

INCOSE Spotlight on Terry Kuykendall, Ph.D.

Interviewed by Sandy Young, info@incose.org

Name: Terry Kuykendall, Ph.D.

Title/Organization: Vice President and Co-Owner at Evolve Engineering & Analysis, LLC

Place of Birth: Atlanta, Georgia, USA

Current Residence: Okaloosa Island, Florida, USA

Domain: Diverse systems engineering industries and applications

Studied: Engineering – nuclear (BS), environmental (MS) and systems (PhD)

Year joined INCOSE: 1997

Role(s) in INCOSE: Vice president, Huntsville Regional Chapter, 2002-03; first chapter president, Atlanta Chapter, 2004-06; author for “INCOSE Insight,” 2002-04; represents INCOSE as industry board member for Kennesaw State University’s graduate SE program, 2006-present; president, Emerald Coast Chapter, 2017-present.

Years in systems engineering: 35

When and how did you first hear about systems engineering?

It was in 1983 while I was working at a nuclear power plant in Florida. The plant was being modernized, and I was assigned from the Nuclear Chemistry Department as the systems integration/retrofit engineer to oversee installations and act as a liaison to the equipment vendors.

You’ve had an impressive career, working on systems engineering projects and programs for the Department of Energy, the National Laboratories, NASA, DoD, nuclear power facilities and international organizations. What advice would you give to systems engineers beginning their careers?

I recommend that young systems engineers seek opportunities to work across discipline lines and build bridges among diverse project groups. Additionally, they should learn as many problem-solving SE techniques and analytical methods as possible, and develop a personal toolset that can create opportunities beyond the traditional domain of the project systems engineer.

What are you working on today at Evolve Engineering & Analysis, LLC?

Probably my most interesting recent work is supporting the program on international security at the Center for International Trade and Security at the University of Georgia. I have been awarded the title of Senior Fellow and asked to address issues associated with the integration of nuclear security and safety requirements for a common purpose of worldwide nuclear facilities and materials protection, and for anti-terrorism planning.

As the president of the restarted Emerald Coast Chapter of INCOSE, what are your goals for the chapter?

Our immediate goals are to engage our prospective chapter members and build interactive participation in activities, including programs and speaker presentations. We have a

strong board of experienced systems engineers who have the skills and abilities necessary to make our chapter exceptional.

What tool or method is most helpful to you as a systems engineer?

I've used a wide spectrum of analytical tools as a practicing systems engineer, and all of these tools have been helpful and useful. I'd say that the one method that I (and probably most systems engineers) use most often is some form of requirements management process or method. For projects involving advanced and complex technology, juggling requirements and ensuring that relational associations are well defined is critical.

For me, I've gotten a lot of mileage in my career by applying systems engineering tools to solve an identified issue or concern within a project or assignment (e.g. FMEA, RAMI, FTA/ETA, etc.), and use of these tools has opened additional opportunities.

What do you consider to be the biggest advancement in systems engineering to-date?

I'd say it is the computerization and automation of complex processes and operations. Whether or not responsible discipline engineers realize it, they are all utilizing tools and aspects of systems engineering to integrate decision-based computer controls into electromechanical and chemical systems, and to optimize operations.

Complete the sentence: The biggest development in systems engineering in the near future will be ... "integration of artificial intelligence and cybernetics in biomedical engineering." In recent years, medical science has taken strides to increase the engineering content of medical research and education programs in ways that encompass the discipline of systems engineering. Artificial intelligence has already proven that it is the future of process automation, and I think the playing field has changed in the medical profession with the advent of possible incorporation of computer-based prosthetics and aides that can improve life.

How has INCOSE shaped your systems engineering career?

INCOSE has provided a forum for me to exchange ideas, keep up with new developments and maintain professional networks of associates, which otherwise would have been very challenging. The ability to stay abreast of ideas and practices in systems engineering as the body of knowledge grows has been invaluable.

What systems engineering topic or product would you like to be remembered for?

On a philosophical basis, I guess I'd like to be remembered as an enthusiastic proponent of inclusion of systems engineering into programs and projects that traditionally have been dominated by "stovepipe" discipline engineering management.

On a more practical basis, I suppose I'd like my legacy to include (1) being known for promoting safety and security as primary-level requirements that drive design, especially for high-hazard/risk design, and (2) my ongoing crusade to ensure that the "engineering" aspect of systems engineering isn't lost or subjugated as the field of systems engineering and the body of systems engineering knowledge seems to be expanding to encompass areas that are not engineering-based (e.g. project management, etc.).

What do you like to do outside of work?

My favorite personal indulgence is a life-long love of the guitar. I've played most of my life, and music has been integral (to drop a systems engineering reference!) to virtually everything I do. I'm currently renovating an old building to use as a recording studio.

Also, my wife and I are strong proponents of animal rights (we have three rescue dogs), and I'd like to encourage my INCOSE associates to adopt a pet that needs a home, and to contribute, if you can, to organizations like the Humane Society of the United States and others.