SPACE SYSTEMS SYMPOSIUM (D1)
Lessons Learned in Space Systems (5)

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HOW DO WE FIX SYSTEMS ENGINEERING?

Abstract

The now half-century-old multidisciplinary, interdisciplinary discipline that we call "system engineering" is the classic half- empty, half-full glass; optimists and pessimists can look at the same thing and draw opposing conclusions.

Optimistically, the maturing of system engineering into a recognized discipline from its roots in the development of large aerospace and defense systems has been, and will remain, an enabling factor in the ability of societies to deal with the macroscale problems facing us in energy, environment, and other key areas.

Pessimistically, system engineers have some explaining to do. How is it that we see, every so often, the failure of an important and complex system where everything thought to be important in the way of process was done, and yet the system failed. Each time this occurs, we as an engineering community vow to redouble our efforts in system engineering process, and yet such events continue to occur. The answer cannot lie in continuing to do more of the same thing while expecting a different outcome.

We need to rise above process, to examine the technical, cultural, and political mix that is "system engineering", and examine the education training we are providing to those who would practice this discipline. This paper will discuss that training from a new perspective, the perspective of design elegance, how we identify it, and how we can design with elegance as a value.