

# The Integrator

INCOSE North Star Chapter



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## North Star Newsletter

*INCOSE North Star Newsletter Communication*

Are you finding the time to read The Integrator?

As busy as you are, we hope to provide you with a usable, concise source of Systems Engineering information in *The Integrator*. Contact [Eileen.Arnold@incose.org](mailto:Eileen.Arnold@incose.org) to contribute articles, topic suggestions, and usable information for our members.

**Eileen Arnold, Editor**

## Systems Engineering at its Best!

*Early Validation*

Any seasoned Systems Engineer realizes the importance of validation in the Systems Engineering Life Cycle. Development of a Validation Plan provides the capture medium and helps focus thoughts as to the extent and intensity of effort to be expended in the end-to-end validation process, given the budget, schedule, risk assumption, and expertise of the culture performing validation. Important in this plan would be an understanding and capture of "who does what, when, and how". The "who" is defined in terms of role assignments, e.g. Quality Assurance Engineer, Test Engineer, and Customer. The "what" is defined by the

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## Quotable Quotes

"You don't have to be a "person of influence" to be influential. In fact, the most influential people in my life are probably not even aware of the things they've taught me.

” -- Scott Adams, Dilbert Cartoonist

## Chapter Presidents Corner

*Wrap-up of 2005 North Star Chapter*

Paul Maggitti  
GD-AIS

Throughout 2005 we have had a great variety of events that met the varied needs of our members. Here's a recap:

January – SE Management – IPT Panel by Rob Dahl, Paul Frenz and Bob Hunter

February – Personal rapid transit by Dr. J. Edward Anderson

March – SE Cost Estimation Model – COSYSMO by Paul Frenz

April – Integration and Test by Bill Putnam

May – From Mil-Spec to COTS by Harvey Taipale

June – Symposium Paper review (by Paul Frenz) and Movie

July - International Symposium – no chapter meeting

August – Moscow on the Hill Summer Social and Symposium Debrief

September – Munition Safety by Bob Hunter

October – Honeywell Advanced Electronics Automotive Inertial Development by Randy Hartman

November – The Transfer of technology – How is it Done by Different Companies? By Eric Anderson, Joe Palmiter, Harvey Taipale and Randy Hartman

December – Holiday Party at Eileen Arnold's Home

extent of validation and to what products validation will be applied. The “when” is defined in terms of the timing, and linked to project milestones or phases of the Program. The “how” captures validation satisfaction in the form of approvals, acceptance, flight test, or modeling and simulation. Consideration of more than End System or End Item Validation is critical for most Systems, products, and services regardless if the intended environment is a Commercial, Medical, Military, or Aerospace application.

Planned Early Validation reduces the risk in the System of Interest. Performing validation early in the life cycle, not waiting until the Systems of Interest is delivered:

- uncovers unacceptable surprises to the Customer early in the Life Cycle
- uncovers unintended function early on
- uncovers budget and schedule risks early on
- keeps failures to a minimum

End System Validation definitions are better known than that of Early Validation. End System Validation is often considered to be the last step in the Systems Engineering Life Cycle. If applied to the Customer acceptance of the final product or System, Validation answers the question, “Did we build the right thing?” A critical differentiation between End Systems Validation and Early Validation is the former must be performed in the Systems intended environment. Early Validation is performed early in the System Life Cycle, prior to the System availability through conceiving and modeling.

Most development efforts employ validation techniques, although not planned or even recognized as Early Validation. Specification of requirements occurs early in the System life Cycle. Engaging the Customer and internal stakeholders (verifiers, higher level management, marketers, other disciplines, etc.) at inception of the requirements helps eliminate surprises. Work with the Customer and Stakeholders to gain their approval, tweaking the requirements to fit the need within the scope captured in the Validation Plan.

Use models, peer reviews, inspections, prototypes,

asking the question, “Are we building the right product?” Assess error tolerance early in the life cycle, including hazard identification and analysis.

Validating Customer agreement early in the life cycle can be tricky as the Customer 1) May not know what they want, and 2) Is usually not a single voice. Consider measuring Customer opinion, based on approvals and surveys early in the life cycle.

Early validation is a proactive approach. Waiting until end-system validation, developing a product in a vacuum then expecting the Customer to accept it as-is, is a high risk proposition. Using Early Validation techniques will help ensure Customer Satisfaction and buy-in early in the management of expectations.

**Eileen Arnold**  
BAE Systems L.P.

SEE WEBSITE FOR MORE  
INFORMATION AT  
[HTTP://WWW.INCOSE.ORG/NORTHSTAR](http://www.incose.org/northstar)

### International Symposium 2006

The 2006 INCOSE International Symposium: July 9-13!



### WELCOME, North Star NEW Members!

Last	First	Title	Company
Akpan	Emem	Sr. SW Eng	Medtronic Inc.
		Sr. Proj.	
Petri	Ronald	Mgr	Medtronic Inc.
Rao	Naren	SE	Medtronic, Inc
Schneider	Steve	SE Director	ATK
		VP Mission	
See	Brian	Assurance	ATK
Sullivan	Abbey	EE	ATK
			Goodrich Cargo
Tweten	Daniel	SE	Systems