Reduce d effc

Test Optimization using Combinatorial Test Design

AT SCALE IMPLEMENTATIONS OF CTD

Client: Large Insurance Company

Objective: Reduce cost by reducing test effort

Method: Reduce test effort by optimizing test suites using Combinatorial Test Design

> Targeted reduction of regression test bed comprising over 60,000 test cases

- Determined effort impact by frequency of usage of tests across release
- Factored quantum of changes expected in next releases
- Types and natures of changes
- Nature of application testing
- Number of releases
- Analysis of past defects
- > Embedded CTD experts in the team to develop models and build skills in the team
- Focused on regression packs in year one; later added functional test optimization
- > Required intense socializing of concepts and results with clients to gain acceptance

Result:

Approach:

➤ In year one

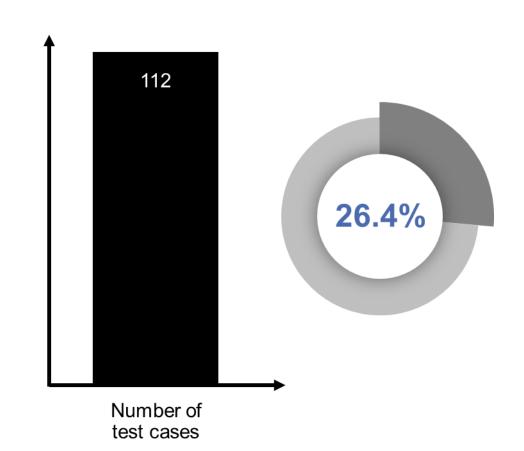
- Created 75 CTD models across regression tests of applications
- Yielded 32% reduction of test scenarios and 27% reduction of test cases (year 1)
- 4000 hours of test effort reduced (2 person years savings) for one execution cycle
- ➤ Over three years increased test coverage with 150 CTD models
- Currently delivering ~40% optimization, with around 20,000 test cases reduction

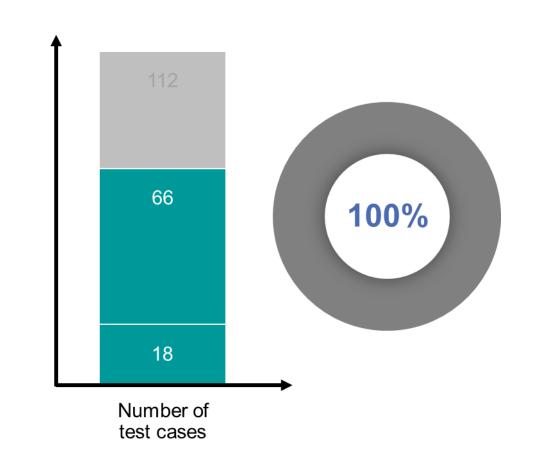
IBM CTD Solution Existing Existing Test Selection Remove Overlapping Less Test Cases Cases Test Cases Same Coverage Find Gaps, Test Enhancement CTD Add New Test Close Gaps Filtration - Standard, security - secretary, security - secretary, security - secretary -Improve Functional Cases to Close Requirement Coverage Gaps Test Generation Generate Test Plan **Brand New** The Least Amount of Test Test Plan Cases to Cover the Most Amount of Test Conditions Test Data Preparation Describe Test Condensed Data Less Data to Prepare Test Data and No Data Sharing Among Test Dedicated Requirement Test Data

TO REDUCE TEST COST



Increase







Sample of optimization and coverage results from one model

TO REPLACE RISK BASED TESTING NEEDS

Client: Large Auto, Home and Life Insurance Company

Objective: Ensure speed to market with reduced risk of defect leakage

Method: Ensured 100% test coverage with test beds by optimizing test case design using Combinatorial Test Design

Approach:

> Redefined the test design process to include Combinatorial Test Design

- Started modeling new program requirements using CTD
- Converted existing tests to CTD models
- Institutionalized CTD to ensure coverage and savings
 Trained existing team on CTD and provided mentorship of CTD SMEs
- ➤ Project team developed the models upfront and experts reviewed models
- Targeted increased test through-put by increased design productivity
 Incorporated CTD in new test case design (from scratch)
 - Incorporated CTD in new test case design (from scratch)
 Eastered a minimal 8 weeks of learning curve
- Factored a minimal 8 weeks of learning curve
 Early inclusion of client in the design journey to enable greater acceptance

Result:

- > Delivered higher throughput of test cases per day (12 TC per day against planed of 8 test case per day)
- ➤ Increased throughput savings inclusion of review efforts by 9%
- ➤ Delivered 18% test case reduction with 100% coverage
- Enabled increase in business (new test services were commissioned)