

## 7<sup>th</sup> Annual INCOSE Great Lakes Regional Conference

# *Leadership Through Systems Engineering*

*Aerospace | Commercial | Defense | Health Care | Manufacturing | Academia*

### **William Schindel, *System Interactions: Making the Heart of Systems More Visible***

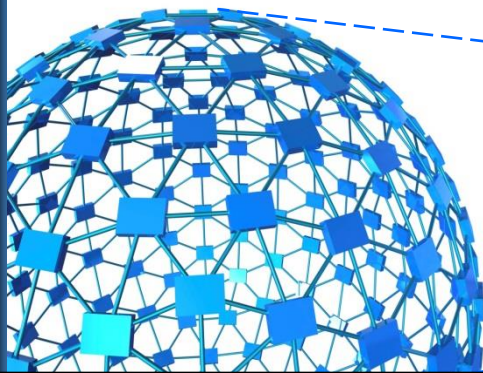
**Abstract:** This presentation argues that the most fundamental concept of systems receives less explicit attention than deserved in typical approaches to systems projects and life cycles. That fundamental concept is the notion of System Interactions. While not completely invisible in typical systems engineering processes, Interactions frequently seem to lurk just below the surface of system representations and engineering deliverables. This is true in Model-Based Systems Engineering (MBSE) as well as its predecessors. The cost of this "fog" is both missed opportunities and unpredicted problems or surprises.

By making Interactions the explicit heart of systems representations, the author has observed dramatic improvement in the ability of individuals and teams to analyze, understand, and communicate critical systems information. This approach has been verified across domains including mil/aerospace, automotive, construction, telecommunications, medical/health care, advanced manufacturing, and consumer products. In addition, it firms up the scientific basis for systems engineering, because the physical laws of the hard sciences are virtually all statements about physical interactions.

This presentation is for systems planners, engineering practitioners, system thinkers, and leaders. It includes a review of commonplace System Interactions in real systems, how they appear and don't appear in typical engineering representations, and the practical impacts of this gap. It also includes examples of how this can be addressed within typical engineering and life cycle processes. The result is improved understanding, earlier awareness, and better project and life cycle performance.

**Author:** Bill Schindel is president of ICTT System Sciences ([www.ictt.com](http://www.ictt.com)), a systems engineering company. His 40-year engineering career began in mil/aero systems with IBM Federal Systems, Owego, NY, included service as a faculty member of Rose-Hulman Institute of Technology, and founding of three commercial systems-based enterprises. He has led and consulted on improvement of engineering processes within automotive, medical/health care, manufacturing, telecommunications, aerospace, and consumer products businesses. Schindel earned the BS and MS in Mathematics. At the 2005 INCOSE International Symposium, he was recognized as the author of the outstanding paper on Modeling and Tools, and currently co-leads a research project on the science of Systems of Innovation within the INCOSE System Science Working Group. Bill is an INCOSE CSEP, and president of the Crossroads of America INCOSE chapter.

**Abstract**



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