Lesson Proper for Week 11

QUALITY PARTICIPATION IN SOFTWARE AND SYSTEMS INTEGRATION

Inside the software and systems integration environment, quality personnel for both software and hardware are required to support integration plans and work products produced by software designers/developers and the test team to ensure software and systems hardware work as one. The test team runs through test installation procedures with the quality team to witness the procedures and verify the media to show that system software works and that results are documented for completion and closed. In military and aerospace programs, the quality team verifies, validates, and approves the media loaded for integration checkout and testing. There is a common approach that the test team will use; redlines applied to an installation procedure are authorized and incorporated in the procedure for the next formal release procedure to support testing.

Ø **Quality Checklist**

A basic checklist for integration operations is used by the quality team. The checklist required by the quality team will ensure that step-by- step operations are verified and validated and provides a buy-off to work products. The quality checklist will provide:

· Criteria defined from previous audits, plans, procedures, and documented requirements

· Recorded results, including any noncompliance or observations

· An audit report that provides the scope and purpose of the audit, completed checklists, trained personnel, results and lessons learned for future improvements

· Measurement data produced during the audit

· Applicable work products submitted for control in accordance with the software/system plans

Ø **Verification and Validation**

The verification and validation process addresses work products in integration environments and include selected requirements, including systems hardware and software work product element requirements. It is an incremental process that is performed throughout the software design/ development life cycle.

The validation process is performed by the quality team to ensure compliance to plans, procedures, and data inside integration facilities. At times, the software designer/developer, CM, and test teams allow subcontractor participation in a team development environment to receive, capture, and report the assessment of the product's ability to meet the needs of the customer and other teams in the user integration environment.

LATE NIGHTS, EARLY MORNINGS, AND WEEKENDS

Many late nights and early mornings, the software quality team is required to support software and systems integration activities in the S/SIF. The team is called in at any time to support integration activities. Without the quality team supporting the installations, testing, buy-off, and delivery to other integration lab users or the customer do not occur. Plans for buy-off require quality team verification and validation and approvals applied (i.e., CDs, computer units, redlined test procedures, version documentation, test sheets, etc.).

Ø **Software Quality Support**

From my experience, if software quality is not available to support software and systems integration operations, the quality team manager receives a phone call or e-mail to ask for support. The quality team at times has no life when it comes to supporting integration activities. Many programs and projects are under pressure when schedules are impacted and depend on the quality team morning and night. My frustration with this is discussed next.

The program and project managers are concerned and worry about delivering a quality product to meet customer expectations. Is this true? Schedule comes first, then quality is somewhere down the totem pole. It is the senior manager's responsibility to guide program and project teams to meet commitments of technical performance, cost, and delivery dates. I know it is tough on senior management to meet all these requirements, but a schedule should be provided that works with all teams that are affected. The quality tasks are everywhere inside the program and projects. These tasks include process/product evaluations, reviews, audits, planning, formal audits, training, and verification and validation of work products to be ready for formal test and delivery. I could continue about the responsibilities required for support. For the senior manager to be responsible for execution of program and project plans, the term *efficiency* is the answer.

When changes are made to planning schedules, include quality teams in the discussions to ensure events in the schedule allow support. I understand that changes to planning schedules change hourly and daily, but also ensure resources are available and expected per updated daily schedules and rescheduled to support the expectations of

both senior program and project managers. Late in a day when the quality team is ready to go home, calls are made and require support immediately in the integration facilities to ensure delivery to customers. It is frustrating at times, but programs and projects do expect quality attributes and approvals to be applied.

BREAK THE MOLD

All military and aerospace programs and projects that are in current operations should learn from the past to improve quality processes and implement sound practices. In other words, lessons learned from past operations inside programs and projects should be discussed and reviews conducted. Teams often state that the current performance is the same process as other programs and projects they have supported. The senior manager along with program and project managers should change the old ways, break the mold, and improve the approach teams should adopt to be more successful. I know that management personnel are not perfect, but they should be able to create a working environment for employees/teams to deliver quality work products to customers consistently and on time.

THE BOTTOM LINE

At times, it is common knowledge that senior, program, and project managers react to schedule concerns. However, the pressure to have quality teams support these schedule concerns is overwhelming, and program and project managers act foolishly. I apologize for the previous statement, but I have been involved and have witnessed the pressure applied to perform verification and validation with a short timeline and to be ready to release work products to software and systems integration facilities and customers. The need is to emphasize results, not the time spent on meeting deadlines, tick marks, and schedules. Effective and efficient teams can overcome bad program and project management and schedules. When strategy meetings are scheduled and there is disagreement with the projected schedules, teams or individuals will find other programs or projects to support.

EFFECTIVE METHODS FOR SOFTWARE AND SYSTEMS INTEGRATION

The purpose of this book is to provide programs and project-effective methods for achieving the success of software and systems integration. My proposal should be reviewed and implemented in military and aerospace programs and projects. The software industry may be able to review it as an approach to see the capabilities suggested. The senior managers, program and project managers, and teams that are managing software and systems integration activities are responsible for the integration of work products. The disciplines of system design, software requirements, and design, build, and testing of work products must show continuous improvements in quality throughout the software life cycle. For development of the work product vision for software and systems integration, key stakeholders must ensure that the definition for work product releases is understood from the start to the finish.

To be effective during integration activities, the following methods for software and systems integration are included:

- Planning
- Communication
- Risk management
- Requirements
- Systems/software design
- Integration
- Execution
- Continuous integration
- Configuration management
- Quality
- Customer satisfaction

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