D engineer in the medical device industry for a little more than seven years. I was fortunate enough to begin my career in a rotation program, which provided me with the opportunity to learn more about the business, our products, and the industry at the start of my career than I likely would have otherwise. More recently, as a member of the Advisory Team in charge of the rotational program for new engineers coming into the company, I have the opportunity to recruit at universities and work with our young engineers at the company while they are in the program to start their careers.



In my free time, I pursue a number of hobbies and activities. I enjoy playing and watching a wide variety of sports, road biking, skiing, camping, backpacking/mountaineering, photography, and traveling.

I am looking forward to the opportunity to serve as the Director of Academia for INCOSE, as I would like to improve relationships and increase involvement of both engineering students and early career engineers in INCOSE.

***The Ballot Question 5 passed.***

***Ballot Question 5: Resources for Conference Volunteers***

*We, the Membership of the North Star Chapter of INCOSE, vote to identify a budget resource to assist in defraying the cost of Leadership and Members that volunteer for conferences to do the work of the Chapter and are not subsidized by a corporate entity. This budget resource is identified as registration fees and limited expenses for conferences approved by the Executive Committee prior to attendance.*

## **Chapter Events**

### **DECEMBER**



#### **The NSC Celebrated with Friends and Family!**

The NORTH STAR CHAPTER of INCOSE invited our Members and Colleagues to the Annual Christmas Holiday Party held on, Saturday, 3 December 2016, at Lake Elmo, MN. A Great Time with Great Food was had by all! This event was not just for members and all were encouraged to bring a spouse, a partner or and accompanying other!

### **NOVEMBER**

#### **Are Your Complex Systems Project Plans Credible?**

Development projects of all sizes, domains and varying system complexity have uncertainty and risk. How stakeholders respond to threats and opportunities can make the difference between success and failure of projects - *and of careers!* This presentation shared best practice strategies implemented by effective leaders to resolve project uncertainty, risk, and to reduce the incidence of unexpected events. The role of "Risk Based Thinking" (ISO 9001:2015) and an example of how NASA calculates Joint Confidence Levels (JCLs) of programmatic cost-schedule risk were included. Case illustrations range from what works poorly to what works well . . . and why.

In education as in consulting, their fundamental purpose is to resolve project uncertainty and risk. *Best practices* developed over years of application are the core method and are among those now published by the US Government Accountability Office (GAO), NASA and others as policy. That is: project teams and stakeholders identify uncertainties and risks while engaged in direct interviews and workshops. Probabilistic network and spreadsheet models use simulation to integrate quantitative cost-schedule risk analytics and prioritize risk drivers for treatment. Team workshops then translate analytical findings into actionable results to be implemented, evaluated, and improved.

*Hornbacher Associates'* experience spans sectors from construction, space missions, energy extraction, and cross country pipeline transportation systems to commercial software development. Assignments include work in the private and public sectors ranging from \$15 billion industrial capital expansion mega-projects to incubator-sized innovative startups.



Mr. Hornbacher held positions of vice president and managing consultant in the Los Angeles organization that pioneered Monte Carlo simulation of project risks in aerospace/defense prior to founding *Hornbacher Associates*. Experience from his ongoing global practice as a consultant and contractor is often shared with professional service organizations. In Philadelphia during the fall term, he leads graduate seminars as a member of Affiliated Faculty, University of Pennsylvania.

Ms. Hauer works with projects of all sizes. She supports analysis of schedules, risks, and reports development for large US federal and private Programs/projects. Among her signature achievements — programmatic risk analysis of the C\$5 billion Hibernia Offshore Oil Platform, now on station in the North Atlantic's "iceberg alley". Her particular interests include overcoming challenges of implementing organizational change and bureaucratic inertia.



### The Fall Tutorial explored how Agile and Systems Engineering work together!

We explored principles of Systems Engineering from INCOSE and ISO 15288 System Life Cycle Processes, and the principles of Agile scaling methods such as those defined in the Scaled Agile Framework (SAFe®), to find ways to gain value from Agile methods when creating systems that include more than software.

#### Topics Included:

- Lean and Agile Principles Applied to Systems Development
- Barriers and Benefits to Adopting Agile
- Architecture of Agile Teams, and the roles of Systems Engineering
- Product Development Processes in an Agile Model
- Beyond software: Tailoring Agile Software Practices for Hardware and Systems

Our Tutorial Presenter, Kelly Weyrauch, is the owner of Agile Quality Systems LLC, a consultancy working with software and systems creators to apply Agile Software Development concepts and Quality Management System principles to the unique context of their development environment. He has more than 30 years of software and systems development experience. As a leader of the Agile movement at Medtronic and now as a consultant working with many organizations, he has worked with project teams to evolve Agile Principles and Practices in the context of a robust Quality System. Kelly has a BS degree in Mechanical Engineering from the University of Minnesota, and a MS degree in Software Design and Development from the University of St. Thomas (Minnesota).

## OCTOBER

### Joint NSC and SAE Systems Engineering for Hybrid and Electric Vehicles

- Polaris Corporate Overview
- Generic Vehicle Development Lifecycle
- Example Stakeholders and User Needs
- Concept Selection: Internal Combustion –vs- Electric
- Is The Vehicle The System: Vehicle As One System In System of Systems
- Vehicle Electrification and Wireless Connectivity
- Vehicle Electrification and Autonomous Operation
- Systems Engineering: Taming The Complexity
- Systems Modeling: An Improved Interface For Stakeholder Communication

Polaris Industries manufactures a diverse set of vehicles and power products. A significant and growing portion of these vehicles utilize electric or hybrid electric powertrains. This presentation was about the use of systems engineering principles as applied to the development of electric and hybrid powered vehicles for niche markets. The presentation included examples and learnings from past experiences of the presenter. The presentation also included discussion of present day topics such as vehicle connectivity and autonomy. Connected and/or autonomous vehicles were presented as one system in a large system of systems and resulting system complexities will be outlined. Systems Engineering, and specifically the use of model based systems engineering, was presented as a means to tame the complexity of future connected and autonomous vehicles development.

Our speaker, Brian Van Batavia, is an engineering manager at Polaris Industries, responsible for electric and hybrid powertrain development. He is the former Director of Engineering at Logic PD where he was responsible for systems engineering, software engineering, industrial design and user experience. Brian has also held lead engineer positions at

Eaton Corporation and MTS Systems. He completed undergraduate studies in Electrical and Computer Engineering and Computer Science at the University of Minnesota Duluth. He holds a Master of Engineering degree from Purdue University where he focused on Integrated Vehicle Systems. Brian is a long standing member of INCOSE and is a Certified Systems Engineering Professional. He is also an active member of IEEE and SAE.

Brian is a creative and multi-disciplinary systems thinker. His background in computer and software engineering, combined with his natural interest in the mechanics of vehicles have created a passion for development of alternative powertrain vehicles. Brian is experienced with model based systems development and agile software methods and has been applying these principles to the development of electric and hybrid vehicles for nearly twenty years. He is the founder of a small engineering consulting and services company that specializes in custom vehicles and alternative energy. He has worked with leading automotive companies across the world, but resides in a western suburb of the Twin Cities.

*For Upcoming Chapter Events Please Go to the [North Star Chapter Website](#) ...*

## New Chapter Members and Certifications

### Congratulations CESPs

**Sean McCoy**, a Senior Systems Engineer at Trane

### Welcome New Members

**Brian Goski** of St. Jude Medical

**Ernie Tursich** of Smiths Medical, an R&D specialist

**Patrick Miller**

**Joe Borden** of Beckman Coulter, Inc.

**Chris Matko** of Polaris Industries Inc.

**Eli Heine** of Lockheed Martin Mission Systems and Sensors (MS2), LAI

**Amit Sawhney** of Beckman Coulter, Inc., R&D – Hardware specialist

**Robert Hankins** of Becton, Dickinson and Company (BD)

*Join us on LinkedIn, [INCOSE North Star Chapter](#)*

## Great Lakes Regional Conference 11 (GLRC 11)

It is coming, please contact Dave Walden, [Dave@sysnovation.com](mailto:Dave@sysnovation.com), to volunteer in any way large or small. Many hands make light work.



#### GLRC11 Plan (Preliminary)

- Theme  
Superior System Solutions for Today's Complex Environments
- Targeting Wednesday-Saturday in October 2017
  - Wednesday – Welcome Reception
  - Thursday – Opening Plenary, Program, Banquet
  - Friday – Program, SE Professional Development Day
    - SE PDD – One Track Broadcast to TBD Satellite Sites
  - Saturday – Tutorials, Tours?
- Venue TBD
  - Likely Hotel near Airport/MoA

# *On the International Front...*

**IW 2017**, INCOSE kicks off each year with its annual gathering of the membership to discuss and advance the state of the art of systems engineering. Spend several days of intense activities centered around technical content with volunteers who meet electronically during most of the year. This is the time to collaborate and celebrate in person. The prestigious Working Group Award winners are named at IW, as is the recipient of the Johns Hopkins INCOSE scholarship; and, newly elected officers and directors are installed. The gathering is capped off with an annual INCOSE Foundation Wine Tasting to raise money for Foundation activities.

Join us at the [\*\*IW 2017 Workshop\*\*](#)

- **Date:** Jan 28, 2017 - Jan 31, 2017
- **Location:** Torrance, CA, USA
- **Venue:** Torrance Marriott

Learn more about what we can do. Click [\*\*here\*\*](#) for the [\*\*Q4 INCOSE Members Newsletter\*\*](#)

*JOIN THE OFFICIAL INCOSE LinkedIn Group*

<http://www.linkedin.com/groups?gid=7499834>

*or*

*INCOSE FACEBOOK*

<https://www.facebook.com/groups/INCOSE/>

and Twitter at

[https://twitter.com/incose\\_org](https://twitter.com/incose_org)

Please visit us at [\*\*North Star Chapter\*\*](#) to find out what is going on in the Twin Cities and surrounding area as the NSC Presents the Year of Systems Engineering Impact on the Twin Cities.