



# NEWSLETTER

Vol. 2: Issue No. 6

December, 2004



## UPCOMING EVENTS

### Dinner Meeting

Tuesday, January 18, 2005

Standard Approach to Trade Studies

Arthur Felix

Naval Air Systems Command – Weapons Division

### Location

The Aerospace Corporation

### Time

Networking 5:30 pm  
Presentation 6:30 pm

### Dinner Meeting

Tuesday, February 8, 2005

AP233: A Data Exchange Standard for  
Systems Engineering

James U'Ren

Jet Propulsion Laboratory

### Location

JPL  
Von Karman Auditorium

### Time

Networking 5:30 pm  
Presentation 6:30 pm

### Tutorial

March 5, 2005

TRIZ — The Ultimate Systems Engineering Tool

Zinowy Royzen  
TRIZ Master

### Location

Radisson Hotel at the Los Angeles Airport

### Time

8:00 am - 5:00 pm



## FAA Releases CMM Extensions For Safety and Security

Scott Jackson

[jackessone@cox.net](mailto:jackessone@cox.net)

Two important issues have dominated the public consciousness in recent years: terrorism and the string of disasters, such as Challenger and Columbia. These issues are the context for the new document published by the FAA, in cooperation with the Department of Defense (DoD), called *Safety and Security Extensions for Integrated Capability Maturity Models*.

The purpose of the project was to provide a set of criteria which may be eventually incorporated in other capability maturity models (CMMs), such as the FAA-iCMM and the CMMI. The document harmonizes other models, such as the Systems Security Engineering Capability Maturity Model®, SSE-CMM®.

Most importantly, the model places its emphasis, not on the design of systems (although that aspect is not neglected), but rather on the human-intensive infrastructure system that designs, deploys, operates, and maintains the systems.

A wealth of literature has appeared in recent years that demonstrates that the root cause of most major disasters is organizational rather than design-based. James Reason's *Managing the Risks of Organizational Accidents* (Ashgate, 1997) is a good example. An early examination of this topic was Elisabeth Paté-Cornell's article "Organizational Aspects of Engineering System Safety: The Case of Offshore Platforms," *Science*, 1990.

The avoidance of disasters has come to be known as *mission assurance*. The FAA model addresses both the design and infrastructure aspects of mission assurance.

While the design aspects of system vulnerabilities are apparent, the infrastructure aspects are much more difficult to characterize for two basic reasons: First, the treatment of the infrastructure as a system is much less mature than the design aspects. The reason for this is that the infrastructure system is human-intensive, and human-intensive systems are not easy to synthesize or verify. Secondly, no one owns the whole infrastructure system, that is to say, it is a system of systems.

It is impossible to summarize the entire document here, but certain aspects stand out. The first part addresses safety and security application. There is an emphasis on competency, on information and reporting processes, on risk analysis, on regulatory compliance, on the development of safe and secure products and services (this is the design area), on product evaluation, on the oversight of suppliers, and on the monitoring and control of products and services.

The second part discusses the work environment. In this area

requirements are laid out for work environment standards, qualification of components, qualification of personnel, technology awareness, and environment continuity.

Such is the importance of risk that three sections are devoted to it. These include the classical steps of risk identification, analysis, prioritization, mitigation planning and monitoring.

Another area that stands out is monitoring and control. A key part of monitoring and control is a robust independent review process. This is one area the Challenger review team cited as being a critical necessity.

One cannot overstate the importance of this document. It is imperative that its provisions be incorporated as soon as possible into all models. You can read the entire FAA model extension by visiting the web page: [www.faa.gov/ipg](http://www.faa.gov/ipg)

Note: Scott Jackson is an INCOSE Fellow. His paper "Attributes of a Managerial and Organizational Infrastructure to Enable Safe Systems," which addresses the synthesis of a human-intensive system to achieve mission assurance, was presented at INCOSE 2004.

## Dinner Meeting

Tuesday, January 18, 2005

**Location:**  
The Aerospace Corporation

**Time:**  
Networking 5:30 pm  
Speaker 6:30 pm

**Cost:**  
Members-Free  
Guests-\$10.00

### Standard Approach to Trade Studies

*Arthur Felix*  
*Naval Air Systems Command – Weapons Division*

**ABSTRACT:** This presentation will provide valuable information regarding the steps for performing and documenting a trade study (i.e., a trade-off study), developing products for the Decision-Making Authority (DMA), and guidelines for tailoring trade studies to meet the needs of specific programs. The trade study process model that will be presented is a series of steps used to transform subjective data into more quantitative information for the DMA to use in the decision-making process. Each step in this process model is designed to alleviate problems that have been identified in past trade study models. The process model presents a framework and structure that are centered on the familiar summary matrix to help document the thinking process in more quantitative decision-making terms. Within the

process model, standard terms and definitions are used, roles and responsibilities of the participants and decision-makers are documented, and a suggested flow is illustrated. The proposed trade study process meets Level 3 'Decision Analysis and Resolution' requirements of the Capability Maturity Model Integration (CMMI@ <http://www.sei.cmu.edu/cmmi/>).



**BIOGRAPHY:** Arthur Felix currently works for the Avionics Department at the Naval Air Systems Command – Weapons Division, Point Mugu, California. In a previous position, Art was a Systems Engineer for Boeing and part of their Best Practices Assessment team. In that role, Art was the Systems Engineering Subject Matter Expert on trade studies.

Art comes from California having received his Bachelors of Science in Electrical Engineering from California State University, Long Beach, and a Masters of Science in Systems Management from the University of Southern California, Los Angeles. With over 27 years of engineering experience, Art has worked for several major Aerospace employers. Art is also serving as a Commander in the Navy Reserves as an Aeronautical Engineering Officer. His breadth of experience and knowledge has exposed him to various aspects of systems engineering and ultimately trade studies.

For registration and other information, please visit our chapter website at: [www.incose-la.org](http://www.incose-la.org)

#### SPECIAL NOTE:

Due to site security requirements, RESERVATIONS will be required and proper picture identification may be necessary.

You must RSVP to attend, NO EXCEPTIONS. RSVP via the INCOSE-LA website ([www.incose-la.org](http://www.incose-la.org)) or to Paul Su (310-336-2602 or [paul.k.su@aero.org](mailto:paul.k.su@aero.org)).

## Tutorials

### Tutorials Planned for 2005:

#### March 5, 2005

TRIZ — The Ultimate Systems Engineering Tool by Zinowiy Royzen

#### June 4, 2005

Mark Maier - Topic TBD

#### August 6, 2005

James Martin - Topic TBD

#### October 8, 2005

Topic and Presenter TBD

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**INCOSE LA Chapter**

Vol. 2: Issue No. 6

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# 2004 INCOSE Los Angeles Chapter Holiday Party



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**The Board and Officers wish to welcome the following new members in the Los Angeles Chapter of INCOSE:**

Eric Chaill	The Boeing Company	Robert Womack	Northrop Grumman
Alejandro Diaz	The Boeing Company	Lucy Wong	Northrop Grumman
Stephen Guine	Northrop Grumman	Tony Yang	Booz Allen Hamilton
Steven Northover	Northrop Grumman	David Zarnow	Raytheon (Space and Airborne Systems) Company
Luke Voss	JPL		

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Return Address:

**9577 Seville Way  
Cypress, CA 90630**

The International Council on Systems Engineering (INCOSE) is an organization formed for the purpose of advancing the art and science of systems engineering in various areas of the public and private sectors. The Los Angeles Chapter meets several times per year for dinner meetings, and additionally sponsors tutorials and other activities of interest to those in the systems engineering field or related fields. L. A. Chapter Officers are as follows:

## 2004 Officers and Board

<b>President:</b>	John Hsu	<a href="mailto:john.c.hsu@boeing.com">john.c.hsu@boeing.com</a> or	<a href="mailto:president@incose-la.org">president@incose-la.org</a>
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<b>Ways and Means:</b>	Ronald Williamson	<a href="mailto:ronald.w.williamson@aero.org">ronald.w.williamson@aero.org</a> or	<a href="mailto:waysandmeans@incose-la.org">waysandmeans@incose-la.org</a>
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