IEEE 829 – 2008
IEEE Standard for Software and System Test Documentation

Presented to ASQ 0511

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Vice-chair P829

Agenda

- PAST – The old 829

- GAP – Unmet needs

- PRESENT – The new 829

- FUTURE – Future needs

- Conclusion

- Q and A

Perspective On The Old 829

- Format and content for:
  - Test Plan
  - Test Design Specification
  - Test Case Specification
  - Test Procedure Specification
  - Test Item Transmittal
  - Test Log
  - Test Incident Report
  - Test Summary Report

Continued … Old 829

- the old 829-1998
  - Focused solely on stand-alone test documentation
  - Identified the same test documents and the same information for every project.
  - Duplicated information for each level of testing if test documentation was generated for each level of testing (component, integration, system, acceptance)

Unmet Needs

- IEEE needed :
  - Standards to be process focused rather than document focused
  - Standards to reflect the role of an activity (eg., test) throughout the SDLC
  - Consistency among related standards

Continued … unmet needs

- Test management needed :
  - Elimination of redundancy of information contained in various test documents
  - A place to describe the management of large/complex projects with multiple test organizations and multiple layers of testing
  - A way to determine how much testing is needed and which test tasks need to be executed
  - Flexibility for various configurations of test documentation

The New 829

- To fill these gaps the new 829 adds:
  - New directions/approach
  - New processes
  - New test documentation
  - Key concepts

The new 829

- **New directions**
  - Introduces the concept that the test effort has tasks to accomplish during the entire development life cycle not merely during the test activity.
  - Moves from a document focus to a process focus. This is in keeping with the IEEE Standards Association direction.
  - Moves away from stand-alone documents to various configurations.

Continued … The new 829

Document configuration example:

– Plan = [test plan] or [test plan + test design]

– Test cases = [test design + test cases + procedures] or [test cases + procedures]

Continued … The new 829

- **New processes**
  - Introduces the concept of integrity levels. Provides a mechanism by which projects can identify their integrity level. The higher the integrity level the more test tasks that are recommended.
  - Introduces the concept of test management. Describes tasks that are exclusive to those who manage a test effort.
  - Adds a process for choosing appropriate documentation and contents.
  - Introduces the concept of integrity levels.

Continued … The new 829

- **New test related documentation**
  - Adds a Master Test Plan. This document governs the management of a large and/or complex test effort.
  - Adds a Master Test Report. May summarize the results of the tasks identified in the Master Test Plan. May be used to consolidate results for multiple Level Test Reports.
  - Adds a Level Interim Test Status Report. This is used during the test execution activity.
  - Moves away from requiring identical documentation. This standard provides for documentation based on the integrity level of the project. Identifies minimum recommended tasks for the identified integrity level.

Continued … new 829

- **Key concepts:**
  - Integrity Levels. Defines (example) four integrity levels to describe the importance of the software or system aspects to the user. The process of identifying the integrity level is the criticality analysis.

Continued … The new 829

Key concepts (continued):

– <u>Recommended</u> minimum testing tasks for each integrity level. Defines the recommended minimum testing tasks required for each of the four integrity levels. Includes a table of optional testing tasks for tailoring the test effort to meet project needs and application specific characteristics.

– Systems viewpoint. Includes recommended minimum test tasks to respond to system needs.

Continued … The new 829

Key concepts (continued):

– Intensity and rigor applied to testing tasks. Introduces the notion that the integrity and rigor applied to testing tasks vary according to the integrity level. Higher integrity levels require the application of greater intensity and rigor.

Continued … key concepts

Key concepts (continued):

– Detailed criteria for testing tasks. Defines specific criteria for each testing task including minimum recommended criteria for correctness, consistency, completeness, accuracy, readability, and testability. For each test task, includes a list of minimum inputs and outputs.

– Systems viewpoint

Continued … The new 829

Key Concepts (continued):

– Selection of test documentation. Both the types of test documentation and the content topics within each documentation type need to be selected based on the testing tasks associated with the identified integrity level.

Continued … The new 829

Key Concepts (continued):

– Compliance with International and IEEE Standards.

The standard is mapped to specific content requirements of IEEE/EIA 12207.0-1997 and IEEE/EIA 12207.0-1998. It is similarly mapped to IEEE/EIA 12207.1-1997 and IEEE/EIA 12207.1-1998. In addition it is in conformance with IEEE Std. 1012-2004 and is applicable for use with ISO 15288.

Future Needs

- IEEE Needs
  - Evolving IEEE standards
  - Synching IEEE standards with ISO standards
- User needs
  - Evolving technologies
  - ???

Conclusion

- The test activity is part of the overall engineering process

- The test tasks will reflect the overall test approach (strategy) <u>and</u> the development methodology

Continued … conclusion

- The new 829 guides the thinking for test planning
- The test documents are the <u>culmination</u> of the test planning activity not the beginning
- Tests are executed based on the applicable test documentation
- Test results are analyzed
- Test reports based on test execution and test results analysis are generated
- Test metrics are prepared and delivered to project management

Questions - Comments

Comments????

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QUESTIONS????

Comments????

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