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IEEE Standard for System, Software, and Hardware Verification and Validation

IEEE Computer Society

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Software and Systems Engineering Standards Committee

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IEEE Std 1012™-2016
(Revision of
IEEE Std 1012-2012/
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Abstract: Verification and validation (V&V) processes are used to determine whether the development products of a given activity conform to the requirements of that activity and whether the product satisfies its intended use and user needs. V&V life cycle process requirements are specified for different integrity levels. The scope of V&V processes encompasses systems, software, and hardware, and it includes their interfaces. This standard applies to systems, software, and hardware being developed, maintained, or reused (legacy, commercial off-the-shelf [COTS], non-developmental items). The term *software* also includes firmware and microcode, and each of the terms *system, software*, and *hardware* includes documentation. V&V processes include the analysis, evaluation, review, inspection, assessment, and testing of products.

Keywords: acceptance testing, architecture evaluation, component testing, concept documentation evaluation, criticality, criticality analysis, design evaluation, disposal plan evaluation, environmental verification and validation (V&V) factors, hardware life cycle, hardware V&V, hardware verification and validation, hazard analysis, IEEE 1012, implementation evaluation, independent verification and validation (IV&V), integration testing, integrity level, interface analysis, IV&V, minimum V&V tasks, nth of a kind, objective evidence, operating procedure evaluation, qualification testing, quality assurance, regression analysis, regression testing, requirements allocation analysis, requirements evaluation, reuse software, risk analysis, security analysis, software life cycle, software quality assurance (SQA), software V&V, software verification and validation, source code documentation evaluation, source code evaluation, SQA, stakeholder needs and requirements evaluation, system element interaction analysis, system life cycle, system maintenance strategy assessment, system of interest, system requirements evaluation, system V&V, system verification and validation, testing, traceability analysis, V&V, V&V measures, validation, verification

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