Founding Chair of Enchantment Chapter
Regina Griego Named INCOSE Fellow

From a March 24 article published by the Sandia Newscenter: Regina Griego, currently on special assignment with the National Nuclear Security Administration (NNSA) in Washington, D.C., has been elected a fellow of INCOSE. Regina was the technical director for INCOSE in 2009-2010 and founding president of the INCOSE Enchantment Chapter. She is also an Industry Fellow for Stevens Institute.

INCOSE President Samantha Brown of BAE Systems informed Regina of her election in a letter that stated, in part, "You join a distinguished group of, now, 62 individuals whose contributions to the art and practice of systems engineering are recognized and respected worldwide. By providing intellectual leadership to the discipline as a whole and enhancing the INCOSE organization through your support to the board of directors and other leaders, INCOSE fellows have the ability and opportunity to contribute significantly to the INCOSE mission to 'Share, promote, and advance the best of systems engineering from across the globe for the benefit of humanity and the planet.'"

In her current assignment Regina is working in NNSA's Nuclear Weapons Stockpile Division as a senior systems engineer and functions as a systems and enterprise engineering adviser. At Sandia, Regina has provided early lifecycle systems and enterprise engineering support on a number of strategic projects and led multiple systems engineering capability efforts. She began her career at Sandia designing and implementing telemetry systems. Before joining the Labs, Regina was the deputy director of Advanced Technology Inc., developing computer-based systems in the area of flight safety.

Regina earned a doctorate in computer engineering from New Mexico State University, a master's degree in computer science from the University of Colorado, a master's in electrical and computer engineering from the University of Arizona, and a bachelor's degree in electrical and computer engineering from New Mexico State University.

Regina's appointment, effective immediately, will be formalized at INCOSE's International Symposium in Denver in June.   ∞

Chapter Strategic and Tactical Planning Update
Heidi Hahn, Chapter President

The Chapter Board of Directors (BOD) met for strategic planning in February. Based on your survey input, and suggestions from other venues (e.g., lessons learned at the International Workshop), the BOD is planning some changes to our existing plans and to our planning and implementation processes.

To improve our focus, we are consolidating our goals from the six that we put forward in 2010 to four for 2011:

- **Communications**, which encompasses both collaboration between and among Chapter members and between the Chapter and other entities, both within and outside INCOSE;
- **Continuing Education/Member Participation**, to improve the professional status of the region's systems engineers by providing opportunities for continuing education, professional development, and other professional activities; and
- **Membership and Chapter Excellence**, expected to have the same strategic emphases as they have had in past years; tactical improvements are planned.

Each goal now has a sub-team of BOD members who serve as champions for the goal. The sub-teams are responsible for the tactical planning necessary to achieve the goal as well as for preparation of any associated planning documents and capture of related evidence for the Chapter's Circle Award application. Team membership and responsibilities are summarized in the table below. Feel free to contact them if you have input or suggestions related to the goal, or if you want to help. Look for the updated planning documents to be posted to the Chapter website in mid-April.
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Sub-team	Members	Major Responsibilities
Communications	Jorge Hernandez (Coordinator) Mary Compton Rick Dove (Newsletter Editor) Ron Lyells, Tom Tenorio	• Communications Plan • Website • Collaboration Tools, e.g., Live Meeting, SharePoint sites • Newsletter
Continuing Education/Member Participation	Heidi Hahn (Coordinator) Ann Hodges (Co-coordinator) Bob Pierson, John "Woody" Weed	• Programming for Chapter meetings • Tutorials • Planning for Chapter-sponsored Publications
Membership	Francis Peter (Coordinator) Mark DeSpain, Tana Lucy Tom Tenorio	• Membership Plan • Member Survey
Chapter Excellence	Woody Weed (Coordinator) Mary Compton, Heidi Hahn Tana Lucy	• Operating Plan • Coordination of Circle Award Application

Working Group News

Systems Science WG
Len Troncale, Cal Poly University

Two new official INCOSE SSE-WG projects are announced.

Towards A Systems Processes Theory

At INCOSE-IW11 in Phoenix, the SS-WG adopted as one of its five official projects the building of a community of researchers who have set the goal of unifying the many systems theories extant in the literature, by focusing mainly on the systems processes they elucidate and the interactions between these systems processes.

The effort would build upon 40 years of work on such an integrated systems science by project leader Len Troncale.

The project will collect extensive bibliographies and a dozen categories of useful knowledge on more than 100 putative system mechanisms hypothesized to be domain-, discipline-, tool-, and scale independent across a wide range of natural and human systems.

The idea is to harvest the vast empirical and experimentally verified literature of the natural sciences, using a team of cooperating professionals and students reformulating that data to achieve a deeper understanding of how systems work and how better sustainable systems can be designed.

Towards A Systems Pathology and New Society

Also at INCOSE-IW11 the Systems Science Working Group adopted another official project—the development of a new field that might be called top-down "Systems Pathology."

This involves systems science and systems engineering taking advantage of the insights and successful protocols proven in 2000 years (yes) of biomedical research, to recognize and define a new taxonomy of dozens of systems-level diseases.

Based on System Process Theory (above), the new Systems Pathology would be distinct from typical bottom-up systems pathology, because it focuses on errors or dysfunctions of systems architecture and motifs instead of dysfunctioning parts.

Presumably the resulting knowledge base would be useful in diagnosing and fixing Systems-of-Systems problems, avoiding system errors in the design phase, and improving systems-level models and simulations.

Troncale et al. are joining systems biologists, earth systems scientists, some systems engineers, systems scientists, and some natural scientists in establishing an International Society for Systems Pathology to further these objectives.

Websites and Wikis

Each of these projects now has its own website or discussion thread, and soon will have Wikis. Several systems engineering M.S. and Ph.D. students may join together to use and/or contribute to these knowledge bases in their theses.

To get involved contact:
lrtroncale@csupomona.edu
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Systems Security Eng. WG
Rick Dove, Paradigm Shift International

Sustaining system functionality in the face of intelligent determined attack requires self preservation capabilities that adapt and evolve with equal intelligence and strength of community. This requires full system awareness and adaptability, and system-of-system relationships. Security engineering alone cannot accomplish this.

Current Projects

- ITNG conference (April, Vegas), nine-paper track: *Toward Next-Generation Security – Self-Organizing Perspectives, Principles, and Patterns.*
- Twelve essays (June, INSIGHT) addressing Systems of *Systems and Self Organizing Security*.
- IS11 (June, Denver) panel: *Is System Security Engineering Failing? What Can System Engineering Do About It?*
- Developing a pattern language for system-security patterns (ongoing), characterized by self organization, adaptable tactics, reactive resilience, evolving strategy, proactive innovation, and harmonious presence. Two papers for IS11 slated as continuing work.
- Adding appropriate security considerations to the INCOSE Handbook, and subsequently the CSEP exam. June IS11 workshop will open this project.

To get involved contact:
dove@parshift.com
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Lockheed Martin Opens CSEP Door for Employees

Lockheed Martin and INCOSE have signed a three year agreement on cooperation in SE certification. If you are a Sandia employee, take note. If you are from another company, run it upstairs.

From the 22 February 2011 press release:

The three-year agreement will help appropriate Lockheed Martin engineers pursue INCOSE certifications, which serve as an important recognition of a systems engineer's professional development.

"Lockheed Martin engineers drive innovation in our Corporation," said Dr. Ray O. Johnson, senior vice president and chief technology officer at Lockheed Martin. "As technology becomes more complex, systems engineering is increasingly important in the development of relevant, affordable solutions for our customers. This agreement with INCOSE complements our technical workforce development initiatives, and it provides an independent and consistent assessment of our systems engineering community."

INCOSE's Certification Program is comprised of three levels: Associate Systems Engineering Professional (ASEP), a Certified Systems Engineering Professional (CSEP), and Expert Systems Engineering Professional (ESEP). These multiple levels of certification align with a typical career progression. INCOSE certification is well-regarded and valued by Lockheed Martin customers.

"Organizations that encourage certification benefit greatly by having their employees meet an objective threshold for systems engineering knowledge, experience and education," said INCOSE CSEP program manager Dave Walden.

More Information
- CSEP Program
www.incose.org/educationcareers/doc/Certification_Overview.pdf
- Thad Madden, Lockheed Martin, 301-897-6833, thad.madden@lmco.com

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Recent Meetings

Mary Compton, Sandia National Labs

January 2011—Rick Dove, Chair of the INCOSE Working Group on System Security Engineering, presented a talk entitled *Toward Systems with a Will to Live*. Rick's talk focused on systems that have an awareness of their environment, and that are sensitive to anomalous changes that might signal a need for a response or an alert. The talk explored inspirational patterns from natural systems that effectively process noisy sensory input from uncertain and changing environments, examined the architecture of the biological immune system in some detail, and then grounded pattern relevancy with an artificial immune system example under development for a resilient cyber-network sense and sense-making application. A copy of the presentation can be obtained at: www.incose.org/enchantment/library.aspx.

February 2011—Chapter members who attended the 2011 International Workshop reported on the activities of the Model Based Systems Engineering Initiative, as well as the Systems Security Engineering and Requirements Working Groups.

March 2011—Paul McGoey, who has supported KBE efforts at Boeing since their inception in the early 1990's, presented *Knowledge Based Engineering in Aerospace (& other Industries): Definition, History, Value, Technology, and Resources.* Knowledge Based Engineering (KBE) is the capture, formalization, automation, and re-use of complex design processes and associated rules that are CAD-system independent and re-usable over decades of aerospace product life-cycles. KBE tools and techniques have been used for over 20 years at aerospace, automotive, and A&E industries. The presentation reviewed the concepts, history, value, tools, techniques, and future potential of KBE in supporting MBSE and leveraging open standards. Presentation at: www.incose.org/enchantment/library.aspx.

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Next Meetings

Mary Compton, Sandia National Labs

April 13: INCOSE Enchantment/UTEP Student Chapter Activities for 2011,
   Octavio O. Castellanos, *INCOSE-UTEP Student Division President*.
Abstract: The officers of the current INCOSE-UTEP student division administration would like to unveil their commitment to help our organization grow by providing our members novel ideas and services that had not been offered, until now. Throughout this academic term, INCOSE-UTEP looks forward to exposing students to industry workforce atmospheres by organizing activities including field trips, conferences and other opportunities for students to network. One notable development is the creation of the INCOSE-UTEP website where members and interested parties can get useful information and upcoming events can be reviewed. We are on schedule for the industry tours that had been proposed for the semester. Also, for the first time, INCOSE-UTEP is reaching out to the community to increase the exposure of high school students to STEM (Science, Technology, Engineering, Math) related activities by inviting a select group of students of a local high school to tour and network with us. As it is our goal to travel this semester, we are making extra efforts to search for funding sources among university contacts, supporting companies, and UTEP's Student Government. Our last administration started an ASEP Test preparation session for students seeking to graduate with the credentials of an Associate Systems Engineering Professional. Our intent is to continue this effort during the upcoming summer term. As an organization, we have purchased supplemental preparation material, in addition to the inclusion of different activities that buildup student achievement and employability. The INCOSE Enchantment/UTEP chapter takes pride in being a welcoming organization in which students and Professors are viewed as family in addition to their roles as mentors and leaders.

May 11: Architectural Patterns for Self-Organizing Systems-of-Systems,
   Craig Nichols, Senior Systems Engineer, L3 Communications.
Abstract: DoD has an increased focus on applying proven SE techniques to Systems of Systems (SoS), which provide more functionality and performance than the sum of the constituent systems. Tools and techniques are necessary to facilitate evolution of today's systems. One major need is the ability to develop agile SoS architectures. This presentation focuses on the most important characteristic of agile SoS – self-organization. First self-organization is characterized. Then four different SoS are reviewed for characteristics that support their self-organizing architecture: Ushahidi, Al Qeada, Swarm Robotics, and Self-organized learning Environments. These four examples are then abstracted as candidate SoS architectural patterns that may be useful for informing SoS architectural design.

June 8: On Developing a Knowledge Base for Collaborative Situational Awareness in Critical System Problem Solving,
   Glenn Fink, Ph.D., Senior Research Scientist, Pacific Northwest National Laboratory.
Abstract: Systems that depend on humans collaborating in real time to solve immediate critical problems have not had the benefit of data measuring the performance of situational awareness. Toward that end, cyber defense competitions arising from U.S. service academy exercises offered a platform for collecting data that might inform requirements for human system integration and for further research on behaviors during certain challenging situations, such as cyber defense situations. We conducted proof of concept experimentation to collect data during the Pacific-rim Regional Collegiate Cyber Defense Competition (PRCCDC) and analyzed it to study the behavior of cyber defenders. We propose that situational awareness predicts performance of cyber security professionals, and in this presentation we focus on our collection and analysis of competition data to determine whether it supports our hypothesis. In addition to normal cyber data, we collected situational awareness and workload data and compared it against the performance of cyber defenders as indicated by their competition score. ∞

Next Generation Security April 13 Las Vegas Forum
Rick Dove, Paradigm Shift International

A special track of nine papers will articulate perspectives, principles and patterns appropriate for a self-organizing system-of-systems security strategy that features systemic innovation and evolution enabled by holistic system architecture.

The idea for this track is to initiate collaboration among forward-thinking system engineers and security engineers, and to find common ground for a next generation system security strategy. The idea originated when the Enchantment Chapter considered hosting such a conference in Santa Fe, calling upon the area's rich depth in security engineering, systems engineering, and complex adaptive systems.

The ITNG conference offered an organized and affordable way to get this started.

Following the all-morning track on the 13th, an afternoon informal gathering will plot the next steps in broader community development. Your interested-presence is welcome.

More info: dove@parshift.com
http://itng.info/
Track Description
Conference Agenda

Membership Drive
Francis Peter, Management Science

The Enchantment Chapter is embarking on a membership drive.

If you are a former member but have not renewed your membership in INCOSE, we urge you to go to the INCOSE web page (www.incose.org) and click on RENEW in the upper right corner of the page.

To make the renewal process easier, you should have your membership number available. If you do not have it, please email fepeter@comcast.net and I will provide your membership number to you.

Those whose membership has lapsed can expect an email from Enchantment Chapter in the near future urging you to renew your membership.

Members who are aware of others working in the Systems Engineering profession but who are not members of INCOSE should feel free to encourage those people to consider joining INCOSE.

Benefits for INCOSE members can be found on the INCOSE web page (www.incose.org) and more information on Enchantment Chapter can be obtained from any Chapter officer. Contact information can be found at www.incose.org/enchantment/officers.aspx

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Resources

Video Glossary from Lawrence Berkeley Lab at http://videoglossary.lbl.gov/. Scientists from all over Berkeley Lab have put together this video glossary, with new entries weekly. As new terms arise, they want Berkeley Lab's video glossary to be your first stop for answers.

Flying android bird. You have to see it to believe it. Watch both the film and then the animation at www.festo.com/cms/en_corp/11369.htm. Inspired by the herring gull, SmartBird can start, fly, and land autonomously, with no additional drive mechanisms. Its wings beat and also twist at specific angles, with an active torsional drive mechanism. A true flying bird automaton built by German firm Festo, known for its systems inspired by nature.

TED brings Stuxnet decoded, the world's first weaponized malware. Though built to target Iran's nuclear production capability, it is now a generic template for mass attacks on system controllers of too many kinds. Watch now >>   ∞

Haiku Slam
Rick Dove, Paradigm Shift International

The Haiku challenge continues, started with a 3 line, 17 syllable (5-7-5) synopsis of the IS10 security panel results...
      standards in winter
      security is screaming
      self-organized spring

Jack Ring returns again, with...
      fog, pain, comes with STEM
      mind joy springs clear with SySTEM
      know, think, do is clue

Rick offers..
      architecture cold
      dragon drops in plug and play
      architecture hot

MILLIONS of DOLLARS COULD BE YOURS

Send your system engineering Haiku to dove@parshift.com. Look up Haiku rules here. Winners will be announced in the Q1 2012 newsletter as among the best of the 2011 submissions, and each will receive an NM lottery ticket for a real slim chance at $$$Multi-Millions.   ∞

New Chapter Members
Francis Peter, Management Sciences

Enchantment Chapter now has 102 active members. We would like to welcome the following new INCOSE members to Enchantment Chapter:

Mark J. Eifert	Wagner Power Systems
Jeannette M. Moore	Sandia National Laboratories
Bruce M. Nemetz	Honeywell Inc
Valerie J. Shulfer	Sandia National Laboratories
Steven L. West	Boeing Directed Energy Systems

The Enchantment-sponsored Student Chapter of the University of Texas at El Paso is doing well in its second year of operation, with 20 active members. We welcome the following new members to the UTEP Student Chapter:

Jorge A. Alvarez	Andres Gonzalez
Vania C. Larios	Hector I. Vazquez

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Complex Systems Course

An open short course on complex systems will be held May 23-25 at the University of New Mexico offered by the Santa Fe Institute. "Exploring Complexity in Science and Technology," introduces professionals from many backgrounds to the complex interactions that underlie social, biological, and computer behavior.

No prerequisites or specific background required in math or science. Participants will explore the broad realm of complex systems science, dynamics and chaos, networks, evolution, and agent-based modeling. They will learn to use these tools to understand complexity in biological, economic, social, and technological systems.

Information and registration: visit the Santa Fe Institute's website. Questions to Juniper Lovato, 505-946-2726, juniper@santafe.edu.   ∞

UTEP SE3 Day April 28-29 Sustainable Eco-Enterprise Engineering

Octavio Castellanos, Pres. INCOSE-UTEP

SE Day started in April 2009 at the University of Texas at El Paso under the new Systems Engineering Program. This year the INCOSE-UTEP chapter has joined the effort on the planning and organization of the event. The theme this year is Sustainable Eco-Enterprise Engineering, SE3.

The event brings speakers from different organizations, such as Lockheed Martin, Los Alamos National Laboratory, MIT, Raytheon, NASA, Sandia National Laboratories, FAA, INCOSE, and AT&T. The mission is to provide a forum for Sustainable Eco-Enterprise Engineering in the 21st century, through current research in academia and industry, and how UTEP students can benefit.

The event will have a poster competition, and a paper/poster related competition. Both have prizes of up to $1000.

To be held April 28th and 29th at El Paso Natural Gas Conference Center in The University of Texas at El Paso.

For more information please contact us at (915)474-8455 or rimes@utep.edu

IS11 in Denver, June 20-23

A beautiful drive away. Now is a good time to register. If you plan to attend please email Tom Tenorio by April 7 at tenoriot@gmail.com to let him know. Tom is coordinating the chapter's Region II participation and needs to provide status info for the MOA received from Region II. Tom is calling for volunteers to help, so let him know.
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Connect to Your Community of Practice

Chapter meetings with a focus on systems engineering are held monthly, usually 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 that are visiting the area for other reasons, and local (more or less) 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 4:45pm. After chapter news, announcements and introductions, the presentation and discussion generally lasts until 6:00pm, all carried live on Live Meeting for those who can't attend. Recordings are not made.

Tutorials with in-depth 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 and event notices routinely go to all INCOSE members within the Chapter's geographic territory; but Live Meeting connections, special notices, and collaborative opportunities are generally limited to registered Chapter members. Obtain chapter membership on the INCOSE web site by changing your profile or so selecting as you renew membership.
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