Midwest Gateway Newsletter

International Council on Systems Engineering

President's Corner

Dear Midwest Gateway INCOSE Members

As my 2007 term as President of your Midwest Gateway INCOSE chapter begins to wind down, I want to take this opportunity to solicit ideas from the membership as to how the chapter officers and the Board of Directors can better serve your needs. Any suggestions about future chapter meeting topics or activities that you would like to see or about ways the chapter can assist you with systems-engineering-related resources would be greatly appreciated. We want to make sure that the chapter continues to reach out to and serve you, our members.

Mason Myers,
Chapter President
Midwest Gateway INCOSE

Upcoming Elections offer Opportunity to Influence

The Midwest Gateway Chapter of INCOSE will be having its annual fall election in the next few months, providing an excellent opportunity for interested members to have a larger voice in the organization. Elections will be held for four Board of Directors (BoD) positions: President-Elect, Treasurer, and two Directors.

The office of **President-Elect** is a three year time commitment that progresses through a series of duties. This office is up for election every year.

The office of **Treasurer** is a BoD position of Director and is a two year term. This office is up for election every other year. The next term for treasurer is for 2008/2009.

There will be two **Director's** positions on the ballot. Two directors positions are up for election at every annual chapter election and they serve two year terms. The two positions are for 2008/2009.

If you are interested in any running for any of these positions for the Midwest Gateway Chapter of INCOSE this fall, please contact Bob Scheurer for more information. Additional insight regarding the duties involved in these positions as well as the descriptions of other BoD positions can be found in a related article "**Chapter Leaders Perform a Variety of Duties**" in this newsletter.

More information on the upcoming elections will be e-mailed out to the MGC membership as the time approaches.

The current Midwest Gateway BoD membership can be found on the last page of this newsletter or on the web at http://www.incose.org/mdwest/directors.htm

What Side of the Equation are You Working On?

By Robert Scheurer

Engineers solve problems. Systems Engineers and systems engineering find the best solution(s) for the problem. These statements convey the essence of how systems engineering is differentiated from engineering and ultimately adds value to the problem-solving process of engineering.

Problems can be solved in a variety of ways, some better than others, of course. In spite of the temptation, the first solution to a problem is often not the best one to employ – for any number of reasons. Consequently, systems engineers ask lots of questions to make sure that the right requirements are being defined to bound the right problem. Then, they think in terms of the functionality that's being described in the problem to learn what the customer is really needing or asking for. Finally, one or more solution opportunities may be presented which embody most or all

INCOSE
International Council on Systems Engineering

System Engineering with a Servant's Heart

Written by Marcos Chu. Contributions by Lou Pape

On the hottest day of the year so far, I met with Lou Pape, a newly appointed INCOSE Midwest Gateway Chapter Ambassador for Francis Howell School District. We were going over our strategy for K-12 outreach at a lunch meeting. As we were talking, I mentioned that I just took a part-time job at a retail hardware store as a new Electrical Sales Associate. As a sales associate I am responsible for helping customers purchase light fixtures, ceiling fans and many other do it yourself electrical components. I mentioned to him how at times I felt "overqualified" for the job since I am an engineer by background, especially since many others would say the same thing when I mentioned my new "gig". On the other hand, I also occasionally felt "under qualified," because the relevant customer satisfaction issues were sometimes color schemes, or architectural and decorating style matches where I had far less training.

Lou is a system thinker who was able to see this opportunity with a different perspective. He talked about a Venn diagram approach to the question, and how my Electrical Engineering experience has very little overlap with my Electrical Sales experience so far. But as I learn to integrate my new electrical sales experience I will become a better Systems Engineer because I will learn to examine more aspects of a problem before I offer a solution. The style and color aspects of a solution were sort of beneath my notice as an aerospace engineer, but suddenly become far more important to a new class of customers, the homeowner.

Got an Idea?

How to Contribute to this Newsletter

This Newsletter is published four times a year, with the goals of

- keeping chapter members informed on upcoming programs and events
- providing technical articles of interest to chapter members
- stimulating discussion on systems engineering issues

The Newsletter staff is always looking for good articles, information on the technical issues Systems Engineers face on a daily basis, questions you'd like answered about the chapter or the International organization, and topics on which you'd like more information.

You can reach the newsletter editor Steve Recker at 314-545-6338. Contributions of articles or announcements, and letters to the editor can be sent to Steve Recker at steven.recker@incose.org.

Articles in Microsoft formats are preferred, but we can use text originating from most word processing formats. For graphics, we can work with, jpg, gif, png, or most other standard graphical file formats. If you have any questions about format, please call. Also, please include your name, e-mail and phone number in all correspondence.

INCOSE MGC Sponsors FIRST Robotics Teams

The Midwest Gateway Chapter of INCOSE is proud to have sponsored three teams in the FIRST Robotics competition for 2007 with $250 cash awards each. (FIRST stands for: "For Inspiration and Recognition of Science and Technology". See http://www.usfirst.org/) This sponsorship represents an ideal way for captivating young minds on the excitement of technology and merits of Systems Engineering at the impressionable high school age. Thanks to three of our Midwest Gateway Chapter members, Lou Pape, Marcos Chu, and Teresa Camp for their involvement with FIRST on their respective teams and competing for our sponsorships. Lou, Marcos and Teresa are engineers at The Boeing Company.

Photos courtesy of Marcos Chu

INCOSE Member Lou Pape (on right) presented Paul Guidoni (on left), President of FIRST Robotics with an INCOSE MGC lapel pin. Lou is the INCOSE Midwest Gateway Chapter Ambassador and Mentor to the Francis Howell Team.

Paul Guidoni talking to INCOSE member Lou Pape and St. Louis FIRST Robotics Planning Committee Member Henry Graham.

Chapter Leaders Perform a Variety of Duties

By Steve Recker

Adapted and updated from an article originally written by Carol Wilke, former INCOSE MWGC Director, Volume 6, Issue 1, March 1997

The Midwest Gateway Chapter of INCOSE consists of the general membership and a Board of directors. The Board of directors meets monthly to direct the affairs of the chapter. The board consists of nine elected officials:

- President
- President–Elect
- Past President
- Secretary
- Treasurer
- 4 Directors

and several standing and ad hoc committees. Chapter elections for officers of the chapter are held in the fall of each year, with the new Board taking office in January of the next year.

Members of the standing and ad hoc committees are appointed by the president and approved by the Board. Here's a quick synopsis of each office and committee.

The Board

President / President–Elect / Past President

Election to the office of president is a three year commitment. When elected, the member first serves a year on the Board as President – Elect. Duties for this position include those normally associated with a vice-president position – i.e., stand in for the president when the president is unable to perform the required duties. In addition, the president – elect provides general supervision of all chapter standing committees and working groups. After one year, the president-elect becomes the president of the

chapter. At this point the duties include general supervision of chapter affairs, presiding at chapter and board meetings and representing the chapter to the larger body of INCOSE. In the third year, the then president becomes the past-president. The main duties of the past-president are to supervise the chapter's ad hoc committees, including the Nominations committee, and to serve as the chapter's historian.

On the current Board of Directors, Marcos Chu serves as president-elect, Mason Myers serves as president, and Bob Scheurer serves as past-president.

Secretary

The office of secretary is a two year position on the Board. The secretary prepares minutes of all chapter and board meetings, maintains the permanent records of the chapter, prepares the chapter calendar, and prepares the chapter's article for the INCOSE publication INSIGHT. The secretary also receives and distributes the chapter mailings from the International Board.

On the current Board of Directors, Tariq Ashraf is serving as secretary through the end of 2008.

Treasurer

The treasurer of the chapter also serves a two year term. The primary duties, are of course, financial in nature, and include preparing the yearly chapter budget, receiving all funds paid to the chapter, maintaining financial records and paying bills, and serving as the point of contact with the International Board on financial matters. The treasurer also serves as the main point of contact with the International Board for membership services and chairs the Membership committee.

The terms for secretary and treasurer are staggered by one year, so that the chapter will elect either the secretary or the treasurer at each annual election. On the current Board of Directors, William Bezdek is serving as treasurer through the end on 2007.

Directors

The four directors provide general oversight of chapter affairs and help implement chapter policies and events. Each director is elected for a two year term, with two directors up for election at each annual chapter election. The chapter directors are the direct representatives of the chapter membership, and serve as ambassadors for INCOSE and our local chapter in the local community. The current directors and their term of office are:

- Al Bruns, serving through 07
- Steve Recker, serving through 07
- Brian Beyer, serving through 08
- Steve D'Urso, serving through 08

The Committees

The Midwest Gateway Chapter has four standing committees:

- Ways and Means
- Communications
- Programs
- Membership

And two ad hoc committees:

- Nominations
- Audit

In addition, the chapter by-laws allow for the establishment of working and interest groups to work particular systems engineering issues.

Standing Committees

The **Ways and Means** committee is chaired by the president-elect. This committee has responsibility for

Chapter Leaders…

maintaining the chapter constitution and by-laws, and considering other rules of chapter business.

The **Communications** committee is responsible for publishing the Midwest Gateway newsletter and notices of chapter programs along with managing the chapter website.

The **Programs** committee plans and coordinates chapter program meetings. This committee, appointed by the chapter president, prepares a master schedule for the year, contacts speakers or instigates preparation of special programs, arranges halls and dinners, and manages the programs budget.

The Membership committee is responsible for recruiting and retaining individual and corporate chapter members. This committee, chaired by the treasurer, serves as the point of contact with the INCOSE Membership committee.

Ad Hoc Committees

The **Nominations** committee is chaired by the past-president, and is responsible for managing the chapter elections. This committee is created in the latter half of each year to seek qualified candidates for each office, prepare and present the candidates to the chapter membership, conduct the elections and collect and tabulate the results.

The **Audit** committee is responsible

for conduction an annual audit of the chapter's finances. The committee consists of three chapter members that do not serve on the Board of Directors. The committee members are appointed by the president. Audits are generally done in late in the fiscal year to supply data needed by the international Board at their fiscal year-end.
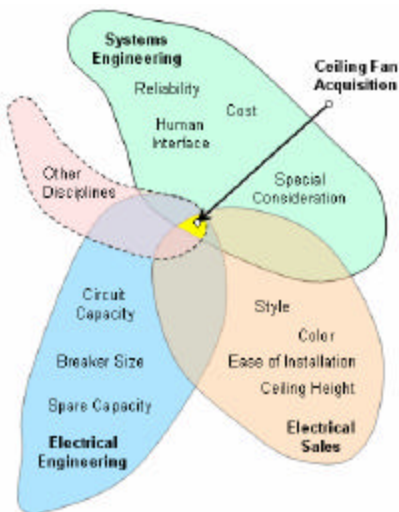
Working and Interest Groups

Each of the committees is constituted to help the chapter run smoothly. Working and Interest Groups, on the other hand, are the vehicles for technical systems engineering work to be performed by the chapter for the benefit of its membership.

SE with a Servant's Heart

After our conversation I had the following model in my head (see diagram below). As I was driving back I have been thinking about all the new things I learned as I worked at the hardware store and how it integrated with my work as a systems engineer. It came to me

that a systems engineer is a leader who is a steward of resources such as people and technologies which must work together to develop a balanced solution from all perspectives. Some of these perspectives may not occur to you until you are brought up short by a demanding customer. The savvy systems engineer tries to think through a problem, and the solution, from many perspectives, to achieve not only a balanced solution, but also a robust one. An example that comes to my mind is when customers at the Hardware store ask me about ceiling fans. Now, in addition to thinking about the electrical aspects of the problems (do they have pre-installed wiring) and mechanical aspects (do they have ceiling braces installed), I also need to think how the fan system will impact other systems in their house, such as the home décor (Would they need to repaint the room in which the ceiling fan would

be installed?) or their existing ventilation system . As I continued to ponder if I was overqualified for this position, it made me think about a scripture passage in the Bible in the book of Matthew: "So the last will be first, and the first will be last." The scripture brings to my mind that sometimes I think as an engineer I am too smart to learn anything from my retail sales experience. I have learned an important lesson that I need to respect the rest of the universe. I have learned that things I didn't think much about were really important for some applications, and it is necessary to listen to the customer to really understand his needs. Listening is a very important part of the systems engineering process and that my retail sales opportunity gave me a "front-line" experience to hear from the customer.

[Marcos Chu has resigned from his part-time job as of August 16, 2007 to pursue other opportunities.]

How Not to Think About Risk Management

While the following commonly-heard comments associated with risk management came from the software community in the Little Bo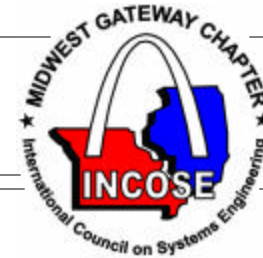ok of Bad Excuses written by the Software Program Managers Network, so many of them can be generalized to apply to risk management in general that we thought we should pass them along. As systems engineers, we should be advocates of the importance of proactive risk management and we should ask ourselves how we would counter each of these statements.

- We have no risk.
- Give us an hour and we'll tell you our top ten risk items.
- Making risks public will kill the program.
- The customer goes ballistic whenever he/she hears of a potential problem.
- We deal with problems as they arise.
- My customer doesn't want to hear that he/she is the source of risk.
- Identifying risks is bad for my career.
- This is development—why should we worry about supportability and maintainability risks?
- How can you predict what will happen a year from now?
- Our planning horizon is six months.
- No one on the staff knows how to do risk management.
- We plan to start implementing risk management next year, after we define the process and train the staff.
- Our job is to develop software, not fill out bureaucratic forms.
- The commercial software industry doesn't waste time on risk management.
- We don't need a separate risk management program because we have frequent technical interchange and Integrated Product Team (IPT) meetings.
- If I gave a realistic assessment, no one would listen.
- That external interface is not in our risk management program because the interface is not our responsibility.
- Using that tool is not a risk. The vendor's salesman said so.
- That method is proven and therefore not a risk. The speaker at the conference said so.
- People outside the project who don't understand the context will invent worst-case scenarios.
- The program is too small to do risk management.
- Corporate management won't buy in.
- My tech people will rebel if we identify as a risk betting our success on an unproven new technology.
- My tech people will rebel if we identify as a risk a lack of skills needed to do development.
- We have no cost or schedule risk because new technology will enormously increase our productivity—by five to ten times.
- New technology we have never used before will mitigate the risk.
- We have to bid the lowest cost to win; we'll worry about doing the job when we get it.
- If we bid everything we do, we would lose the project. It's a delivery-order contract.
- We can't identify risks based on industry metrics because our process is different.
- You have to cut corners to win the program.
- We don't mitigate software risk in systems engineering trade studies for embedded systems because software is only a component of subsystems.
- Our methodology is Rapid Application Development (RAD), so we have no schedule risk.
- Our methodology is evolutionary development, so requirements volatility is not a risk.
- We don't include anyone from our hands-on software development staff in risk identification because we have hired an outside consultant as a risk expert.
- We don't include anyone from our hands-on software development staff in risk identification because our managers are using a generic risk database to identify risk.
- A prime contractor is not behaving like a prime if people from a subcontractor organization participate in risk identification.
- There is no risk in the planned big increase in our software staff because of the large layoffs by defense contractors during the past few years.

What Side of the Equation …
from page 1

of the needed functionality in a form which can be affordably delivered to the customer while satisfying their stated requirements.

Of course, the sequence of listed activities for applying systems principles and systems engineering to a problem leaves out significant detail. However, if we stay focused on these fundamental principles of systems engineering, our day -to-day tasks may be more clear as we understand what side of the equation we are working at any given time; i.e., are we working on defining the problem more correctly or are we working on finding the best solution … or both)?

Have you visited the INCOSE Midwest Gateway Chapter website lately?
http://www.incose.org/mdwest/

2007 Board of Directors

President:
Mason Myers, Jr.
mason.myers@incose.org

President-Elect (Vice President):
Marcos Chu
marcos.chu@incose.org

Secretary (07/08):
Tariq Ashraf
tariq.ashraf@incose.org

Treasurer (06/07):
William Bezdek
william.bezdek@incose.org

Directors (07/08):
Brian Beyer
brian.beyer@incose.org

Steve D'Urso
steve.durso@incose.org

Directors (06/07):
Al Bruns
al.bruns@incose.org

Steve Recker
steven.recker@incose.org

Past President:
Robert Scheurer
robert.scheurer@incose.org