

Reliability Standards Update

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Early this year, the IEEE published 2 new standards developed by the IEEE Reliability Society Standards Committee (IEEE-RS-SC). These standards are IEEE 1633 and IEEE 1624. IEEE 1633 is the Recommended Practice for Software Reliability. IEEE 1624 is the Standard for Organizational Reliability Capability. IEEE 1633 was approved by the IEEE Standards Board in March 2008. IEEE 1624 was approved by the IEEE Standards Board in September 2008.

Besides the publication of these 2 new IEEE standards, the IEEE-RS-SC is revising 3 existing standards.

1. IEEE 1332 - Reliability Program For The Development And Production Of Electronic Systems And Equipment
2. IEEE 1413 - Standard Methodology for Reliability Prediction and Assessment of Systems and Equipment
3. IEEE 1413.1 - Guide for Selection and Using Reliability Predictions Based on IEEE

All 3 of these standards have active Project Authorization Requests (PARs) approved by the IEEE Standards Board. The following is a status for each of these 3 PARs:

1. IEEE P1413 working group has completed development of a new draft, and began the ballot process in November 2009. A PAR modification was approved by the NesCom of the IEEE Standards Board to extend completion to 31 Dec 2010.
2. IEEE P1332 working group began development of a new draft concurrent with the development of IEEE P1413. The current PAR submittal date to RevCom is Oct 2010.
3. IEEE P1413.1 working group is planned to start development of a new draft upon completion of IEEE P1413.

As a part of collaboration activities amongst other IEEE Societies, the IEEE-RS-SC began preliminary planning for a new revision to the IEEE 982.1 standard under the auspices of the IEEE Computer Societies committee, Software and Systems Engineering Standards Committee (S2ESC). The IEEE-RS-SC identified a new chair for the working group, Kadir Demir, who formerly was instrumental in the development of IEEE 1633. Members of the IEEE 1633 working group may be available to join the IEEE 982.1 working group in early 2010, and to assist in writing the PAR for IEEE 982.1. IEEE 982.1 is the “IEEE Standard Dictionary of Measures of the Software Aspects of Dependability”.

The IEEE-RS-SC is contributing to the development of other standards outside of the IEEE, such as MIL-HDBK-217 which is sponsored by the Defense Standardization Program Office (DSPO) and Naval Surface Warfare Center (NSWC) Crane Division, NAVSEA. MIL-HDBK-217 is the Military Handbook for the Reliability Prediction of Electronic Equipment. A working group was formed in early 2009 and began work immediately on drafting a revision to MIL-HDBK-217F, Notice 2. On November 12, 2009, the working group submitted a draft to NAVSEA to begin document formatting and final editing. NSWC Crane is planning to release a draft of MIL-HDBK-217 Rev G by the end of 2009 for public review.

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Finally, discussions began with the IEC on collaboration on an IEC standard for Reliability Growth based on existing IEC standard 61164 and IEC standard 61014. IEC 61014 is the standard titled: “Programmes for reliability growth”. IEC 61164 is titled: “Reliability Growth – Statistical Test and Estimation Methods”. This International Standard specifies requirements and gives guidelines for the exposure and removal of weaknesses in hardware and software items for the purpose of reliability growth. It applies when the product specification calls for a reliability growth program of equipment (electronic, electromechanical and mechanical hardware as well as software) or when it is known that the design is unlikely to meet the requirements without improvement. A statement of the basic concepts is followed by descriptions of the management, planning, testing (laboratory or field), failure analysis and corrective techniques required.

Recent emphasis has been placed on reliability growth by the DoD community. The international community already has an existing standard that could be leveraged for IEEE use and suppliers to the DoD, without creating a new and redundant standard. A preliminary draft PAR (IEEE P1467) was written for this new project, pending submittal to NesCom for approval.