

Software Reliability Assessment Services

Mission Ready Software has developed an industry available assessment based on benchmarking data from hundreds of actual industrial software projects. Certain industry assessments, such as the Software Engineering Institute Capability Maturity Model, focus entirely on the development process. The facts¹ show that software process only accounts for about 22% of the factors that affect software reliability. Highly reliable software does require a software development process but it also requires other important factors which cannot be compensated for by process.

- People - experience, location to each other and to the hardware engineers, organization, team structure, small team sizes, leadership
- Technique - ability to execute the project, methods and tools for developing the product
- Product characteristics - requirements, design, code, test plans
- Project and Industry Risks – New product, new technology, new hires, turnover, government regulations, industry, market stability, type of software etc.
- Process - ability to tailor the process to meet the needs of the project, consistency and repeatability of development processes

The assessment results include one of seven predicted “clusters” which range from “Distressed” to “World Class”. Also included is a benchmark to others in the defense industry, the most sensitive factors for your organization, and the practices that aren't resulting in software reliability ROI.

Statement of work

Step 1. Assessment survey. The assessment survey has up to 350 inputs is completed by a trained assessor with inputs from subject matter experts such as the software manager, lead software engineer, software engineer, software tester, software QA. The assessment is scored and that score determines one of seven percentile groups from World Class to Distressed as well as the predicted defect density. That prediction is then used for benchmarking against similar application types, sensitivity analysis and software reliability predictions. The questions are related to:

- What are the primary risks related to this product? Evolving system hardware? New environment? Old fragile code? Turnover? Vendors that you can't depend on? Too many distractions from the field?
- What's in the artifacts? Pictures or words? Can the requirements be tested? Is design an after the fact activity? What exactly are people testing? Does anyone consider what the software should NOT do?
- How is the project managed and executed? Is progress against schedule tracked often enough to allow for mitigation? Is the project as a whole and each of the individual tasks "starting" on time? Is it getting derailed by previous releases that require field support? Is verification stalling because software engineers were allowed too much latitude in testing their own code? Is testing stalling because the testers waited until the end to review the requirements?
- How are the teams organized? Where are they located with respect to the rest of engineering? How much domain experience do the team members have?

¹ The Cold Hard Truth about Reliable Software Edition 6i, 2019 AM Neufelder.

- What methods exist for identifying and mitigating schedule risk before it becomes a big problem? Is the wheel being reinvented (code being written that's available commercially)? Are there too many short term contractors who don't understand the product domain? Are the software engineers and marketing persons restricted from gold plating once the scope is set? Are big projects decomposed into smaller ones?

Your software development organization is expected to provide:

- 90 minutes of availability with software requirements engineers, software design engineers, software development engineers, software managers, software test engineers, software QA engineers and engineering management during the 1.5 to 2 day visit.
- Exported listing of recent software problem reports, software development plan, SLOC estimates (if available), a typical software requirements specification, design document, test plan, procedures and software schedule.

Step 2. Mission Ready Software Assessor completes the assessment.

Once the assessment inputs are reviewed, your assessor will determine which of the 7 clusters is most applicable for this product/version of software as shown in the figure below. Once the cluster (World Class to Distressed) is predicted then the defect density is predicted from that as well as the probability of a late software release. In order to improve reliability the defect density must be reduced. The model is used to identify how to transition to the next cluster which on average reduces defects by 55% and probability of late release by 25%.

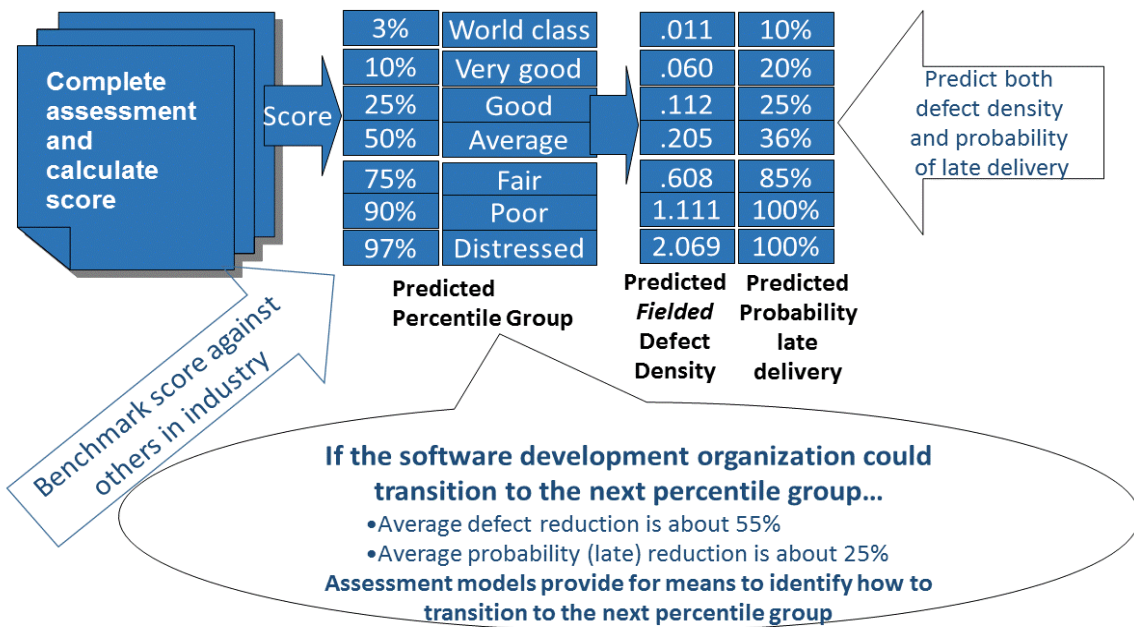


Figure 1 – Assessment

The final report includes:

- Benchmark to all other organizations in the database and other organizations in the same industry
- Predicted defect density and probability of late release.



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- Key strengths and gaps as well as a short list of development practices that can most effectively improve the predicted cluster.
- Any development practices that *aren't* providing software reliability ROI will also be identified.
- Specific weaknesses in the software requirements, software design, software test plans, software test procedures

Related products and training

Related products	Related training
Requs AI Predict	The IEEE 1633 Software Reliability Training class covers what you need to know to predict software reliability.

Pricing

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