speed quality

Rational®

the software development company

Principles of Software Testing for Testers

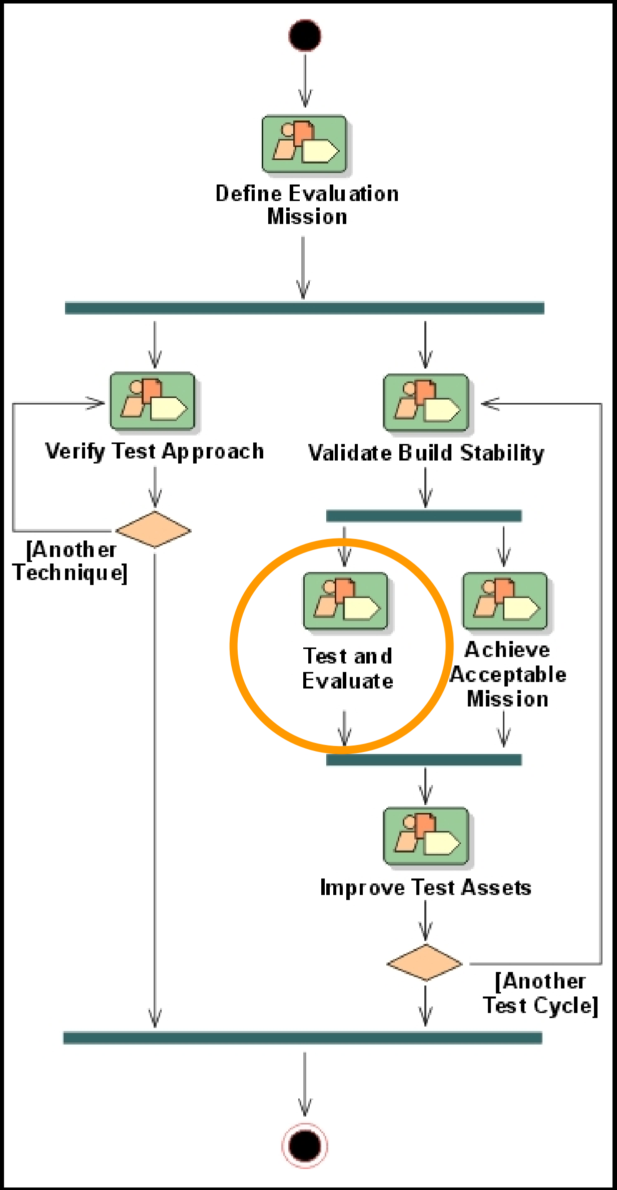
Module 7: Achieve Acceptable Mission

Module 7 - Content Outline

- **Definition of the workflow:**
  Achieve Acceptable Mission
- Reporting the status of testing

Review: Where We've Been

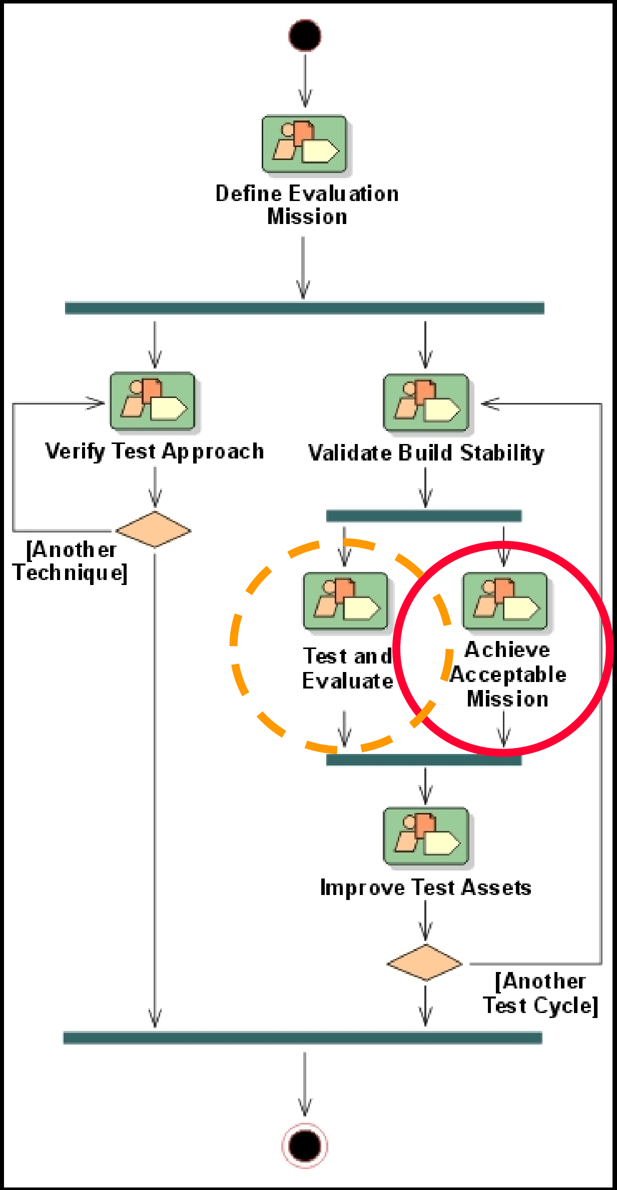
- In the last two modules, we covered the workflow detail Test and Evaluate
- In part one, we looked at *techniques* for implementing tests, and in part two, we looked at *analyzing failures* and writing *change requests*.



Rational
the software development company

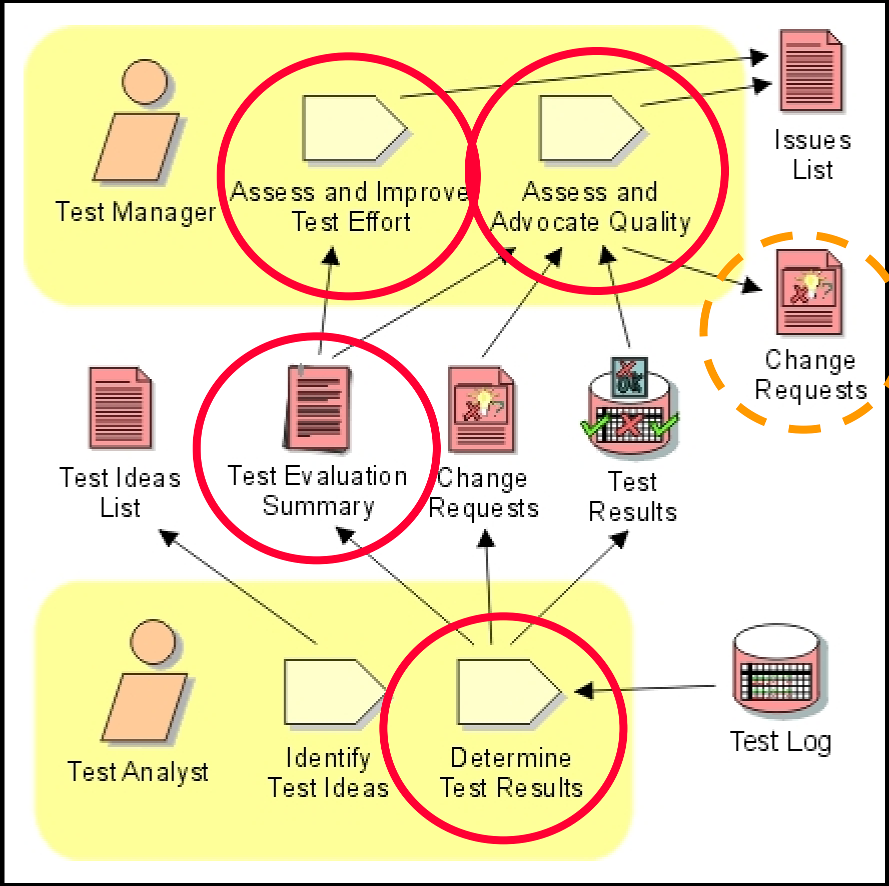
Achieve an Acceptable Mission

- In this module, we'll look at monitoring that the Mission is being achieved and reporting the status of the test effort



Achieve an Acceptable Mission

- This module focuses on *Assessment* of the test effort reporting an *evaluation summary* of the test results
- In the last module, we discussed *change requests* which are used here to help evaluate status.
- We will look mainly at producing *Evaluation Summaries*.



Module 7 - Content Outline

- Definition of the workflow:
  Achieve Acceptable Mission
- **Reporting the status of testing**

Discussion Exercise 7.1: Reporting Status

- Pick a project and a point in time.
- You are the test manager.
- The project manager asks you:
  - How far are you with testing?
  - How much do you have left to do?
- How do you answer?

Status Reporting

- Key questions: How far are we? How much is left to do?
- Experienced test managers have very different answers
- Complex, multidimensional question
  - Many types of data explain “extent of testing”
  - Simple metrics are often profoundly misleading
  - The best status reports consider several dimensions together
- Eight different categories of information

Dimensions of “Extent of Testing”

Common answers are based on the:

- **Product** We’ve tested 80% of the lines of code.
- **Plan** We’ve run 80% of the test cases that we had planned to run.
- **Results** We’ve discovered 593 bugs.
- **Effort** We’ve worked 80 hours a week on this for 4 months. We’ve run 7,243 tests.

Dimensions of “Extent of Testing”

- Common answers are based on the:

Obstacles
- We’ve been plugging away but we can’t be efficient until X, Y, and Z are dealt with.

Risks
- We’re getting a lot of complaints from beta testers and we have 400 bugs open. The product *can’t be* ready to ship in three days.

Quality of Testing
- Beta testers have found 30 bugs that we missed. Our regression tests seem ineffective.

History across projects
- At this milestone on previous projects, we had fewer than 12.3712% of the bugs found still open. We should be at that percentage on this product too.

Status Reports – Extent of Testing

- Each dimension addresses a different issue
  - At times, each may be important to management
- Build status report around a cluster of dimensions
- Successful status reports provide range of different types of information, to give management a better context for decisions

The Overall Structure of a Common Report

- Here’s one structure that some managers find works well for them:
  - The report has four parts, each part starts a separate page.
  - Part 1 Risks and responsibilities
  - Part 2 Progress against plan or some other multidimensional chart
  - Part 3 Project bug metrics
  - Part 4 Deferred and no-fix bugs to approve

The Overall Structure of a Common Report

- Part 1: Risks and responsibilities
  - Highlights current problems, such as:
    - Artifacts due into testing but not arrived
    - Artifacts that due out of testing but not yet completed
    - Staff turnover that threatens the schedule
    - Equipment acquisition problems that might threaten the schedule.
  - A project slips one day at a time
    - It can be recovered one day at a time
    - Encourage addressing the problems that cause slips
  - Good status reports show fine grain detail whenever it is likely that a reader could intervene and help the project, if only the reader understood (or was aware of) the problems that cry out for help

The Overall Structure of a Common Report

- Part 2
  Progress against plan or multidimensional chart

Component	Test Type	Tester	Total Tests Planned / Created	Tests Passed / Failed / Blocked	Time Budget	Time Spent	Projected effort for Next Build	Notes

Elisabeth Hendrickson’s report.

- Note how this covers progress against a plan, risks/obstacles, effort and results, all in one chart

The Overall Structure of a Common Report

- Part 2
  Progress against plan or multidimensional chart

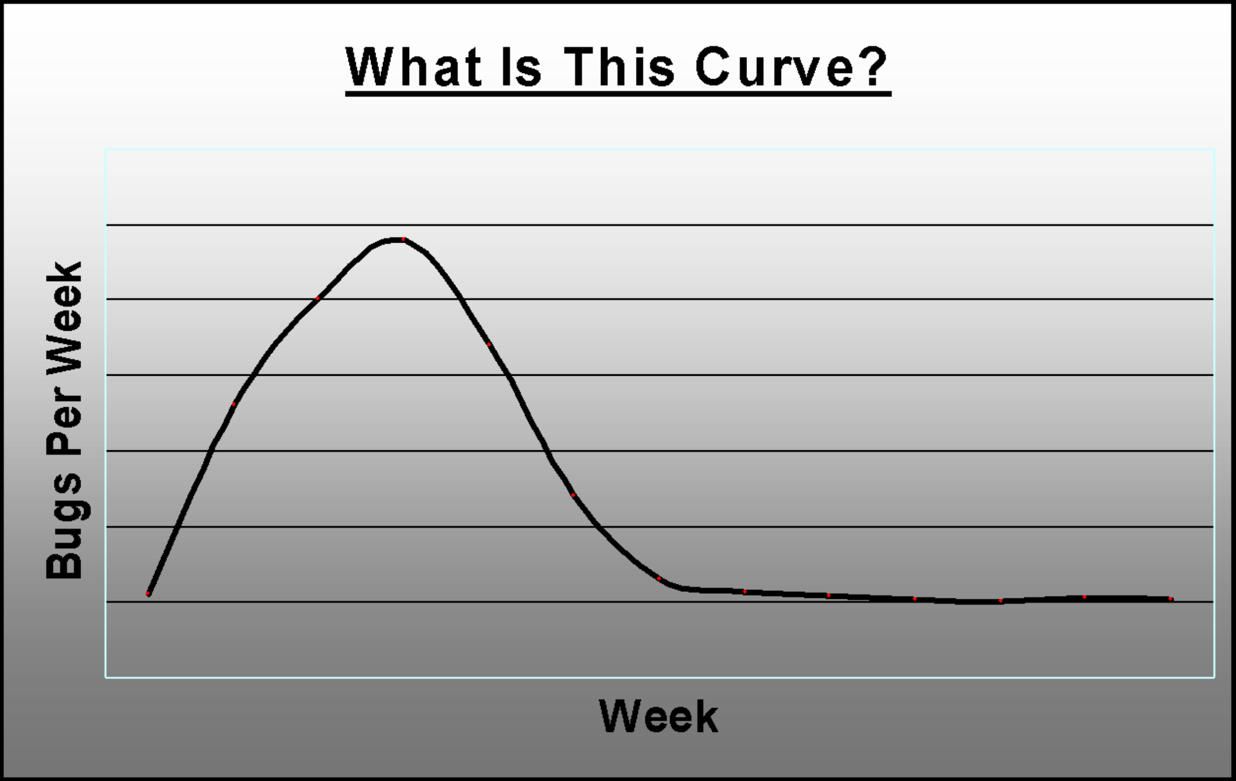
Testing Dashboard				Updated 11/1/00	Build 32
Area	**Effort**	**Coverage Planned**	**Coverage Achieved**	**Quality**	**Comments**
File/edit	High	High	Low	😐	1345, 1410
View	Low	Med	Med	☺	
Insert	**Blocked**	Med	Low	☹	**1621**

- James Bach’s project dashboard
- Note how this covers areas, progress against plan, current effort, key results and risks, and obstacles.

The Overall Structure of a Common Report

- Part 3
  Project bug metrics
  - These charts show find / fix rates over the course of the project.
  - Useful to give a sense of the rate at which problems are being repaired.
  - If the repair rate near the end of the project is slow compared to the find rate, the schedule is at risk.
  - It is too easy to over-interpret these charts

Bug Counts and Extent of Testing?



- Some people believe they can measure testing progress by plotting a project’s bug numbers against a theoretical curve of expected find rates over time.

Potential Side Effects of Defect Curves

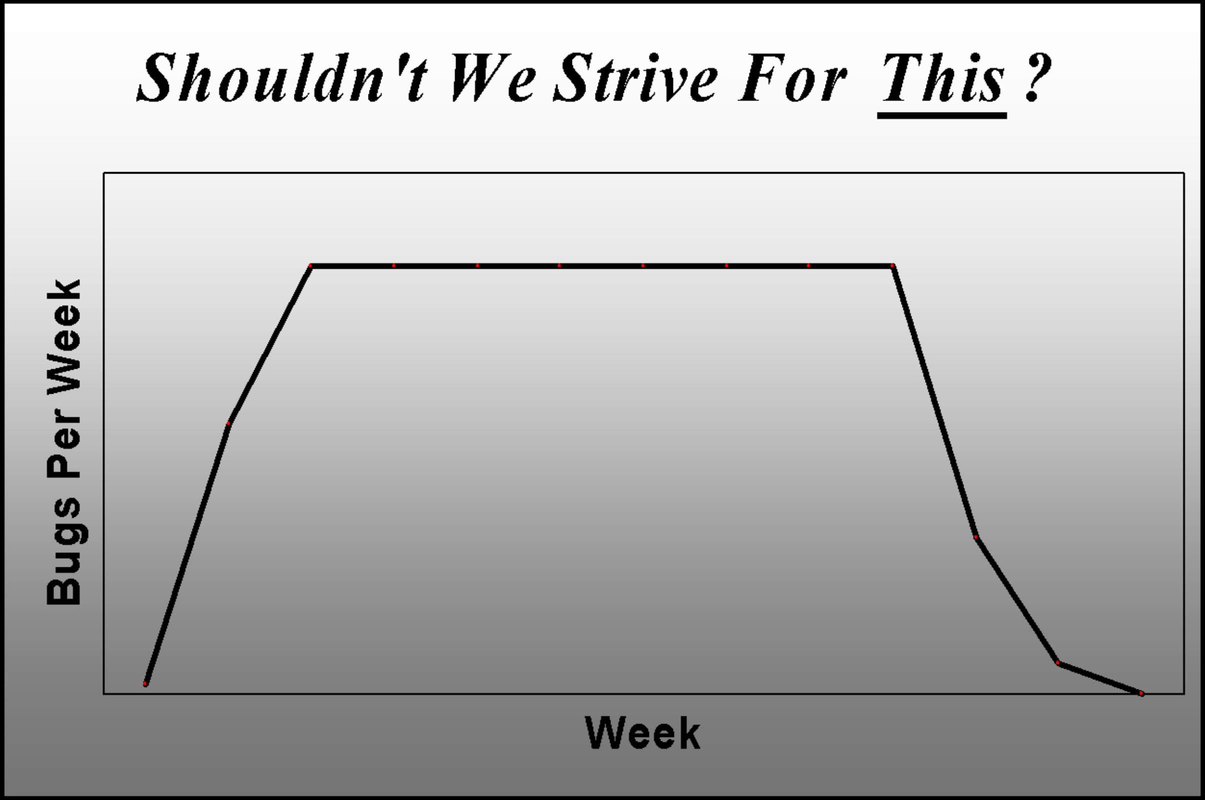
Earlier in testing: Pressure is to increase bug counts

- Run tests of features known to be broken or incomplete.
- Run multiple related tests to find multiple related bugs.
- Look for easy bugs in high quantities rather than hard bugs.
- Less emphasis on infrastructure, automation architecture, tools and more emphasis of bug finding. (Short term payoff but long term inefficiency.)

Potential Side Effects of Defect Curves

- Later in testing: Pressure to decrease find rate
  - Run lots of already-run regression tests
  - Don’t look as hard for new bugs.
  - Shift focus to appraisal, status reporting.
  - Classify unrelated bugs as duplicates
  - Class related bugs as duplicates (and closed), hiding key data about the symptoms / causes of the problem.
  - Postpone bug reporting until after the measurement checkpoint (milestone). (Some bugs are lost.)
  - Report bugs informally, outside of tracking system
  - Testers sent to movies before measurement milestones
  - Programmers ignore their bugs until reported by testers
  - Bugs are taken personally.
  - More bugs are rejected.

Bug curve counterproductive?



- Sometimes, a drop in bug find rate reflects the declining efficiency of a given style of testing or overreliance on a specific technique.
- Perhaps the better solution, as bug rates drop, is to switch to a more powerful technique—such as one that had not yet been used because it relies on stability of individual features as a prerequisite event.

The Overall Structure of a Common Report

- Part 4
  Deferred and no-change change requests
  - Every project team fixes some bugs and rejects or defers others.
    - At some point, there must be management review of the collection of problems that will not be fixed.
  - Rather than save up the list for the end of the project, list the new not-to-be-fixed change requests every week.

Module 7 - Review

- Keep Status reporting frequent, simple and easy to understand.
- Select an appropriate way to measure the extent of testing.
- Use a standard reporting format that highlights important information appropriately.
- A “dashboard” is a useful summary tool.