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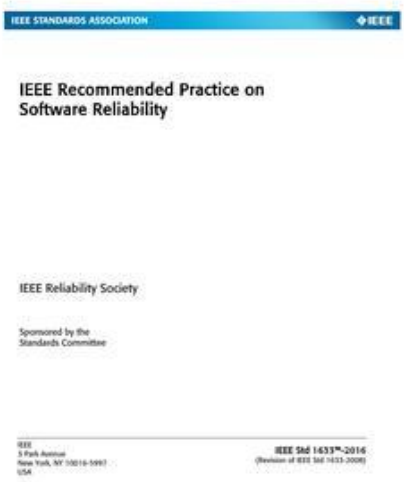
IEEE 1633 Recommended Practices for Software Reliability Training Class

This 2-day course focuses entirely on methods to predict software reliability before the code is written.

Target audience

Reliability engineers, systems engineers, software management, software QA and test engineers.



What this course has that other courses do not have

- This course is presented by *the* leading industry practitioner who chaired and authored IEEE 1633.
- The methods presented in this course are recommended as per the IEEE 1633 Recommended Practices for Software Reliability, 2016.
- The software reliability prediction assessment presented in this course is NOT AVAILABLE in any other software reliability course.
- The method for using the software reliability assessment to make improvements and do benchmarking is NOT AVAILABLE in any other software reliability course.
- Open session and online course attendees receive a single user license to a software reliability toolkit

Each course attendee will

- Predict defects to be found in testing and operation, defect pileup up, failure rate, MTTF, MTTCF, availability, reliability and defect density of the software BEFORE the code is written. These predictions will be for future points in time during testing and operation.
- Use the predictions to determine the staffing needed for testing and field support.
- Software managers can also determine how to ensure that the software releases are spaced to minimize unscheduled maintenance that causes the next project to be late.
- Acquisitions personnel will know how to assess the reliability of vendor supplied software.

Related products and services

People who have bought this training class have also purchased these products and services.

Related products	Related services
Regus AI Predict	Software reliability prediction and assessment services

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1.0 Getting started

Morning Day 1
Greetings and Introductions
Software Reliability Timeline
Industry guidance available for software reliability
Vocabulary
Overview of models that predict and estimate software reliability models
Hard facts
Mapping software to hardware reliability - Failure modes that do and do not apply, Where software fits within the product lifecycle
Common myths - Top list of things that everyone thinks is related to reliable software (but really isn't
Overview of methods for reliability testing

2.0 Planning for software reliability
Afternoon Day 1

Topics	**Section of IEEE 1633**
Characterize the software system	5.1.1
Define failures and criticality	5.1.2
Perform an initial risk assessment	5.1.3

3.0Apply software reliability during development
Remainder of day 1 and all of day 2

Section of this presentation	**Section of IEEE 1633**
1. Predict normalized effective size – using labor hours, KSLOC. Methods for estimating size of COTS.	5.3.2.3.1, 6.2 and Annex B
2. Predict testing or fielded defect density using the SEI CMMi, industry type, Shortcut Model, Advanced models for predicting defect density - Quick Assessment, Full-scale, Neufelder, Rome Laboratory, Historical Data	
3. Predict total testing and fielded defects	
4. Predict when defects will be discovered over time	5.3.2.3.2
5. Predict failure rate and MTTF	5.3.2.3.3
5.1. Sanity check the predictions	5.3.3
6. Predict reliability	5.3.2.3.4
7. Predict availability	5.3.2.3.5
8. Sensitivity analysis	5.3.7
9. Apply predictions with incremental development	5.3.2.4
10. Predict defect pileup	5.3.6
11. Predict staff required to maintain software	5.5

The below shows the topics of this class mapped to the IEEE 1633 Recommended Practices. This course covers the clauses related to predictive modeling.

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Section of IEEE 1633	IEEE Software reliability predictions	Integrating software and hardware reliability	Software FMEA	Software FTA	Reliability driven software testing	SRE for DoD Acquisitions	SRE planning
4.0 Roles, Approach, Concepts						X	x
5.1 Planning							
5.1.1 Characterize the software system	X					**	
5.1.2 Defines failures and criticality	X		X				
5.1.3 Perform a reliability risk assessment	X						
5.1.4 Assess the data collection system		X					
5.1.6 Develop a software reliability plan							x
5.2 Develop failure modes model							
5.2.1 Perform a defect root cause analysis			X			**	
5.2.2 Perform a software FMEA			X				
5.2.3 Perform a software FTA				X			
5.3 Apply software reliability during development							
5.3.1 Identify/Obtain the initial system reliability objective		X				**	
5.3.2 Perform a software reliability assessment and prediction	X						
5.3.3 Sanity check the prediction	X						
5.3.4 Merge the software reliability predictions into the overall system reliability		X					
5.3.5 Determine an appropriate overall software reliability requirements		X					
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5.3.7 Perform a sensitivity analysis	X						
5.3.8 Allocate the required reliability to the software LRUs		X					
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5.4.2 Increase test effectiveness through fault insertion			X		X		
5.4.3 Measure test coverage					X		
5.4.4 Collect fault and failure data		X					
5.4.5 Select Reliability growth models		X					
5.4.6 Apply software reliability metrics		X					
5.4.7 Determine accuracy of the predictive and reliability growth models	X	X					
5.5 Support release decision							
5.5.1 Determine release stability		X				**	
5.5.2 Forecast additional test duration		X					
5.5.3 Forecast remaining defects and effort required to correct them		X					
6.0 Software reliability models	X	X					
Annex A templates for SFMEA			X				
Annex B Additional methods for predicting software reliability during development	X						

** These topics are briefly discussed from the viewpoint of DoD acquisitions