

Requirements-Based Testing Proof of Concept

Purpose:

This document describes the Requirements-Based Testing Proof of Concept activities.

What is Requirements-Based Testing?

Requirements-Based Testing (RBT) is a rigorous process for improving the quality of requirements and for deriving the minimum number of test cases to cover 100% of those requirements. RBT is comprised of two techniques: Ambiguity Reviews and Cause-Effect Graphing.

An Ambiguity Review is used in the requirements phase of software development to identify ambiguities in requirements. The intent of an Ambiguity Review is to identify anything that is ambiguous, unclear, and imprecise in the requirements. The elimination of these ambiguities improves the quality of the requirements.

Cause-Effect Graphing is a test case design technique that is performed after requirements have been reviewed for ambiguity, and after they have been reviewed for content. Requirements are reviewed for content to insure that they are correct and complete. The Cause-Effect Graphing technique derives the minimum number of test cases to cover 100% of the functional requirements to improve the quality of test coverage.

Why would you be interested in Requirements-Based Testing (RBT)?

- If you believe you are working with requirements that are not clear and complete.
- If you believe your test cases take too long to execute, and you still have too many defects after testing is complete
- If you believe that you have to cut time and costs from your software development and testing projects

Description of RBT Proof of Concept Activities:

1. Software Testing Services (STS) submits a proposal to the client to perform an RBT POC. Once the client agrees to proceed, the POC is organized as follows:
2. The POC is expected to take no more than 2 days to complete, including a meeting with the client to review the results of the Ambiguity Review and the test case design.
3. If a non-disclosure agreement is required by the client before a sample of their requirements can be distributed to STS, then the client is responsible for sending the non-disclosure agreement to STS. The non-disclosure agreement will be signed by STS, and returned to the client before proceeding with the POC.

Non-disclosure agreement required: Yes _____ No _____

4. The client emails a sample requirements document to STS (garym@softtestserv.ca). The sample requirements must be contained in a Word document that has read/write access.

Sample requirements readable: Yes _____ No _____

5. STS performs the Ambiguity Review. The Ambiguity Reviewer is not necessarily a domain expert, and is not reading the requirements for content. The Ambiguity Reviewer is reading the requirements to identify ambiguities in the logic and structure of the wording. The Ambiguity Reviewer identifies all ambiguous words and phrases using the Ambiguity Checker software. The Ambiguity Reviewer imbeds comments and issues regarding ambiguity into a copy of the original sample requirements.

6. STS performs test case design on a portion of the requirements provided by the client using the Cause-Effect Graphing technique supported by the BenderRBT software. The portion of the requirements selected for test case design is determined by STS and is dependent on the amount of time remaining in the POC, and the complexity of the functionality in the sample requirements.

7. STS arranges a final meeting with the client to deliver the POC results.

Ambiguity Review Deliverables:

The Ambiguity Review deliverables include the following:

- A summary of the Ambiguity Review findings.
- The ambiguities are documented within the copy of the requirements at the site of each ambiguity.

Test Case Design Deliverables:

The Test Case Design deliverables include the following:

- A copy of the sample requirements with any assumptions that were made by STS to complete the test case design effort.
- A list of the “holes” in the requirements identified during the test case design effort
- A Word document containing the test cases derived using Cause-Effect Graphing.

Why do a Proof of Concept?

The intent of the Proof of Concept is to show the Requirements-Based Testing process on a real set of **your** requirements, so you can better understand the benefits of RBT.

For a nominal fee of **\$2000 CDN** **, we offer you a two-day RBT Proof of Concept to illustrate the benefits of RBT to your organization. This nominal fee is refundable when your organization obtains further services from us, such as training, mentoring or product sales.

** This nominal fee is waived for organizations that have CIO commitment to adopt a formal software development / quality discipline, and are willing to sponsor an RBT presentation to the CIO and the management team.

Benefits of an Ambiguity Review:

- Higher quality requirements are made available to the domain experts to read for correctness and completeness.
- Defects are corrected at the earliest point in the software development lifecycle. (defect avoidance instead of defect identification in latter phases of the software development lifecycle).
- The cost of correcting defects is at its lowest point in the software development lifecycle during the requirements phase.
- Timely feedback from the Ambiguity Review reduces issue resolution time.
- All members of the project team can work from one clear set of requirements, thereby reducing the chance of scrap and rework occurring throughout the remainder of the software development lifecycle.

Benefits of Cause-Effect Graphing

- Provides 100% functional coverage with the minimum number of test cases.
- Reduces the risk of promoting untested code into production.
- Identifies defects in the requirements during Cause-Effect Graphing.
- Identifies any exceptions and error conditions not documented in the requirements, so that the requirements can be updated with this information.
- Enables domain experts to verify that the right system is being developed when they review the test cases that are derived.

Gary Mogyorodi, B.Math., M.B.A.
Certified Tester, Foundation Level (CTFL)
Certified Tester, Advanced Level – Functional Tester (CTAL-FT)
Certified Tester, Advanced Level – Test Manager (CTAL-TM)
President – Canadian Software Testing Board

President
Software Testing Services
Phone: (647) 692-5040
Fax: (509) 356-6647
Email: garym@softtestserv.ca
Web: www.softtestserv.ca