

The Integrator

INCOSE North Star Chapter



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North Star Newsletter

INCOSE North Star Newsletter Communication

This month's newsletter features Sarah Sheard, Third Millennium Systems. Sarah Sheard is an INCOSE Fellow and prolific author.

Eileen Arnold, Editor, BAE Systems

*"When we design systems and applications,
we are, most essentially,
designing scenarios of interaction."*

John M Carroll

Systems Engineering at its Best!

The Words Are Not the Concept - **Sarah Sheard**

You can't call it a SEMP (Systems Engineering Management Plan) anymore. You have to call it a SEP (Systems Engineering Plan). You can't say 'metrics' anymore. You have to say 'measurements'. It seems that every week, a new word impinges upon the language of systems engineering. A good systems engineer will strive to understand and communicate these words.

Unfortunately, many people do not take the time to figure out what the difference is between what they know already, as expressed by current vocabulary, and what they do not now know, as suggested by the creation and use of a new word. The whole point of a new word is usually to force discussion on a new concept. But busy people often do not honor that intention. Instead they look for a concept they already know and paste the new word onto it.

Here are two examples of new concepts which one would miss if one did not do the work of understanding what is meant by a new word.

Capabilities: In the last five years the US Department

Chapter President's Corner

Neill Radke, Eaton Corporation and John Palmer, U of Minnesota, 2008 Co-Presidents

The 2008 North Star program is off to a very successful start and is well underway. The chapter has adopted a theme of "Back to the Basics" with emphasis on the activities performed across the systems engineering life cycle. Our intent has to been to have speakers who can provide our membership with real takeaways that can be readily applied to our day-to-day systems engineering activities. At the last meeting, which is definitely the highlight of the year so far, Ronald J. Voelker discussed his thoughts behind the recent I-35W bridge collapse, and Peter F. Sanderson, Flatiron-Mason's Project Manager, discussed the ongoing construction of the new bridge. A special thank you goes out to both speakers! Look for more interesting topics to be discussed at our meetings later this year.

The Chapter has also recently held the first of two tutorials. The tutorials are a key part of the annual program, and provide opportunities for our membership to brush up on their systems engineering skills. Lou Wheatcraft from Compliance Automation provided the attendees with valuable insight into "How to Write Good Requirements". A special thank you goes to Lou for presenting this tutorial!

As mentioned in the last issue's President's Corner, the foundation of a successful chapter includes active participation of the membership. While everyone enjoys attending an interesting meeting, we also challenge our membership and other meeting attendees to get involved in what we do. We need new participants with new ideas to be able to continue to offer exciting topics at our meetings. Feel free to "Raise Your Hand" and get involved in giving back to the chapter so that other may take away. Come join us!

North Star Chapter Website
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of Defense has changed its acquisition emphasis, as suggested by the slogan “Capabilities, not Requirements.” Some are puzzled by the change in words; indeed, the government is asking what functions the services need to provide. One could easily call these system requirements, if one considered the entire service to be the system. So is the distinction just gobbledegook? Or is there a reason for the new word, “Capabilities”?

In this case, services had historically stated their needs in the form of developed technological systems, such as 3 ships or 6 airplanes. They called this list their requirements. Use of the word “capabilities” was a movement toward a different concept. “Don’t tell us what technologies you want, tell us why...what are you trying to accomplish, what functions do you need to fulfill...those are your capabilities. When you ask for developed technological systems, you will need to show us how those systems meet the [required] capabilities, (your required system [agency or service] functionality).”

In this case, proper use of words has clear consequences: those who do understand the distinction between the previous word and the new word have been more likely to get their programs funded.

Metrics: During the development of PSM (*Practical Systems and Software Measurement*) and the related ISO 15939 standard (*Software Engineering - Software Measurement Process*), the term “metrics” was up for discussion. Authors eventually decided not to use “metrics” at all because the term had many meanings, and it would be too difficult to clarify with each use of the word that we mean “business goals” here and “raw data” there. Instead, a vocabulary was created that helped clarify the different shades of meaning, including “attribute”, “base measure”, “derived measure,” and “indicator”. Although the word “measure” applies to more of the mixed-up meanings of the word “metrics” than other words, “measure” intentionally applies only to some of the meanings. Thus anyone who says, “You have to change the word ‘metrics’ to ‘measurement’ because that’s the new fashionable term” is displaying ignorance of the many varieties of the term “metrics,” and does not know to which one he or she is really replying.

“A slash is a symptom of sloppy thinking,” stated IBM Technical Editor Truly Donovan. Similarly, “Substitution of an old word for a new word is a symptom of lazy thinking”. Those who hear new terms and look for simple meanings of the terms are engaging in simplistic and lazy thinking, and will prove themselves either wrong or as a minimum, naïve.

What to do instead: When you hear a new term, ask for clarification about how the term differs from terms currently in use. Ask not only the first person who uses

the new term, but multiple people. You can gauge how well-understood the new term is by how congruent are the multiple answers you receive.

Per Richard Feynman, if you really understand a concept, you can draw it simply. Try to produce a graphic that shows how the new terms overlap and differ. Then you will not only know what you’re talking about, you’ll be able to help others with different definitions understand everyone else. Isn’t providing language to a project a function of systems engineering?

WELCOME, NORTH STAR NEW MEMBERS!

Name	Company	Job Title
Robert Orange	MTS Corporation	Project Engineer
Chris Polson	Taxi 2000	Chief Engineer
Juliana Pronovici	Medtronic	Sr. Systems Eng
Brian Littman	Beckman Coulter, inc.	SE and Reliability Mgr

2008 Meeting Calendar

Date	Topic/Theme	Location
10 April	Architecture	U of Minnesota
8 May	Implementation & Symposium Papers	U of St. Thomas
12 June	INCOSE International Symposium	Utrecht, Netherlands
10 July	Tour, Social & Debrief	TBD
14 August	Integration	Boston Scientific
11 September	Verification & Validation	MTS
9 October	Operations & Maintenance	UPS
6 November	Risk Management	ATK
14 December	Member Holiday Party + Guest	TBD