Planning for Software Acquisition, Development, and Sustainment in a Complex Systems Environment

As the demand for software acquisition and development expertise continues to rise in an environment of limited resources, we must ensure that programs engage software expertise early in the system life cycle and that the program has tools and processes in place that enable distributed teams to work effectively across geographic boundaries. Best practices highlight the importance of taking the necessary planning in *The Beginning* of a project to properly design a way to reach the desired outcome.

Acquisition of software-intensive systems in today's rapidly evolving technological environment is a challenging task. Consistency of processes for estimating scope, size, and complexity of software is often lacking. Requirements are often unstable or incomplete and are not adequately allocated down to the software domain, the results of which may include excessive rework, cost, and schedule overruns, as well as poor quality products.

We know that up-front planning helps teams save money and deliver a better product to the customer. Through various methods teams consistently use requirements to generate the tasks necessary to create the product. This issue of CROSSTALK focuses on ways to maximize the conversion of project requirements to an effective task plan.

When you read Ellen Gottesdiener's article *Good Practices for Developing User Requirements*, take note of how she dissects an effective approach for defining user requirements. For a deeper understanding of various methods of state machine-based design to perform software development read Markus Herrmannsdörfer, Dr. Sascha Konrad, and Brian Berenbach's *Tabular Notations for State Machine-based Specifications*. Interoperability and secure data sharing in a real-time operational environment are discussed in Dr. Douglas C. Schmidt, Dr. Angelo Corsaro and Hans Van't Hag's article *Addressing the Challenges of Tactical Information Management in Net-Centric Systems With DDS*. Learn how the technical process and people came together successfully on a geographically distributed project in *NAVAIR's Coast to Coast Support of the E-2C Hawkeye Using Distributed TSP* by Linda Lou Crosby and Jeff Schwalb. Also included in this issue of CROSSTALK is experimental data gathered by Dr. David J. Coe and his University of Alabama students leading to recommendations for improving the consistency of the estimation process in *Improving Consistency of Use Case Points Estimates*.

As software assumes an ever-increasing role in the acquisition, development, and sustainment of evolving capabilities within Department of Defense-fielded systems, the need for robust up-front planning of software related activities, processes, best practices and events as an integrated component of the overall system throughout the entire systems engineering life cycle is vital to program success. The future holds great promise. With accelerating technology and great planning we will have a skilled, trained, workforce that shares a common vision and operates in an integrated fashion to achieve a clear set of goals. Effective planning at the outset of every project is crucial to meet the challenges of the future.

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