Software Reliability Prediction Services

The below figure illustrates the basic steps for performing a software reliability prediction. These steps are recommended as per the IEEE 1633 Recommended Practices for Software Reliability. The first step involves predicting the effective size of the software. "Effective" means new or modified. The bigger the effective size the more that can go wrong. The second step of the prediction process requires a software reliability assessment. The third step predicts the total escaped or testing defects and is simply a multiplication the results of the first 2 steps. Step 4 predicts when the total predicted defects will result in a failure. Step 5 divides by the defect profile from step 4 by the operating system to yield a predicted failure rate or MTTF. Steps 6 and 7 use the result of step 5 to predict the software availability and probability of failure over the life of the mission. The Sensitivity analysis can be conducted at any time from step 2 onwards.

This prediction process predicts the number of defects that are serious enough to effect reliability. The types of defects can be predicted via a defect root cause analysis. Refer to An introduction to Software Reliability Prediction.

Statement of Work

The software reliability assessment (step 2 in Figure 1) is a prerequisite for the software reliability prediction. Ann Marie Neufelder will then complete steps 1, 3-7 as recommended in the IEEE 1633 document. Estimates of defect pileup will also be computed if the size and dates of future releases are established.
Related products and training

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<th>Related products</th>
<th>Related training</th>
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<td>The software reliability toolkit and the Frestimate software automate these steps.</td>
<td>The IEEE 1633 Software Reliability Training class covers what you need to know to predict software reliability.</td>
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Pricing

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