The Rockwell Software Process Training Program

Part I
Herbert L. Reed
Manager, Professional Development
Rockwell International
Space Transportation System Division
Downey, California

Part II
Sam Harbaugh, PhD
President
Integrated Software, Inc.
Palm Bay, Florida

Part I - The Pre-development Phase

Abstract

Part I describes the pre-development phase of "The Rockwell Software Process Training Program" (SPTP) currently under development at Rockwell International Space Transportation Systems Division (STSD), Downey, California. Part II describes the development phase. Part I describes the sequence of events leading to the award of a contract to develop the Rockwell SPTP and gives STSD's perspective of this effort to date. Included in Part I is a discussion of the following:

- A short description of STSD's needs for a Software Process Training Program
- STSD's program objectives and project plan
- SEI support of curriculum development at Rockwell
- The invitation and response to quote
- Evaluation and selection of a training vendor
- Transition to the M.S. Degree in Software Engineering at a local University
- Planned Funding through the State of California Employment Training Panel
- Lessons learned

Background

In 1985, Rockwell divisions in Southern California initiated a major training effort to train its employees in the Ada language. Through this training program, with STSD acting as the lead division, a total of 475 Rockwell members of the technical staff including 175 from STSD have completed Ada language training. The success enjoyed through Ada training and continued pursuit of enhancements in the software development process has encouraged STSD to pursue total software process training.
In April 1987, the Space Transportation Systems Division's Human Resources Professional Development Group initiated a software engineering training needs assessment among Rockwell International Southern California Divisions. Software engineering department heads were asked to determine the extent of their requirements for software engineering training. Feedback from this inquiry indicated there were over 400 current or future employees who would need software engineering training or retraining for current or planned projects. It was generally agreed upon by management that the right source for software engineering training was not immediately available, and that required training in software engineering would be expensive.

Software engineering is concerned with the orderly, methodical development of reliable, usable software, and since the software process is labor intensive where adequate attention must be paid to establishing a consistent process, the training of people in understanding that process becomes an important strategy for continued productivity. STSD Human Resources professional development unit in conjunction with experts from the software engineering unit were tasked with a goal of developing a software process training program that would develop key competencies (knowledge, skills, and attitudes) by providing learning experiences which enable individuals to perform current or future jobs in the software process environment.

An overview of the Software Process Training Program, which resulted from this development is shown in Part II, Figure 4. It consists of 21 topics organized into 7 courses with a total of 408 video taped lecture-hours. In addition there is an integrating laboratory problem scheduled to be completed in 164 lab-hours plus 28 hours of comprehensive tests.

Introduction

Rockwell International Space Transportation Systems Division (STSD), Downey, California, provides systems, services, and technologies for access to and use of space, both manned and unmanned. STSD markets are national and international, involving both government and private customers. STSD provides systems and software engineering, integration, production, operations, and leadership capabilities to meet customer needs from concept formulation through full program life.

STSD's software development mission is to produce reliable high-quality systems and software products for commercial, military, and NASA programs. The software for systems required by these customers is steadily becoming more complex and the size of programs is increasing. Many of these systems have to be modified extensively during their life cycle due to changes in the operational environment and customer demands. Such complex and dynamic programs have to be properly engineered and their development must