



Abstract: Problem Solving in the Internet Age

Speaker: Scott Workinger

Each age has distinctive challenges in critical thinking. Thriving in the networked age requires learnable thinking skills that address the greater scope and complexity of today's problems and opportunities.

The Internet Age has significantly increased the demand for systems engineering. At the same time, systems engineers face greater challenges due to a massive increase in the scale of systems and demands for an increased pace of engineering activity. As systems engineers address these challenges, in some situations, new techniques are emerging and in others, certain older techniques are becoming more important. This presentation is an overview of emerging patterns with an emphasis on system of systems thinking issues.

The presentation will briefly cover:

1. Systems and Their Discontents – Why is systems engineering getting harder?
2. Analyzing System Misbehavior – Why is root cause analysis more important today?
3. Complexity – What makes a system complex and how can systems engineers use complexity to their advantage?
4. Patterns and Paradigms – How systems thinkers use patterns. Why we increasingly encounter individuals with conflicting views and why this is good. Paradigms as tools in the systems engineer's toolbox.
5. Networked Computing, a Paradigm Shift – How networked computing is driving the challenges to the systems engineering profession.
6. Collaboration – Emerging collaboration patterns. Why we need different approaches when we work on systems of systems. How to use the principle of designing for emergence when working on large systems. Working with differing points of view. The Community of Practice movement.
7. Patterns in Creativity – Creativity as a systems phenomenon. How to increase personal and organizational productivity.
8. Validation – The essential role of validation. Why validation has become more difficult. Incremental validation.
9. Paradigm Shifts – How do you know when you need a paradigm shift? What do you do about it?

The key point of the presentation is that many of the situations in which systems engineering is applied have changed so significantly that we need to change how we think about systems. We need to get to a new level. The explicit intent of the presentation is to challenge the audience to contribute to emerging problem solving paradigms so that we all move forward together as we address the problems of the Internet Age.

Dr. Scott Workinger, Ph.D, Stanford Engineering has 35 years experience leading people that create innovative, practical solutions to business problems and field working systems in a multi-disciplinary context. He currently teaches courses on technical leadership, systems architecture, test engineering, problem analysis, systems engineering, and systems thinking. The students in his continuing education courses come from a broad cross section of backgrounds and include experienced leaders and technologists from such diverse backgrounds as the US Navy, NASA, pharmaceutical companies, aircraft program management, and systems engineering consulting firms. Scott has a passion for empowering his students through research, application, and teaching. His teaching style emphasizes dialog and class discussion.

