

## Advanced Speaker Series on Emerging Technologies

### Engineering for Safety and Security:

What do you do with residual risk when there is no clear mathematical YES or NO

## Dr. Ben Calloni, Lockheed Martin Fellow

Friday, April 8th 2011 at 3 PM

MEC 205

### Abstract

At the heart of every engineering effort, engineers make design decisions to meet customer needs and requirements. Those requirements might be to a specific, single customer such as many of the programs to which Lockheed Martin builds and delivers products. Or they can be more commercially centric based on the marketing department's analysis that a viable new product line will sell well to the general populace. For either "customer set", in many circumstances the optimum design is clear.

But all too often several competing designs can equally meet the provided parameters to meet the customer's expectation; and each of the design choices will have differing advantages as well as residual risks. This is particularly true in systems with safety critical or security relevant requirements. It is in these situations when the engineer must muster and rely upon the very core of his or her ethical being to make the best decisions." Sometimes a cost vs. performance assessment will help guide the choices, but more often than one would like, the engineer has to rely on more subjective processes and judgments. In every case the engineer will have to provide management, the real stake holders, with the clear residual risk as balanced against cost for the various designs, then implement to management's final decision. This presentation will provide some examples and focus on how to balance the best design against an individual's ethos when any outcome will leave a residual risk to the customer.



### Biography

Dr. Ben Calloni is a Lockheed Martin Fellow for Software Security and a Certified Information Systems Security Professional (CISSP). He is a senior research program manager of Aeronautics Company in Fort Worth assigned to the Advanced Development Programs, formerly known as "The Skunk Works". His research interests are in the area of Software Security and Safety Assurance. He is partnered with Air Force Research Labs, the National Security Agency, and Department of Defense Networks and Information Integration office, and several commercial off the shelf suppliers, to provide international standards based, COTS product based, Multi Level Security infrastructures applicable for Department of Defense weapon systems and for the Department of Homeland Security (DHS) as well.

Dr. Calloni serves as the LM Corporate representative to the Object Management Group (OMG), is currently serving on the OMG Board of Directors, and co-chairs the System Assurance Task Force. He is active in The Open Group and formerly served as Vice Chairman of the Board of Directors and Chairman of the Customer Council. He is a regular participant and invited speaker to the DHS Software Assurance Forum and working groups.

Dr. Calloni is licensed by the State of Texas as a Professional Engineer in Software Engineering. He was the first software engineer nationally in Lockheed Martin Corporation to achieve software engineering licensing. Prior to joining Lockheed Martin, Dr. Calloni served as a USAF Fighter Pilot in the F-4 Phantom with 2000 hours. He served tours in Europe, South East Asia, CONUS and as a top gun instructor. He has a Ph.D. and M.S in Computer Science (Texas Tech University), an M.A. in Theology (Wayland Baptist University) and a B.S. in Industrial Engineering (Purdue University).