



Test Management Part 2

Causal Analysis

Objective



Objective

Apply Causal
Analysis to
improve test
effectiveness

Causal Analysis



| First introduced by IBM in 1983

- IBM reports an investment of less than 1% in causal analysis achieved a 50% reduction in error rates


| Seeks to identify the root cause of defects as well as approaches to eliminate future occurrences

| Defect data is collected and analyzed

Causal Analysis Steps




Select a set of defects missed by testing to analyze



For each defect identify the probable cause it was not detected



Identify common causes among defects



Identify possible solutions to eliminate the common defect causes

Defect Cause Categories



Communication Failure

| Defect was missed due to missing or incorrect information

| Examples:

- Problems with requirements doc
- Last minute requirements changes not communicated to test team

Defect Cause Categories (cont'd)



Oversight

| Defect was missed because of a failure to consider all cases or combinations when testing

| Examples:

- Failing to test a feature interaction
- All combinations of inputs not addressed
- Boundary value not tested

Defect Cause Categories (cont'd)



Education

| Defect was missed because of a lack of understanding of testing methodologies or tools

| Examples:

- Design of experiments was incorrectly applied
- Tester didn't understand how automated tests were generated

Defect Cause Categories (cont'd)



Transcription

| **Missed defect was a result of a simple mistake**

| **Examples:**

- Tester failed to carefully compare expected and actual results

Determining Probable Root Causes



Five Whys

- | Ask why enough times to get to the root cause of the defect
- | Up to 5 repetitions may be needed

Example



| **Consider customer reported feature interaction error**

| **Why was defect not detected during testing**

- Feature interaction was never tested

| **Why was feature interaction not tested**

- Late feature addition was not communicated to test team

Developing Possible Solutions



Oversight Problems

- | Use of checklists
- | Tools to automate checking
- | Work-product templates
- | Reviews

Developing Possible Solutions (cont'd)



Education Problems

- | Just in time training

- | Tutorials

- | Proper staffing

Developing Possible Solutions (cont'd)



Communication Problems

- | Liaisons to other groups
- | Change tracking system improvements
- | Improved documentation
- | Changing processes

Developing Possible Solutions (cont'd)



Transcription Problems

- | Tools to automate

- | Reviews

Summary

