



# Midwest Gateway Newsletter

## International Council on Systems Engineering

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### President's Corner

William J. (Bill) Bezdek  
President MGC INCOSE

Dear Midwest Gateway INCOSE Members,

This is my last president's message for 2011. We are deeply moved by the loss of Bill Schoening. He is already being missed. We appreciate our previous treasurer, Mike Franco, for stepping in to help with the books. We had a very busy year with some excellent programs as well as an excellent Trade Study Workshop held at Washington University with a mix of student, SE experts and engineering professionals. Most of the presentations are online, so be sure to take a look at our chapter web site at: <http://www.incose.org/mdwest/index.htm>. Our outreach has been very active from working with St. Charles Community College on their general

(see *President's Corner cont'd...* on page 6)

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### Chapter Election Brings On New Board Members

As a result of the excellent slate of candidates and a good response from our membership (29% of 84 eligible members voted), our annual chapter election was a complete success. The new officers for the 2012 Midwest Gateway INCOSE Board of Elections are as follows:

President-Elect: Mike Mobley

Treasurer: Dale Waldo

Director 1 (12/13): Mike McCoy

Director 2 (12/13): Jake Hertenstein

They will join the returning board members to lead our chapter in 2012 under our new President, John Headrick. Current president, Bill Bezdek, will retain a seat on the board by transitioning to Past President. Outgoing members of the 2011 board are Director, Bill Beavin and Past President, Bob Scheurer.

### INCOSE/MSPE Trade Study Workshop

October 29th, 2011 - Washington University

MSPE and INCOSE sponsored a Trade Study Workshop at Washington University on October 29th. It was attended by 18 people, being pretty much equally divided between System Engineering experts, members, non-members and students. The use of system engineering principles and using cost as a discriminator early in a program can help control the life cycle cost. Four Professional Development Hours (PDHs) were awarded for taking the course. The photos are of the instructors Jim Carlson and Dale Waldo, both from Boeing in the Technical Fellowship. The professionals enjoyed working with the students and the students liked working with the professionals. The students attended as our guests.



Jim Carlson



Dale Waldo



### *INCOSE and MSPE participate in FIRST Lego League Events*

Several of our members participated in the FIRST Lego League (FLL) competition this year that was held at several schools in the area: Lindbergh High School, MICDS, St. Charles Community College, and Brittany Woods Middle the weekends of 11/11/11 through 11/20/11 and will participate in the Championship at Florissant Valley 12/4/11 as coaches, mentors and judges. In particular, Brian Beyer had 5 rookie teams from Nipher Middle School in Kirkwood, several of which will be competing in the State Championship.

We were impressed with the level of knowledge and hard work from the 9-14 year olds as well as their team spirit. They were judged in a Robot Design and Competition using the Lego Mindstorm Robot, they developed a project around the theme “Food Factor” and demonstrated their FLL Core Values. Several of the teams received a “Golden Ticket” to move ahead to the state competition. Others will be invited to participate in other events, like the “Robot Rage” held at Holt High School. There are a few photos from the competitions here and many more of the competition and additional information from this year and previous years on:

<http://www.firstlegoleague.org/challenge/thechallenge> and <http://www.stlfirst.org/> including information on upcoming other FIRST robotics events leading up to the “World Finals” again being held at the Edward Jones Dome in April of 2012.



Bill Bezdek manning the booths



The Pits – MICDS FLL Regional



Robot Competition – MICDS FLL Regional



Robot Rage, Holt High School



2010 Championship, FRC, Edward Jones Dome

**FIRST Lego League Events**



### *In Memory of Bill Schoening*



Bill Schoening passed away on November 5, 2011 at Missouri Baptist Hospital, St. Louis. He was 69 years old.

Bill started his career at McDonnell Douglas as an Operations Analysis intern in 1966 with degrees in Mathematics from Princeton and Northwestern. Following two years in the Army, he returned to McDonnell Douglas in 1970 and worked on advanced fighter programs (F-15, F-18, and A-12). He was a systems engineer with Boeing since 1992 when it was formally recognized, and was deeply involved in systems engineering for the second half of his 44 year career. He was a sought-after teacher and expert in systems engineering, having taught and consulted in Turkey, Taiwan, and Australia (along with the U.S.) Bill formally retired from Boeing on Oct. 31, 2011.

Bill was a Technical Fellow of Boeing, a Past President of the International Council on Systems Engineering (INCOSE International President in 1997), an INCOSE Fellow, a Founding Member of the Midwest Gateway St. Louis Chapter, the first elected President of the Midwest Gateway Chapter (1992), and was serving as chapter Treasurer at the time of his passing. He was an avid birder and juggler.

Bill leaves behind wife Sue Schoening (nee Swanson); son Rob Schoening (Christine Chen); grandchildren Oliver and Jack; sister Sandy Stern and brother Robert Schoening; and countless friends and colleagues. A Memorial Visitation was held Thursday, November 10, 2011 at LUPTON CHAPEL, University City, MO with a private burial. Contributions to St. Louis Repertory Theatre and St. Louis Audubon Society were received.



**MWG INCOSE visits St. Charles Community College**

The INCOSE Midwest Gateway Chapter again had an opportunity to brief David Niermann's General Engineering class at St. Charles Community College. This class provides the prospective engineering student with a lot of information on

different engineering opportunities and what the engineers do using guest lecturers. Bill Beavin, Bill Bezdek and Lou Pape were the presenters this time around and had good questions and comments from the students. Each presented a set

of INCOSE slides which describe system engineering and then talked about different projects each presenter has done. We appreciate the opportunity to make these presentation as part of our outreach program.



Bill Bezdek



Lou Pape



Bill Beavin

**Adaptability**

By Bob Scheurer

As a partner to my previous newsletter article on complexity, this newsletter's article is about "adaptability". We often are reminded of how important and sometimes difficult it is to adapt to a situation. Because we are faced with many changes in our lives – and at an accelerated rate it seems in today's age, it is critical that we adapt to the changes at hand. Of course, simply adapting to a change in our circumstances is usually easier said than done. Our families evolve from generation to generation, our work likely changes over time, our relationships can grow and decay from year to year, and even our financial status can rise and fall with dynamic market conditions. Hence, being able to adapt is not only a fact of life but can be necessary for survival.

Just as our lives need to adapt over time, the attribute of adaptability is becoming more relevant in the systems that our customers are asking for today as well. In regard to systems, adaptability is typically categorized as reliability, robustness,

modularity, and requirements adaptability. All of these attributes can help a system to endure in one way or another.

Adaptability to changes internal to a product may include the probability of recovering from malfunctions, partial failure, or being able to tolerate certain modes of failure. This type of adaptability is often referred to as reliability.

Another form of adaptability is an ability to respond to uncontrollable or unexpected external variations, such as changes in the operating environment, manufacturing, supply chain, availability of materials, etc. This type of adaptability is often measured by a robustness metric.

Adaptability may also entail a product's evolution or variety. In the systems world, this may be present in the form of mix and match modules to produce greater product variety, or a platform-based design with optional add-ons for additional functions, technology upgrade, or future capacity scaling. This type of adaptability is often referred to as modularity. (We see this in new

customer product requests called out in the form of "Modular Open-Systems Architectures".)

Adaptability to new requirements, such as variations in mission parameters, payload, range, weapons systems, etc. is yet another system-related principle. Since there are no conventional measures for this type of adaptability, it is typically referred to as requirements adaptability.

Regardless of whether we refer to adaptability as that in our own lives or as an attribute of the systems we develop, the value of adaptability cannot be understated. In fact, it was once stated by Charles Darwin that "It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is most adaptable to change."

**Quote of the Day**

The best way to adapt to change is to be the one who's changing things.

-- Jeff Tomchick,  
Manager of Learning  
Technologies at THINQ





***INCOSE Volunteer starts  
Nipher Robotics Club in Kirkwood***

INCOSE Member and Boeing senior systems engineer, Brian Beyer, decided it was time to bring FIRST robotics to the Kirkwood school district in 2011. He worked with the principal and teachers at Nipher Middle school to initiate a school club that would promote STEM education through hands-on learning utilizing the FIRST Robotics FLL program.

Brian has been an active INCOSE member for about 10 years and has been supporting Boeing’s [and INCOSE MGC] FIRST outreach efforts for over eight years now, but this time it was personal. Besides founding the club and recruiting 30+ students to create five teams in their rookie season, Brian coaches his son Cody (12 years old) and their all-boys, 7th grade team named “SHIFT Robotics,” Team 4763.

Three of the Five Nipher teams made it to the Eastern MO regional championships December 4th, 2011 at StLCC Flo Valley. The students have had a great FLL season developing their engineering, science, and math skills by building and programming their robots to perform complex missions while competing in the Food Factor Challenge.

Club Chairman: Brian Beyer Call: 314-984-0027 [brian.c.beyer@boeing.com](mailto:brian.c.beyer@boeing.com)



Nipher Middle School, Kirkwood, MO



The “Smarties” getting final round judging at the Dec 4<sup>th</sup> competition



Nipher Team “Unabashedly DORKS” gets their robot’s score during judging at the Dec 4<sup>th</sup> FLL Regionals



Team “SHIFT Robotics” gets judged during the “Robot design” portion of the Nov, 2011 Qualifiers at MICDS



Nipher Team “1.8 Update” competing their robot at Regionals



Nipher 8<sup>th</sup> Grade all girls Team “Smarties” selects a Robot program during the Dec 4<sup>th</sup> competition



Nipher 6<sup>th</sup> Graders from Team “1.8 Update” pose before their match



Team “SHIFT Robotics” gets a perfect score in “teamwork” at MICDS during Nov, 2011 Qualifiers



**MSPE/IEEE/INCOSE/Engineers Club Meeting  
September 29th, 2011 - Engineer's Club**

The September meeting was about the Structural Assessment Visual Evaluation (SAVE) Coalition Joplin EF-5 Deployment presented by Mr. Benjamin Ross, PE, PTOE 1 on September 29th at the Engineers Club of St. Louis. He and a group of

engineers went to Joplin to assess the damage and mark each building for occupancy. The SAVE Coalition objective is to assist the Missouri State Emergency Management Agency (SEMA) in the execution of its responsibilities with respect to the

use of qualified volunteers in the emergency assessment of buildings following a catastrophic event such as an earthquake, tornado, flood or manmade disaster which causes structural damages. They spent three days in Joplin.



Benjamin Ross (left) is presented an INCOSE "Thank You" plaque by Bill Bezdek

The goals of the Structural Assessment Visual Evaluation (SAVE) Coalition are to assist the Missouri State Emergency Management Agency (SEMA) in the following:

1. Implementing an emergency assessment of building conditions following catastrophic events.
2. Maintaining a Safety Assessment Administrative Plan for Volunteers to use in performing building and structure evaluations following catastrophic events.
3. Developing and managing an acceptable training and accreditation program for volunteers.
4. Maintaining a roster of volunteers by regions of the state.
5. Developing an "alert system" to contact volunteers and marshal these personnel to appropriate locations.

**President's Message cont'd**

engineering course, to coaching several team of 9-14 year olds on a program called FIRST Lego League (FLL). As you recall from one of our surveys, it appeared that children decide to enter Science Technology, Engineering or Math (STEM) about that time and by high school many know what they want to do later in life. Perhaps we made a small impact. When we had a booth at the Science Center during their robot day, which I understand was attended by up to 5000 students and adults, I don't know how many of them from 5-65 would say "they love LEGOs" to each other or to me. See a separate article on our FLL activities. To get a little more name recognition, we have cosponsored programs at the Engineer's Club, with the Missouri Society of Professional Engineers (MSPE) and the American Society of Civil Engineers (ASCE). Your new board will be installed on Thursday, 8 Dec. at our Appreciation Night. We

are pleased and excited to have John Headrick as the new president. Our chapter's strength and success is directly related to the involvement of members in chapter activities. We appreciate everyone who is involved at whatever level possible. These are challenging times to say the least, but being involved in a professional

society, whether it be at local or international levels, is an ideal way to network with others and overcome the challenges together. Thank you for attending different events, working on projects, attending the workshop and all the things we need. Have a happy holiday and a wonderful new year.

**INCOSE MWG 2011 Board of Directors**

**President:**

Bill Bezdek  
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