## Seeking Connections

Ann Hodges, Chapter President, Sandia National Labs

I find the TV series *Connections—an Alternative View of Change*, by James Burke, fascinating. Many of the 40 episodes are available at http://topdocumentaryfilms.com/james-burke-connections/, though a few are blocked.

It examines the history of science and invention in a unique way by determining how various discoveries, scientific achievements and other world events synergistically built upon each other to yield particular elements of technology as we know it today. For example, in the "Distant Voices" episode, one of the historical threads focused on telecommunications. A starting point was with Jean Picard, a French astronomer and priest who was curious about the mercurial phosphorescence glowing in his barometer. This led to an experimental flurry focused on electricity. In 1820 Hans Oersted stumbled upon the relationship between electricity and magnetism (electromagnetism). This discovery led to Alexander Graham Bell's telephone invention. Radio and radar also have foundations based in electromagnetism.
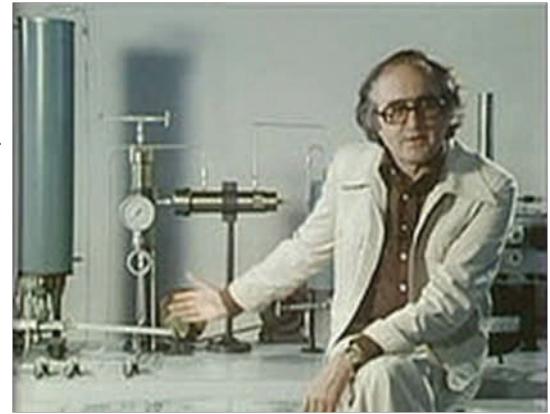
Systems engineering is rich with connections. A goal of the product development treasure hunt (i.e. meeting mission needs) is to make explicit and exploit linkages such as relationships between stakeholders, stakeholders' needs, needs to requirements, "flowdown" between and within levels of requirements, requirements to related risks, realized risks to issues, requirements to architecture, architecture to design elements, verification and validation focused on product development artifacts as well as the relationships between the elements throughout the development lifecycle … . You get the idea – relationships between the activities and artifacts associated with the ISO 15288-based SE V-model (a graphical depiction of the systems development lifecycle). The presence or absence of treasure (meeting mission needs) in this treasure hunt is answered by the questions – Does the network of related elements and activities holistically support the product's intended use? What are the issues and nonconformances, and what risks exist to undermine supporting the intended use? How severe are the risks, issues, nonconformances?

Another opportunity for SE connections is to join us at our regional Enchantment Chapter meetings. The meetings are held every 2nd Wednesday 4:45pm-6pm, and are also offered via GlobalMeet (a webinar capability). For more information, visit our home page at http://www.incose.org/enchantment/. I am humbled at the level of SE knowledge and experience of our SE "Community of Practice." Leveraging the contacts of the Chapter's Board of Directors, we've had fantastic chapter talks. I invite you to see the lineup at http://www.incose.org/enchantment/library.aspx. As I write this, the INCOSE International Symposium 2014 is coming up at the end of June, which I personally find to be yet another rich opportunity for learning about the latest SE thinking/practicing.

The image above-right is downloaded from http://en.wikipedia.org/wiki/Connections_(TV_series)   ∞

Enchantment Chapter Signs MOU with PMI's Otowi Bridge Chapter

Heidi Hahn, Los Alamos National Lab

In April, the Enchantment Chapter signed a Memorandum of Understanding with Project Management Institute's Otowi Bridge Chapter (OBC), which serves the northern part of New Mexico. The agreement is intended to promote the synergistic relationships between the disciplines of systems engineering, project management, and related professional areas that are of mutual interest and benefit to the two chapters. Specifically, the agreement provides for mutual advertisement of meetings and events and mutual granting of member rates for same. It also provides for mutual granting of PDUs, at member rates for PDU events where a fee is involved.

For more information about OBC, please visit their web site at
http://www.otowibridgepmi.org/index.php?option=com_content&view=frontpage&Itemid=1.

You will also find information about upcoming OBC events in the Enchantment Chapter newsletter and/or the monthly chapter updates. While most OBC events are held in Los Alamos, there are also periodic dinner meetings in Santa Fe and also joint events with the PMI Rio Grande Chapter that are generally held in the Albuquerque area.

2014 Aug 14 Chapter Lunch Meeting—Presenter: Mark Fidel. Title: The Cost of Data Breach or This Thing Isn't Cheap.
Date & Time: 2014 Aug 14, 11:30 am - 12:30 pm. Location: Fuller Lodge, Los Alamos
Members: Online Registration $5; Door Registration: $10, Non Members: Online/Door Registration: $10, PDU: 1.

2014 Oct 16 Chapter Lunch Meeting—Presenter: Bob Mason. Title: Leadership Excellence
Date & Time: 2014 Oct 16, 11:30 - 12:30 pm. Location: Fuller Lodge, Los Alamos
Members: Online Registration $5; Door Registration: $10, Non Members: $10. PDU: 1.   ∞

In Memoriam

Regina Griego, Sandia National Labs

On April 13, 2014 we lost Dr. Ricardo Pineda, a good friend, esteemed colleague and leader in Systems Engineering. As I reflect on Ricardo and what he brought to the Enchantment Chapter and our region, I remember most his enthusiasm.

Dr. Ricardo Pineda
(12 June 1950 - 13 April 2014)

Rumors of Ricardo's work at UTEP in El Paso preceded us getting to know him. I remember we received an invitation to participate in the Systems Engineering discussions and events at UTEP just before Ricardo joined UTEP, with queries about an INCOSE student chapter, clear back when Francis Peter was Enchantment Chapter President and Bob Pierson was Vice-president. We did our best to respond, not knowing the gregarious miracle-worker that was behind all the commotion.

Before long the Enchantment Chapter expanded to fully integrate northern New Mexico, largely because of our Los Alamos colleagues and then south to White Sands and of course El Paso (which most of us consider a part of New Mexico) thanks to Ricardo and Tom Tenorio. This propelled our need to make technology work for us and we matured as a chapter.

In getting to know Ricardo it was apparent that his sparkling eyes, welcoming smile, and engaging communication style made it easy to include and look forward to interactions with Ricardo. He continued to include the Enchantment Chapter in the activities he was doing at UTEP, and he fostered a thriving INCOSE Student Chapter at UTEP.

After returning in 2011 from my assignment in Washington DC, I was invited as a presenter at the UTEP Systems Engineering Day. I was delighted to interact with so many graduate students, in particular Hispanic students with over 5 of them female! The students were amazing young people and their pride at showing their excellent projects was very exciting. I know other members of the Enchantment Chapter have had similar experiences.

Ricardo was an integral member of INCOSE at the international level, especially his work on SEBoK; but his local work most profoundly reflects Ricardo's legacy. A legacy that betrays a love of young people (who's lives he profoundly affected), passion for Systems Engineering, and ingenuity in making the Systems Engineering program at UTEP successful.

We honor Ricardo for all these things, and for his contributions to the Enchantment Chapter, including the Student Chapter work, contributing to our speakers and building the chapter, and his service as the Vice President in 2012 and for a half year as our President before Stevens Institute stole him away. We are very proud to claim Ricardo as one of the Enchantment Chapter's own.   ∞

My name is Yan and I was one of Dr. Pineda's PhD students that moved from UTEP to Stevens with him. I would like to leave my reflection in memory of Dr. Pineda for INCOSE. -- Dr. Pineda was my inspiration to pursue my Ph.D. and he made my dreams come true. In fall of 2011, I had the privilege of being his Ph.D. student at UTEP and researching with his team at RIMES. When he offered me an opportunity to move and join him at Stevens Institute of Technology last year, I was so touched and honored that he was also thinking about his students' future. He took me under his wings and taught me everything about life in the academia world, as well as introducing me to his professional networks including INCOSE. I will fulfill his wish and finish my education here to make him proud. I would also like to dedicate my Ph.D. dissertation in memory of Dr. Pineda. He was a very supportive mentor, wise advisor, knowledgeable teacher, excellent professor, great visionary, courageous leader, and a caring, protective father to me... He always taught us that family comes first and he led us by example. Dr. Pineda will always be remembered for his kindness, loyalty, generosity, enthusiasm, passion, and drive to achieve his goals in life. No words can fully describe him... He was a man with big dreams. Dr. Pineda had a deep, profound impact in my life and I am forever grateful for everything he has done and provided for me. Thank you, Dr. Pineda. May you rest in peace... We will miss you dearly...   ∞

Ricardo Pineda
Systems Engineering
Scholarship Fund

Website: http://www.ricardopineda.org

The family requests that donations be made to UTEP to benefit the **Ricardo Piñeda Systems Engineering Scholarship Fund.** Donations may be mailed to UTEP Office of Institutional Advancement, Kelly Hall, 7th Floor, 500 W. University Ave., El Paso, TX 79968. Online donations can be made at https://givingto.utep.edu; from the Designation pull-down menu select "Other", enter "Ricardo Piñeda"; complete the form.   ∞

Recent Meetings

Jennifer Turgeon, Sandia National Labs

April 2014—John Frederick, branch manager of the Federal Aviation Administration (FAA) Verification and Validation Strategies and Practices Branch at the Atlantic City International Airport, talked on *Evolving Test & Evaluation (T&E) in the FAA*. John discussed the movement to the next generation (NextGen) of aviation, enabled by a shift to smarter, satellite-based and digital technologies, and new procedures that make air travel more convenient, predictable, and environmentally friendly.

NextGen enables the sharing of real-time data about weather, the location of aircraft and vehicles, and conditions throughout the National Airspace System (NAS). John discussed the NAS operational views and challenges; and shared how NextGen is improving and optimizing the T&E approach from a systems engineering perspective. Slides are posted on the Enchantment Chapter website.

May 2014—Bill Schindel, President of ICTT System Sciences, and Troy Peterson, a Booz Allen Fellow, provided the chapter with a tutorial on *Pattern-Based Systems Engineering (PBSE): Leveraging MBSE Techniques*. Bill and Troy spoke about PBSE from a practitioner's perspective by first giving an over view of PBSE, including some specific system domain illustrations.

They introduce the concepts being developed through the PBSE Challenge Team of the INCOSE/OMG MBSE Initiative Team, which aims to enable INCOSE membership, and the larger systems community beyond INCOSE, to achieve improvements in addressing increasingly complex systems while reducing effort.

They explained that projects using PBSE get a "learning curve jumpstart" from an existing Pattern, gaining the advantages of its content, and improve that pattern with what they learn, for future users. Slides from the presentation are posted on the Enchantment Chapter website.

June 2014—Dawn Beyer, Ph.D and Lockheed Fellow, and Perri Najib, Lockheed Sr. Fellow, provided a presentation on the Lockheed Martin Security Engineering Assurance Model^{TM}(SEAM^{TM}), created to "seam" together people, process, tools, threat intelligence, communication and collaboration throughout an engineering lifecycle to reduce cyber security risk. Dawn and Perri explained how SEAM was developed in response to the agile nature of the growing cyber threat, which demands cyber security engineering with core agility-enabling concepts, such as learning loops, be in place. They explained how the concept of constant learning through identification and exploitation of feedback loops across a systems lifecycle is key for success when dealing with the rapidly changing and complex cyber environment. They hope to continue further discussions on how agile system engineering must also incorporate and take ownership of agile system security engineering. Slides from the presentation are posted on the Enchantment Chapter website. ∞

Next Meetings

Jennifer Turgeon, Sandia National Labs

July 9: Chapter Social: Is the Glass Half Empty or is it Half Foam? The Art, Science, and Engineering of Beer Production

Zach Guilmette, Head Brewer.

Abstract: The Enchantment Chapter's summer social features a talk, tour and tasting at the Chama River Brewing Company followed by socializing with appetizers provided by the Chapter. Beverages will be available for purchase. Space will be limited. Details available in separate email and invitation. 5:00 PM Check in, 5:15 PM talk, tour, and tasting. Location: Chama River Brewing Co., 4939 Pan American Fwy., in Albuquerque.

August 13: Conjunction Analysis: an old problem, a simple problem... a common problem

Seth Harvey, PhD, Senior Aerospace Engineer, Intelligent Software Solutions, Colorado Springs, CO.

Abstract: For the aerospace community, conjunction analysis is the process used to determine when two objects in space are at risk of colliding. This problem – predictive avoidance – motivated developing the space catalog over 50 years ago. In 1970, there were 2,000 objects orbiting the earth including active satellites, dead satellites, rocket bodies, and launch debris. Today there are over 23,000 objects 10 cm or larger orbiting the earth. That number is anticipated to grow to over 100,000 objects within the next five years. As analysis goes it doesn't much simpler then determining the Euclidean distance between two points, however the complexity grows significantly as more objects are added. Today the operational organization responsible for providing conjunction analysis uses racks of blade servers and it takes them 8 hours to compare just the active satellites (1200) against the rest of the catalog. A research effort started in 2010 enabled us to understand the root of the problem and expose commonality of the challenge with similar challenges in many other domains like molecular science and the computer gaming industry. Leveraging this multi-domain perspective may be the key to sustaining the conjunction analysis mission into the future and to shedding new light on many other Space Situational Analysis (SSA) problems for which analysis has never before been possible.

September 10: Agile Systems & Processes 103 – Fleshing out Architecture with Design Principles, Activities, and Closure

Rick Dove, INCOSE Fellow, CEO/CTO Paradigm Shift International.

Abstract: Agility is enabled and maintained by a fundamentally necessary and sufficient common structural architecture in systems of all kinds; from agile development and deployment processes, to the agile systems and products that are deployed. Architecture is viewed as structure and strategy. This talk will focus on the strategy of fleshing out an agile structural architecture, reviewing fundamental design principles that drive system functional processes, and a method that brings closure to the basic design concepts. Examples will be drawn from agile systems and from agile engineering processes in a variety of domains. The presentation will lead off with a quick review of agile 101 (architecture fundamentals) and agile 102 (requirements fundamentals). ∞

Is The Glass Half Empty, or is it Half Foam?
The Art, Science, and Engineering of Beer Production

CHAMA RIVER BREWING CO.
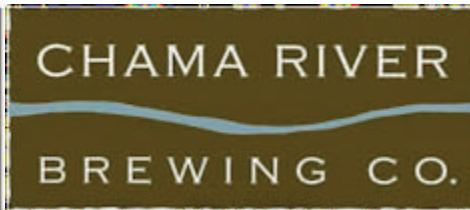
Chapter Summer Social
July 9, 2014

Chama River Brewing Co.,
4939 Pan American Fwy., Albuquerque.

Check-in at 5:00 PM.
Talk/tour/tasting at 5:15 PM,
followed by appetizers & networking.
Option: Self organize into dinner groups.

This event is free; participants must be 21 or over. Guests are welcome, but space is limited to the first 50 participants.

Each Enchantment Chapter member will receive a ticket for a glass of wine or beer.

RSVP to Mary Compton,
mlcompt@sandia.gov,
by *7/7/2014 @ 12* **noon**

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GREAT AMERICAN
BEER FESTIVAL® AWARDS

Gold - Baltic Style Porter - 2010 - "3 Dog Night"
Gold - Pro-AM Competition - 2009 - "Herbal Joe's Columbarillo IPA"
Gold - American Style Rye Ale – 2004 – "Rye On"
Gold - German Style Kölsch – 2003 – "Atomic Blonde"
Silver - Traditional German Style Bock – 2002 – "Get Off My Bock"
Bronze - Oatmeal Stout - 2009 - "Sleeping Dog Stout"
Bronze - Kellerbier/Zwickelbier - 2008 - "Zwickel"

Things to Know

SE Job Bank

Reminder that INCOSE has the **Job Bank** available for both Employers/Recruiters and job seekers' posts.

View Jobs
Post an Anonymous Resume
Personal Job Alerts
Employers/ Recruiters
Post a Job
View the Resumes

Products/Pricing

∞

Important Certification Exam News

On May 1, 2015 [note: this may change], the INCOSE Certification knowledge exam will be based on Systems Engineering Handbook Version 4 (SEHBv4). Until then, INCOSE System Engineering Handbook v3.2 should continue to be used to prepare for the certification exam for CSEP and ASEP. The time between SEHBv4 release and exam updates allows applicants who have already began studying to continue using currently published materials. It also gives the SEP Program Office time to develop and test new questions.

The INCOSE Certification Program will be sunsetting the Acquisition (Acq) extension. Everyone who has earned this extension will retain it as long as their base certification (ASEP, CSEP, or ESEP) is active. Any lapse in certification requires re-starting the process, which means the Acq extension will no longer be possible to regain once it is lost. Applications for the Acquisition extension will be accepted through 1 February 2014, and the exam offered through 1 April 2014. ∞

Introspection on Values of Membership

Rick Dove, Paradigm Shift International

The Enchantment chapter has a relatively steady average membership count of almost 100 members, with a churn of new members replacing dropped members about 20% each year. Members dropped from the Enchantment chapter roster include those that move to another geographical location, those that retire, and those that take new jobs outside of systems engineering. That leaves the area of non-renewal concern to be those that are practicing systems engineers but find insufficient value in continued INCOSE membership. I can understand at least three type of members:

1. Self motivated members who consider SE a personal profession, and value various activities and opportunities enabled by INCOSE membership.
2. Members and student members with early commitment questions, investigating potential personal values.
3. Members satisfying employer expectations, but uncommitted to active involvement.

Do you fit or see another type _____?

What follows is my own personal survey, an attempt to understand why I or anyone else maintains an INCOSE membership. Maybe this will help you place a value on your decision to continue or obtain membership.

Why are you considering or maintaining INCOSE membership?
___Only because my employer pays the dues. I would not be a member otherwise.
___Only because my employer values it. I would not be a member otherwise.
___Partly because my employer values it, partly because I value it.
___Because I value it personally, regardless of what my employer thinks.
___Other: _____?

Regardless of the answers above, is there perceived personal value in:
___Attendance at the International Workshop, even occasionally?
___Attendance at the International Symposium, even occasionally?
___Reading selected papers from the International Symposium?
___INCOSE webinar library.
___INCOSE SE handbook and it's continued evolutionary revisions.
___Staying professionally current with knowledge, practice, and evolution?
___Opportunity for CSEP certification?
___The local chapter meeting topics, even occasionally?
___The local chapter newsletter and communications, even occasionally?
___The local chapter tutorials, even occasionally?
___The quarterly Systems Journal, even occasionally?
___The quarterly INSIGHT issue, even occasionally?
___Professional interaction with my community of practice?
___Social interaction with others in the profession?
___Other: _____ ?

I would continue paying my own membership even if I could not afford to attend the semi-annual International events, which I value very highly. That would reduce my return to the emotional value perceived in "belonging," the resume value in citing professional association membership, and the value in local chapter activity participation.

Here are comments from a recent survey taken by the Southern Maryland chapter:

- Being an INCOSE member has kept me abreast with the most recent research, publications, technical initiatives, etc. related to systems engineering and the general interest from academia, industry, and government organizations. The membership also provides an opportunity to network with other INCOSE members and the systems engineering community in general.

- My personal thoughts on the value of INCOSE membership are: 1) Plugged into the SE community to keep up with the basic direction of the industry both locally and world-wide; 2) Use the professional certification process to find professional strengths and weaknesses; 3) Use the certification as positive addition to my credentials and skills.

- Local - works well! Active/engaged chapter and have learned a lot from talks/topics they have socialized over the years.

- I feel that it is well worth the investment in money and time supporting INCOSE activities.

- Networking with other engineering professionals is the biggest value of membership. Systems engineering is not something everyone is passionate about (and it can be sliced and diced into so many separate disciplines) so it helps to be able to find others with the same passions and desires in any particular niche of the domain.

- The value of membership to me is the CSEP designation. I find INSIGHT informative and I receive the hardcopy to leave in the lobby at my workplace. I find the articles in SE Magazine to be written at too high a level to be of interest.

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Conference on Systems Engineering - ICSEng 2014

August 19-21, 2014, held at the University of Nevada, Las Vegas, www.icseng.com — This series of International Conferences is jointly organized on a rotational basis among three institutions: University of Nevada, Las Vegas; Wroclaw University of Technology, Poland; and Coventry University, UK. **Special Sessions** include: SS1: Computational Cognitive Science, SS2: Nature-inspired Computational Methods, SS3: Intelligent Video Surveillance Systems   ∞

Resources

Watch this. Martin Fink, head of HP labs, unveils a system six times more powerful than existing servers that requires eighty times less energy. According to HP, *The Machine* can manage 160 petabytes of data in a mere 250 nanoseconds. And, what's more, this isn't just for huge supercomputers- it could be used in smaller devices such as smartphones and laptops. www.youtube.com/watch?v=JzbMSR9vA-c

Remarkable and classic agile system architecture of Google's Project ARA Modular Phone shown by project lead Paul Eremenko www.youtube.com/watch?v=T6BHJspyh6s

From TED: Uri Alon tells us *Why truly innovative science demands a leap into the unknow*n, a talk really about project management when innovation under uncertainty is required. www.ted.com/talks/uri_alon_why_truly_innovative_science_demands_a_leap_into_the_unknown

From TED: Simon Sinek tells us *Why Good Leaders make You Feel Safe.* www.ted.com/talks/simon_sinek_why_good_leaders_make_you_feel_safe

Watch this: *The Designer Of The F-15 Explains Just How Stupid The F-35 Is.* Pierre Sprey is a defense analyst who spent 20 years working at the Pentagon and helped designed one of the most successful jetfighters ever, the A10 Warthog. www.cbc.ca/player/News/TV+Shows/the+fifth+estate/Web+Exclusives/ID/2308854708/   ∞

New Chapter Members

Francis Peter, Management Sciences

Enchantment Chapter now has 96 active members including 3 Senior Members. We would like to welcome the following new INCOSE members to Enchantment Chapter:

John Burns	USAF
Elizabeth Joseph	Los Alamos National Laboratory
James Lavin	Sandia National Laboratories
Stephen Lee	Lockheed Martin
Randy Lexvold	Sirius Requirements
Michael Rigby	Sandia National Laboratories
Robert Selina	National Radio Astronomy Observatory

The Enchantment sponsored Student Chapter of the University of Texas at El Paso currently has 9 active members. We would like to welcome the following new student chapter member:

George Moreno Pineda	Marine Corps Systems Command ∞

Connect to Your Community of Practice

Chapter meetings with a focus on systems engineering are held monthly on the second Wednesday, except in December. The December meeting is an annual social event, with mingling, dinner, and a speaker chosen for enjoyment by systems engineers and guests alike.

Monthly meetings feature speakers from out-of-town as well as local subject matter experts on topics of relevance.

On occasion special facility tours are arranged, sometimes as the monthly meeting, and other times on a separate schedule.

Chapter meetings begin at 4:45 pm. After chapter news, announcements and introductions, the presentation and discussion generally lasts until 6:00 pm, carried on GlobalMeet for anybody to access who can't attend in person.

Tutorials with coverage on topics of interest are arranged approximately twice a year. Delivered by experts in the field, tutorials range from 1/2 day to day+ durations, and generally involve a tuition.

Mix with people who have the same professional interests as you do, but with a diversity of perspective beyond daily workmates. It comes in handy when you need help or answers to questions outside your accumulated experience, need a connection at another organization, or simply want some mind stretching thought.

Meeting announcements, event notices, and GlobalMeet links routinely go to all INCOSE members within the Chapter's geographic territory; as well as to names on a special *information* list open to one and all. Sign up for the *information* list with a request to the Chapter secretary listed below.

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Chapter Board

Ann Hodges	President	505-844-6284	alhodge@sandia.gov
Rick Dove	President Elect	575-586-1536	dove@parshift.com
Ricardo Pineda	Past President		
Mary Compton	Treasurer	505-845-9268	mlcompt@sandia.gov
Jeni Turgeon	Secretary	505-553-4554	jturgeo@sandia.gov
Regina Griego	Director	505-844-7238	griegor@sandia.gov
Mike Gruer	Director	505-828-5656	mike.gruer@honeywell.com
Heidi Hahn	Director	505-665-4606	hahn@lanl.gov
Ron Lyells	Director	505-828-5625	ron.lyells@honeywell.com
Francis Peter	Director	505-255-8611	fepeter@outlook.com
Bob Pierson	Director	505-767-1210	pierson@aptec.com
Eric Smith	Director	915-747-5205	esmith2@UTEP.edu
Tom Tenorio	Director	575-322-4123	tenoriot@gmail.com