Chapter News

The President's Corner…

Greetings members and friends of the North Star Chapter!

Summer is now past and we enter headfirst into the fall season, my favorite time of year. Our success as a Chapter, and the positive momentum that we have developed, both continue to grow. July started out with the release of the marketing materials and videos that Michele Zoromski has been working on since 2017. One of the videos was featured at the opening presentation at IS2019. It was a proud moment for the North Star Chapter, and for Michele.

For the July meeting, we tackled an emerging and complex subject – applying the principles of Systems Engineering to an organization, or "human enterprise". As business-culture works to adopt modern values around diversity, inclusion, and equity while preserving the fairness of a meritocracy, there is pressure to move towards more flexible leadership and organizational models. The days of the "alpha dog" and strict hierarchies are remnants of the past. The presentation by Bill Farmer and David Quimby made a clear point that Systems Thinking is required to address the challenges that exist in the context of organizational and social leadership. They presented a model that illustrated the importance of networks for accomplishing real work; and a hierarchy is simple the simplest, and most constrained, form of a network. We are in the early stages of this subject; expect to see more as the thinking and writings about this subject matures.

For the August meeting, we brought in Google to talk about "IoT, AI, and the Cloud, oh my!". Ben Catlin gave an excellent, practical, and captivating presentation on what IoT, AI, and Cloud-Computing are really about. For a Systems Engineer, he presented the high-level concepts that are important to understand; like the flow of data from devices (IoT and not IoT), to the cloud, and then to applications/products that are packaged and sold to customers. Practitioners from the audience had great questions and there was a lot of consensus on how these technologies effect business and product development – from security, to tools & technology, product lifecycle changes. Ben posed that these emerging software technologies will be effecting all companies. "If you're not a software company, you will soon be bought one" was a strong message from his presentation.

For our September meeting, we held a joint meeting with SAE hosted by Polaris. Over 100 people attended the event, with 3 technical leaders from Polaris (Duane Wagner, Amber Malone, and Larry Keller) sharing their stories of success. First, Polaris has the #1 product in 4 different markets. Second, Polaris continues its exponential growth while their competitors are struggling. Finally, Polaris has embraced diversity, equity, and inclusion; which has developed into a critical competitive advantage as they grow into a leading engineering organization. The military now consults with Polaris to understand how to develop technology and new products more quickly, and at a lower cost. The world will be hearing more about Polaris.

Some other activities over these past three months include:

- We held our first "Brown Bag Session" with Cyber Optics.
- We are collaborating with the Heartland Chapter (located in Cedar Rapids, IA) to rejuvenate interest in INCOSE and Systems Engineering.
- We are involved in the GLRC-13 Conference planning.
- We continue to develop our knowledge, skills, and experience to support remote-streaming of our Chapter meetings.

In closing, I would like to remind everyone that Chapter elections are in progress. Four positions are up for vote for 2020 – President, President-Elect, Treasurer, and Director of Academia. Please submit your votes via SurveyMonkey. If you have not received an email about the election, please contact one of the Chapter's officers.

Remember, the North Star Chapter is your chapter. If you have a request, a suggestion, or would like to become more involved, contact me, or any Chapter officer.

Sean McCoy
2019 President, INCOSE North Star Chapter
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Welcome New Chapter Members!

The International Council on Systems Engineering (INCOSE) is a not-for-profit membership organization founded in 1990 to develop and spread the interdisciplinary principles and practices that enable successful systems. We have grown to more than 17,000 members meeting in over 70 local chapters in over 35 countries which translates to boundless opportunities to network, learn and have fun.

As members we represent a broad spectrum – from student to senior practitioner, from technical engineer to program and corporate management, from science and engineering to business development. We work together to advance our technical knowledge, exchange ideas with colleagues, and collaborate to advance systems engineering. There are many exciting challenges ahead and we are glad you are joining us!

BILL FARMER, Vice President of customer experience at Solid Design Solutions, a principal at F&A Consulting, and an adjunct professor in business problem-solving at Augsburg University. Find, Bill Farmer on LinkedIn.

JOHN HOFFMAN, Computer Vision Engineering Manager at Cyber Optics. John has 30+ years of professional engineer, with a diverse background leading and executing projects across a wide variety of application domains. Find, John Hoffman on LinkedIn.

ALEXANDER BOTZ, Wireless Systems Engineer at Starkey Hearing Technologies. Alexander's specialties are RF / Microwave Design and Wireless Systems Engineering. Find Alexander Botz on LinkedIn.

BRIAN SCHOUSEK, Senior Systems Engineer. Brian is an experienced Senior System Engineer with a demonstrated history of working in the medical device industry. Skilled in DMAIC, Medical Devices, Reliability Engineering, and Root Cause Analysis. Strong information technology professional with a BS focused in Electrical Engineering from University of Nebraska-Lincoln. Find Brian Schousek on LinkedIn

PATRICK STUMPF, Graduate Student at the University of Minnesota in Industrial & Systems Engineering, Class of 2020. Patrick is an aspiring engineer, leader, and working professional. He attended the University of Minnesota as a Klick Foundation Scholar, and graduated with his bachelor's degree in aerospace engineering & Mechanics in 2016. During his senior design project, he had the opportunity to work with engineers from Orbital ATK (Northrop Grumman) on a guidance, navigation, and controls problem in a systems engineering role, which allowed Patrick to realize my interest in the field. Find, Patrick Stumpf on LinkedIn.

Where We Have Been...

July 11th Meeting: Organizations as Systems: Systems Engineering in Socio-Technical Systems

Various paradigms have been proposed for envisioning organizations: Organizations as machines, organizations as societies, organizations as organisms, organizations as brains. In this session, we will envision organizations as systems. This presentation identified some principles of systems engineering that we find useful in modeling complex organizations as complex systems; we explored some system archetypes / design patterns that we find useful in a systematic approach to organizational analysis; and shared a model that we developed for improving organizational performance.

Our presenters were David Quimby and Bill Farmer. David Quimby is a principal at Innovation Radiation. He is a mathematical economist and a systems analyst. He has rotated through various cycles at the extremes of large enterprise and small enterprise as a technology executive and a software entrepreneur. His expertise includes knowledge management, technology forecasting, and systematic innovation; he is also a thought leader in the application of systems engineering to organizational design.

Bill Farmer is vice president of customer experience at Solid Design Solutions, a principal at F&A Consulting, and an adjunct professor in business problem-solving at Augsburg University. He has consulted on lean development, agile development, and related disciplines. He has held leadership positions in product development and general management in a variety of technology-based enterprises. He worked as a research engineer at Sharp in Japan, where he became proficient in "Japanese-style management" based on the Deming management system.

August 8th Meeting: AI, the Cloud, and IoT

In this talk, the presenter, Ben Catlin, broke down how he sees the technology connecting to the real world for ubiquitous IoT, and what is necessary for any organization going after IoT to reap the value of a adopting of IoT concepts. Along the way he talked about the value of cloud in general, AI/ML, digital transformation, and what makes Google's take on these areas particularly useful for companies going after IoT initiatives.

Ben Catlin works for Google Cloud by day, helping large enterprises take the next step towards the Cloud and modern collaboration tools like GSuite. Prior to this he spent 2 years working directly w/ a fortune 250 manufacturing company deploying an IoT platform with 1000's of devices active in the field. The twists and turns of his career took him from electrical engineering in the semiconductor industry to mobile front-end development for a commercial HVAC controls company. But those curvy roads never stopped him from powersliding through more Mario Kart than you can shake a stick at.

September 26th Joint Meeting with SAE: Presentation and Tour of POLARIS

For more than 60 years, Polaris (www.polaris.com), has been making high-quality, breakthrough products—whether it's launching the snowmobile industry, reinventing ATV categories year after year, developing the first purpose-built military vehicles or introducing a radical 3-wheel moto-roadster. From their entrepreneurial roots as a mechanical shop, they have grown into one of the world's largest Powersports companies. In recent years, they have expanded beyond Powersports into adjacent markets, like commercial and military vehicles. Today, Polaris offers a diverse portfolio of best-in-class brands.

INCOSE got a presentation about Polaris and a tour of their facilities. The Polaris R&D Center opened in Wyoming, Minnesota in April 2005 as a result of outgrowing existing facilities and to accommodate future growth. The R&D center is responsible for research and development of Motorcycles, All-Terrain Vehicles (ATV), RANGER Utility Vehicles, and Polaris Engines, which includes prototype fabrication and assembly, laboratories for structural testing, electrical development, materials engineering, and powertrain assembly and dynamometer testing.

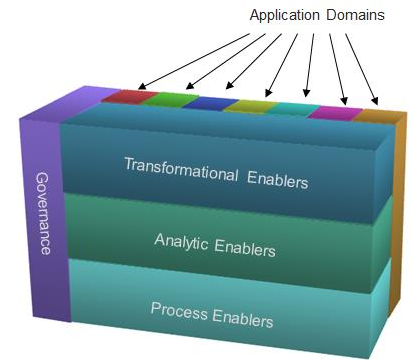## INCOSE Publications: Keeping up with Technology…

Systems Engineering (SE Journal)

Systems Engineering, INCOSE's scholarly journal, is a primary source of multidisciplinary information for the systems engineering and management of products and services, and processes of all types. Systems engineering activities involve the technologies, processes, and systems management approaches needed for: definition of systems, including identification of user requirements and technological specifications; development of systems, including conceptual architectures, tradeoff of design concepts, configuration management during system development, integration of new systems with legacy systems, and integrated product and process development; and deployment of systems, including operational test and evaluation, maintenance over an extended lifecycle, and reengineering. Modern systems, including both products and services, are often very knowledge intensive, and are found in both the public and private sectors. The journal emphasizes strategic and program management of these, and the information and knowledge base for knowledge principles, knowledge practices, and knowledge perspectives for the engineering of systems. Definitive case studies involving systems engineering practice are especially welcome.

Systems Engineering is included in both the INSPEC and COMPENDEX indices.

Keep your skill set current and keep up with best practices by joining a Working Group TODAY!

INCOSE working groups are a great place to meet individuals who are looking to overcome similar challenges. These groups often span multiple regions and industries, so we can really look at these topics in a broad, informed way. In the North Star Chapter, we have several members Chair/working in different groups like the Measurement, SE in Very Small Enterprises (VSE), Handbook as well as others. There are many topics to choose from. Finding the groups and joining is easy!

To join any working group:

1. Login to your account at INCOSE.ORG
2. Click on the "Profile Home" link under your login at the top of the page.
3. Scroll down to **My Committees/Working Groups** on the lower left-hand side of the page and click on the link **Browse / Join a Working Group**
4. This will result in a list of Working Groups under the header Committees. (The terms are interchangeable)
5. Scroll down until you see find a committee that you are interested in. Click the link and then on the right click on the (view) link.
6. This will result in a roster of current WG members.
7. Scroll down to the bottom of the list and under "Committee Tasks" click on "Join this Committee"

Working groups are a great way to learn more about a subject, grow your network, and share your knowledge about a subject.

Learn more about what we can do. Click here for the *Q3 2019 INCOSE Members Newsletter*

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