GSAW 2006 Tutorial F:

Evolutionary Acquisition & Spiral Development

Length: Half day

Overview:
The publication of Department of Defense (DoD) Directives 5000.1and 5000.2 in 2003 established a preference for evolutionary acquisition and spiral development in the acquisition of complex weapon systems. Similarly to the original DoD directives, National Security Space Acquisition Policy 03-01 also positioned evolutionary acquisition and spiral development as preferred strategies for the Space domain. The policy was based on the assumption that the implementation of these strategies would drastically reduce the time to deliver complex weapon systems to the war-fighter. Nevertheless, the DoD still struggles with substantial cost and schedule overruns. Spiral development is blamed, and a revision to the 5000 Directives is expected. Also, as recently as June 8, 2005, Michael Griffin, the newly appointed NASA Administrator was quoted saying with respect to the Crew Exploration Vehicle program that "… I hope never again to let the words spiral development cross my lips."

It is unfortunate that even though evolutionary concepts were introduced in the early 1960's and spiral development in the1980's, so much controversy remains about their use. Technical difficulties with the Spiral Development fundamentally stem from the flexibility of the model. While it was originally introduced as a software development life cycle model, in reality it is much more; it is a meta-model, with multiple applications. Itis, in fact, a risk-driven process generator that is applicable not only to Software Engineering, but Systems Engineering as well, and it can be applied to the development of any process, concurrently with product development. Besides technical difficulties, there are substantial political issues that also need to be understood when Evolutionary Acquisition and Spiral Development are considered.

Our key goal is to emphasize to both acquisition and development organizations that Evolutionary Acquisition and Spiral Development should be implemented not simply for policy compliance's sake, but because they represent a prudent risk mitigation strategy. A secondary goal of the tutorial is to explain the similarities and differences between Spiral Development and the more-and-more popular IBM/Rational Unified Process (RUP®), and provide tangible life cycle modeling guidelines for the acquisition organizations during the formative stages of the contracting process.

Instructor: Peter Hantos, The Aerospace Corporation

Biography:
Dr. Peter Hantos is currently Senior Engineering Specialist in the Software Acquisition and Process Department of the Software Engineering Subdivision at The Aerospace Corporation. He has over 30 years of experience as manager, software engineer, professor, and researcher. Prior to joining Aerospace, as Principal Scientist at the Xerox Corporate Engineering Center, he developed corporate-wide engineering processes for software-intensive systems. Earlier, as Department Manager, he directed all aspects of quality for several laser-printer product lines. Dr. Hantos has authored over 40 publications. He holds MS and PhD degrees in Electrical Engineering from the Budapest Institute of Technology, Hungary.

Description of Intended Students and Prerequisites:
The tutorial is introductory in nature, and targeting a broad audience of people in both acquisition and product development environments. There are no formal, topical pre-requisites, just a basic familiarity with the system and software development process; all concepts introduced are discussed methodically, in a bottom-up fashion, in detail. Program office personnel, project managers, executives, process architects, and software engineers can all benefit from the tutorial with, of course, amplifications on slightly different areas of the material.