

that are 7 or higher, we took the percent management reserve as an indicator of the perceived risk and applied it to all the TRLs we assumed to be in this range. The new WBS to TPM Correlation is in Figure 5 and the new Data Summary in Figure 6 (see preceding page).

Note that there were only minor changes in the color-coding, although most of the numbers turned more negative because the TPMs were not on their planned profiles and the TRLs were fairly high. This shows that if you have TPMs that are not meeting their estimated planned progress and the supporting technology is less mature (higher risk), you can expect a larger impact on cost and schedule for the earned value control accounts supporting this work effort.

Once again, you get an earlier indication of potential problems.

Lastly, Systems Engineering

The role of systems engineering in this process cannot be over emphasized. According to the Defense Systems Management College, *Systems Engineering Fundamentals Guide* of January 2001, the WBS is a product of the systems engineering process. So are requirements analysis and traceability, functional analysis and allocation of verifiable performance requirements, and also system verification. These functions are all critical to the establishment of the technical baseline, KPPs, and the TPMs that are an indicator of technical baseline integrity.

Almost invariably, when a program gets in trouble, the analysis of what went wrong includes inadequate or non-existent systems engineering. This is simply due to not recognizing the need for proper planning and the role systems engineering plays in reducing uncertainty and performance risk. I believe if

well-structured programs use systems engineering to provide properly developed TPMs that allow for computation of technical variance, this can complement and modify, through a quantitative link, the earned value cost and schedule variances that are used for program management. This will make for a well-defined technical baseline that can provide the basis for cost and schedule revisions and be an early determinant of risk and future problems.

Then technical estimates will be used in a systematic, integrated fashion to help program managers address the right issues, anticipate the right challenges, and make the right decisions.

Editor's Note: Ferraro welcomes questions or comments on this article. Contact him at mferraro@hq.dcmamil.

Two DAU Civilians Earn 35-Year Service Awards Lou Jones and Dennis Cox Recognized at Dec. 11 Ceremony

During a ceremony conducted in Howell Auditorium on Dec. 11, 2002, DAU President Frank Anderson Jr. presented Lou Jones and Dennis Cox, DAU Operations Group, with certificates in recognition of 35 years' federal civilian service. Jones is a member of the Information Technology Department and is the longest-serving federal civilian employee at DAU. Cox works in the Contracting and Logistics Department.



DAU President Frank Anderson Jr. (left), presents Lou Jones a certificate recognizing his 35 years of federal civilian service.

Anderson (left) presents Dennis Cox a certificate recognizing his 35 years of federal civilian service.

