

PROJECT MANAGEMENT SIG

Software Testing & Tools

Wednesday

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Carson

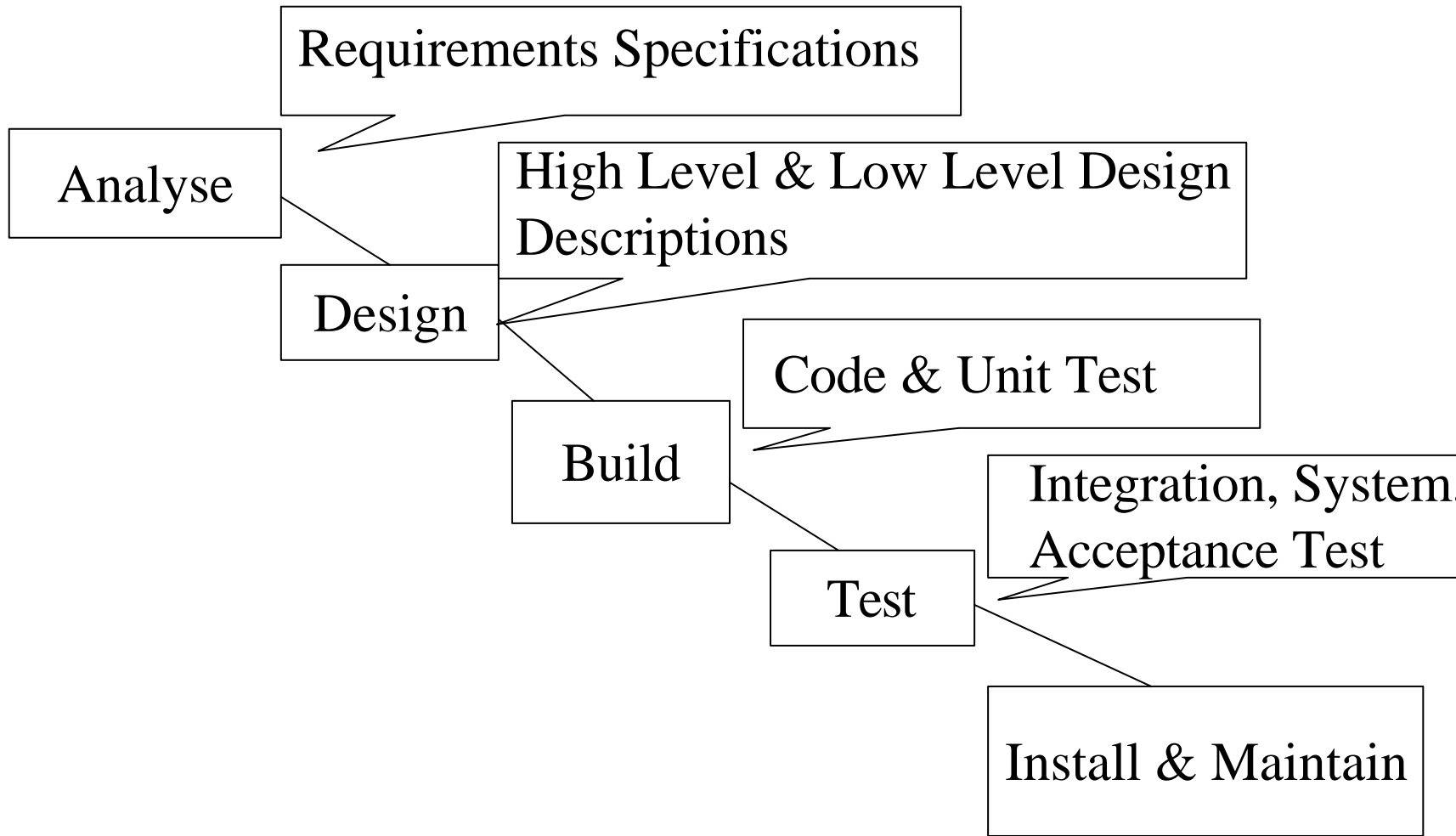


Early business failures

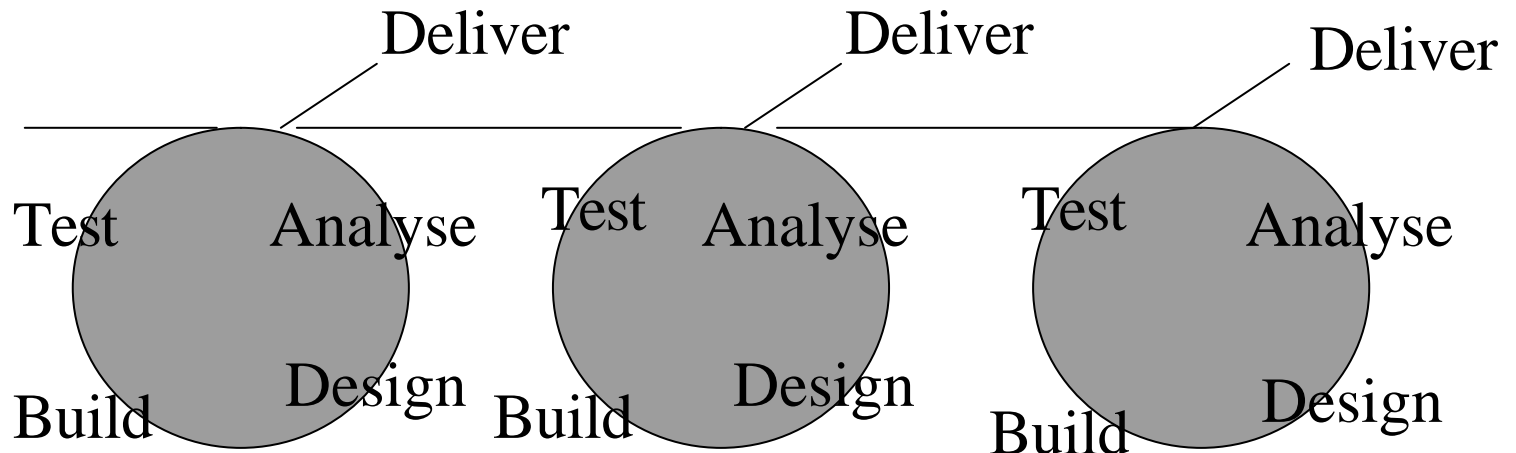
Software Quality Management Principles

- The Software Development Lifecycle (SDLC)
- Phase Deliverables & Reviews
- Building Quality In, Not Testing Quality In

Waterfall Model

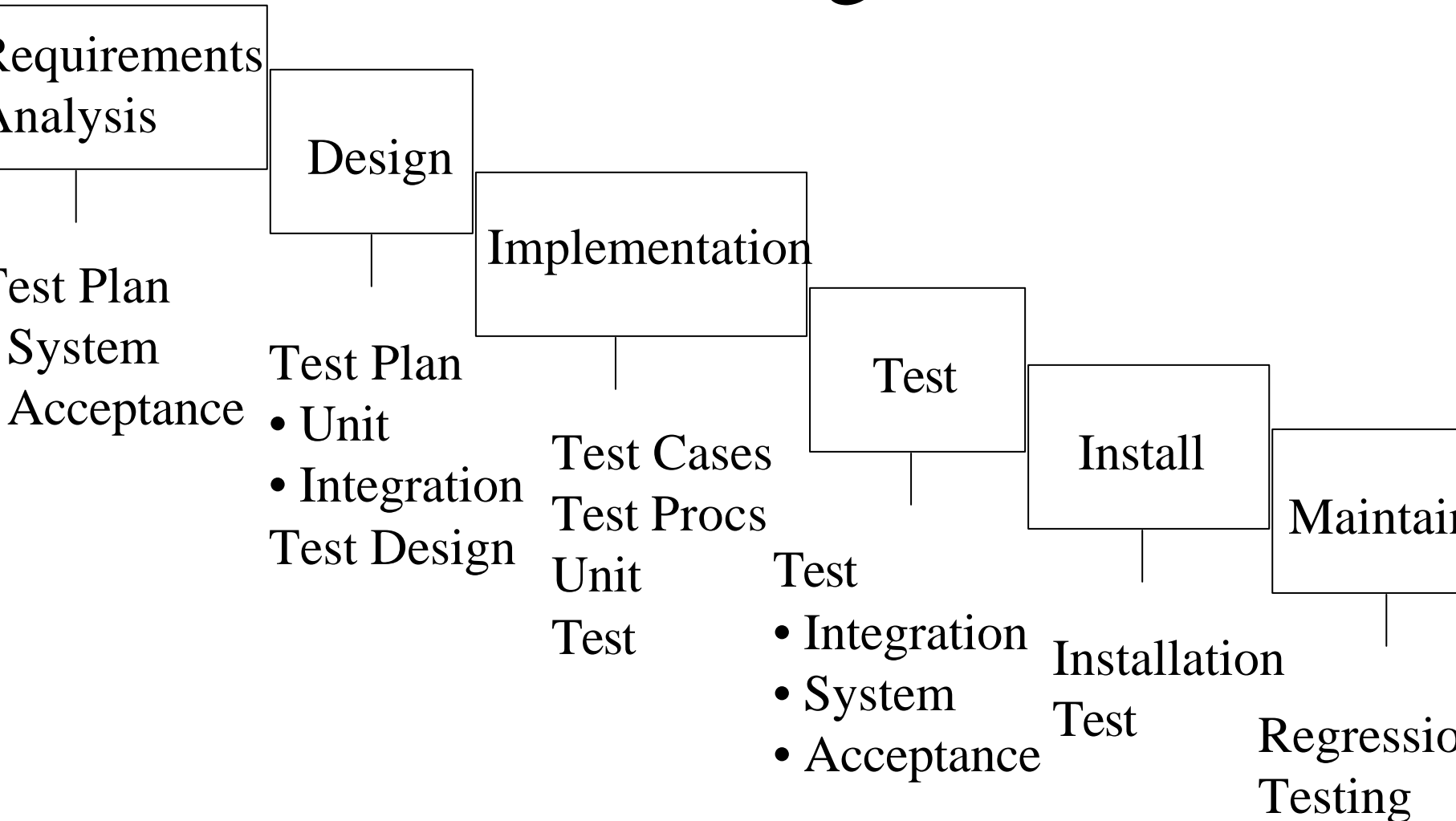


Spiral/Iterative Models

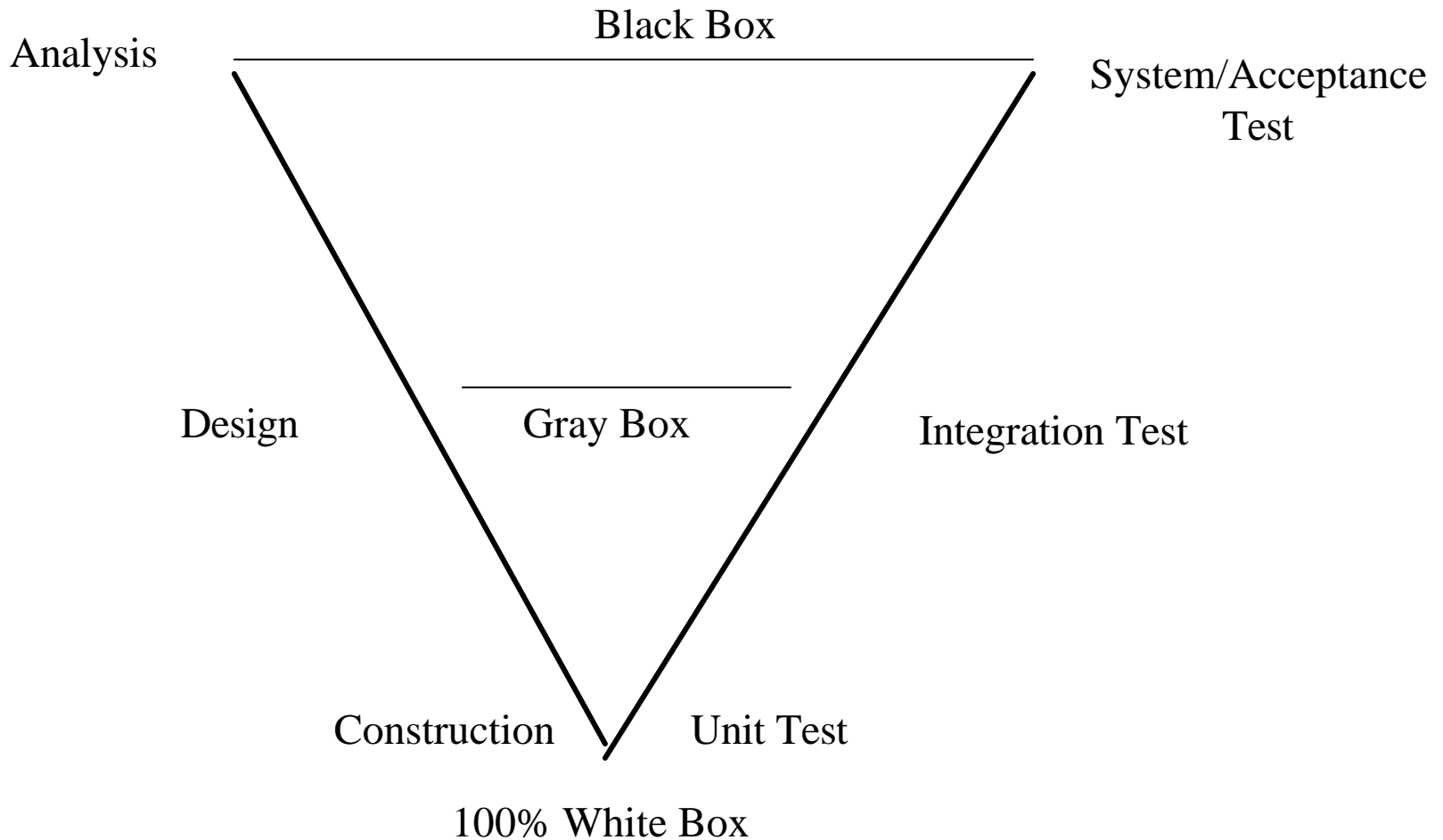


Software Development Lifecycle

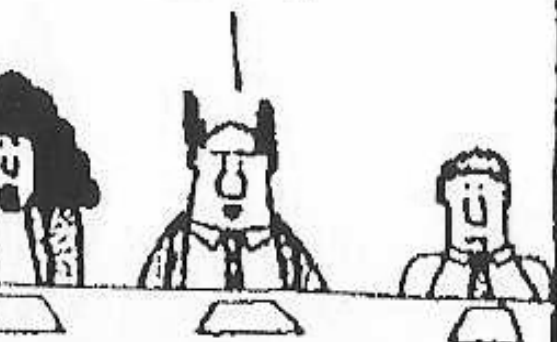
Testing



The V Model



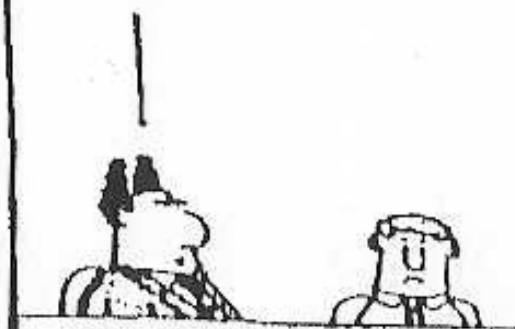
LET'S GO AROUND THE
TABLE AND GIVE AN
UPDATE ON EACH OF
OUR PROJECTS.



MY PROJECT IS A
PATHETIC SERIES OF
POORLY PLANNED,
NEAR-RANDOM ACTS.
MY LIFE IS A TRAGEDY
OF EMOTIONAL
DESPERATION.

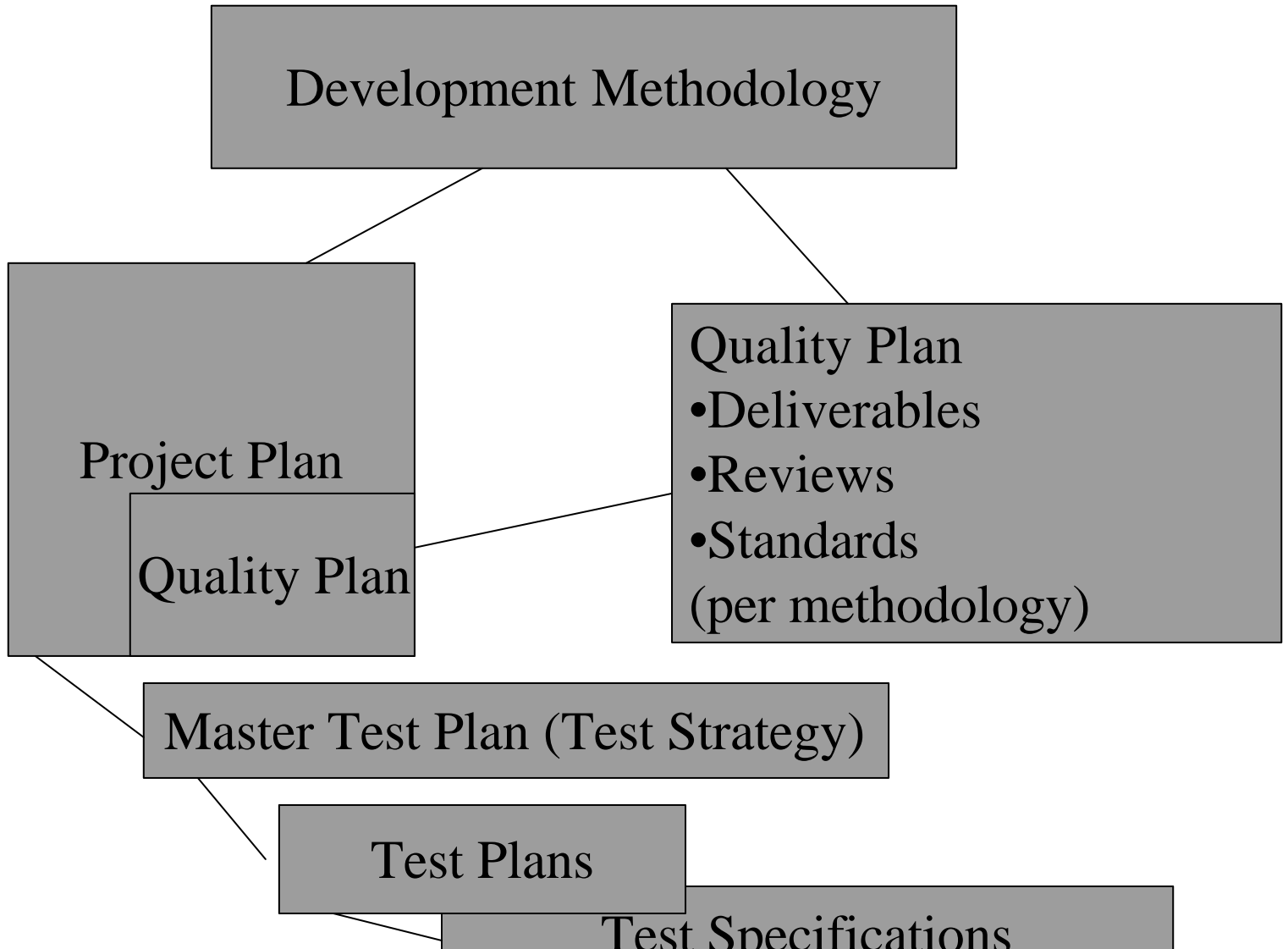


IT'S MORE OR LESS
CUSTOMARY TO SAY
THINGS ARE GOING
FINE

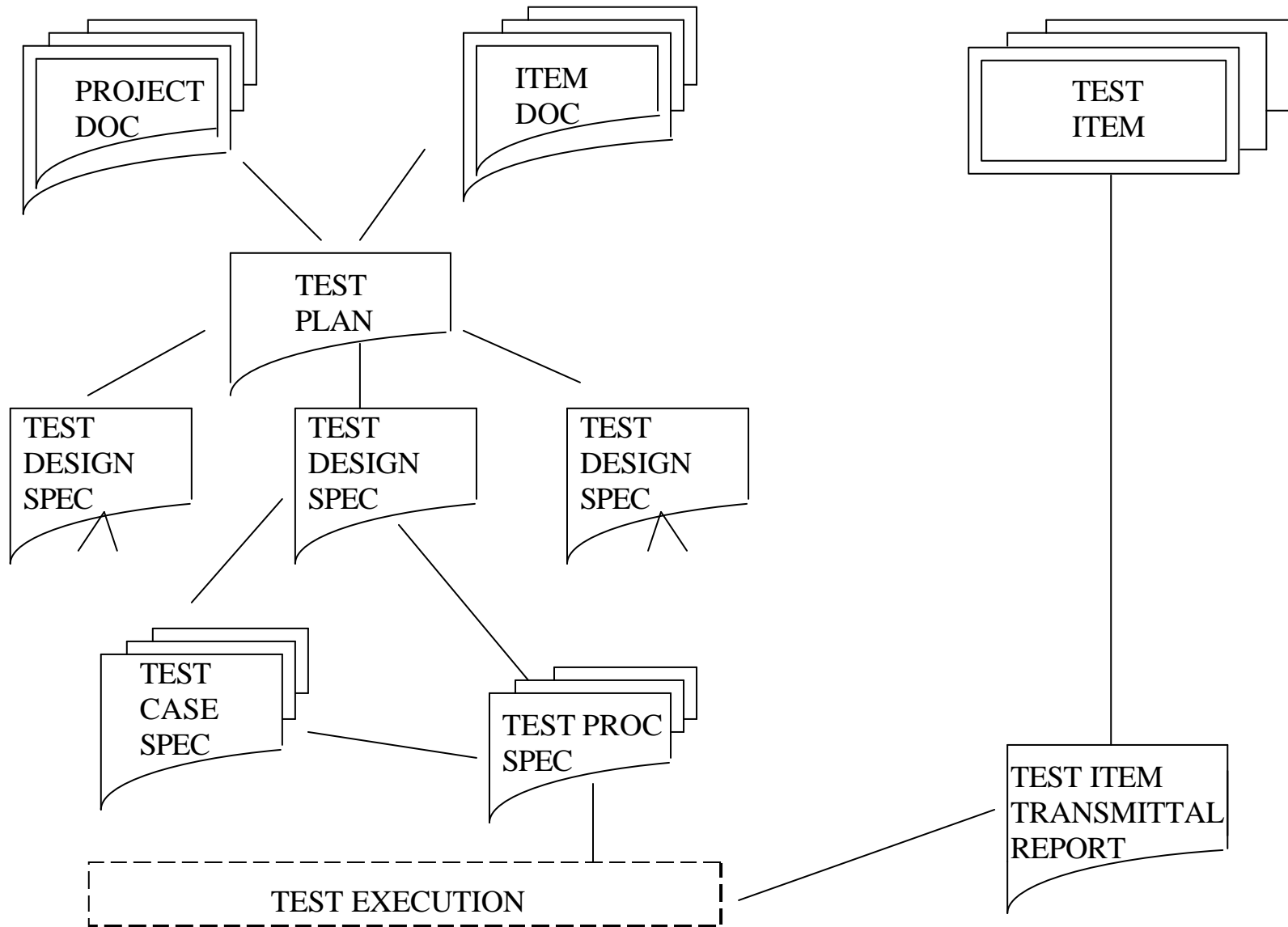


Cartoon courtesy of Philippe Etienne.

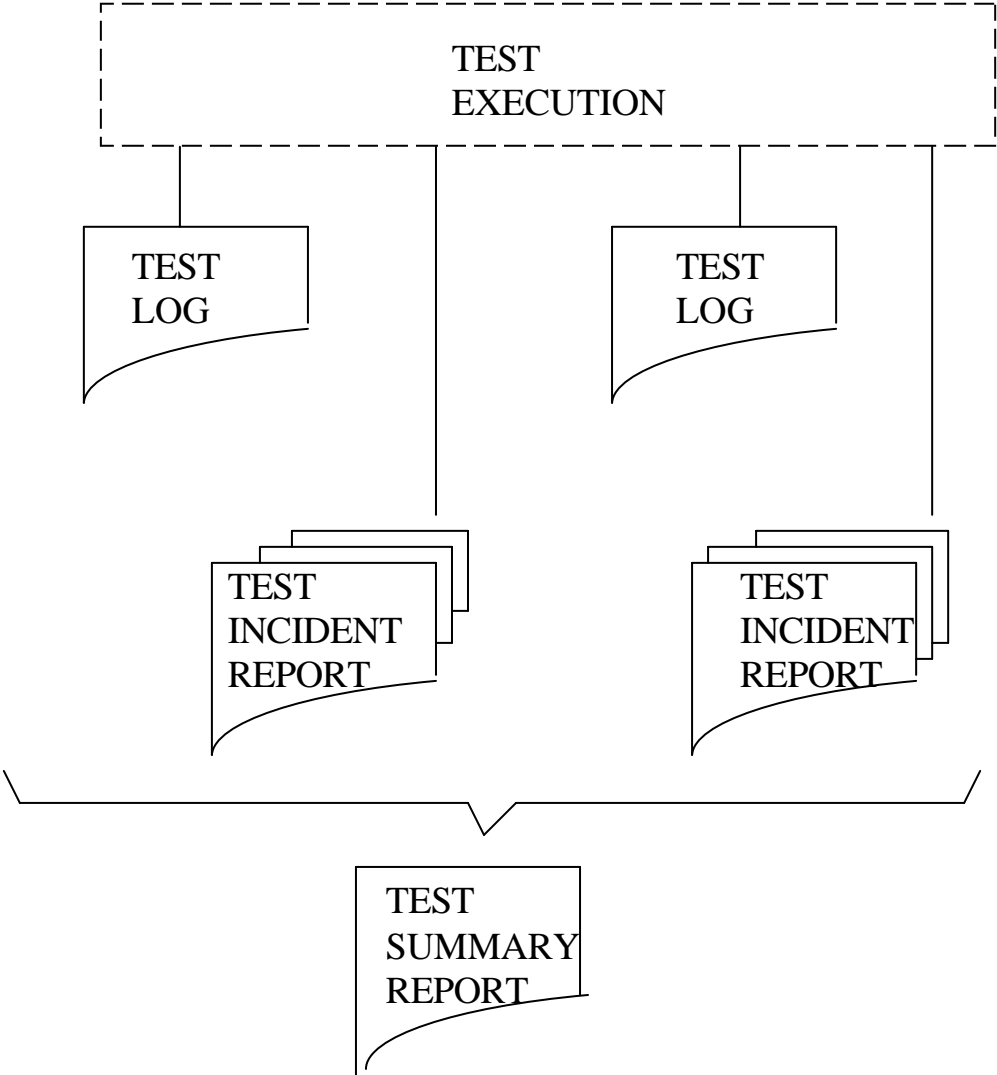
Project Plans, Quality Plans and Test Plans



IEEE Std 829 Model - Part 1



IEEE Std 829 Model - Part 2



Sample System Test Plan (1)

- Introduction
- Scope and Objectives
- Test Phases and Cycles
- System Test Schedule
- Resources
- Roles and Responsibilities

Sample System Test Plan (2)

- Error Management/Configuration Management
- Reviewing and Status Reporting
- Issues/Risks/Assumptions
- Signoff
- Appendices
- Control Documentation

Estimating the Time and Resources Needed for Testing

What proportion of the total development budget is needed for testing?

- The test labor content, across most applications is generally accepted as 50%, when people do honest accounting. For life-critical software, this can go up to 80%. **Boris Beizer**

- 1/3 plan, 1/6 code, 1/4 component test, 1/4 system test **Nancy Leveson**

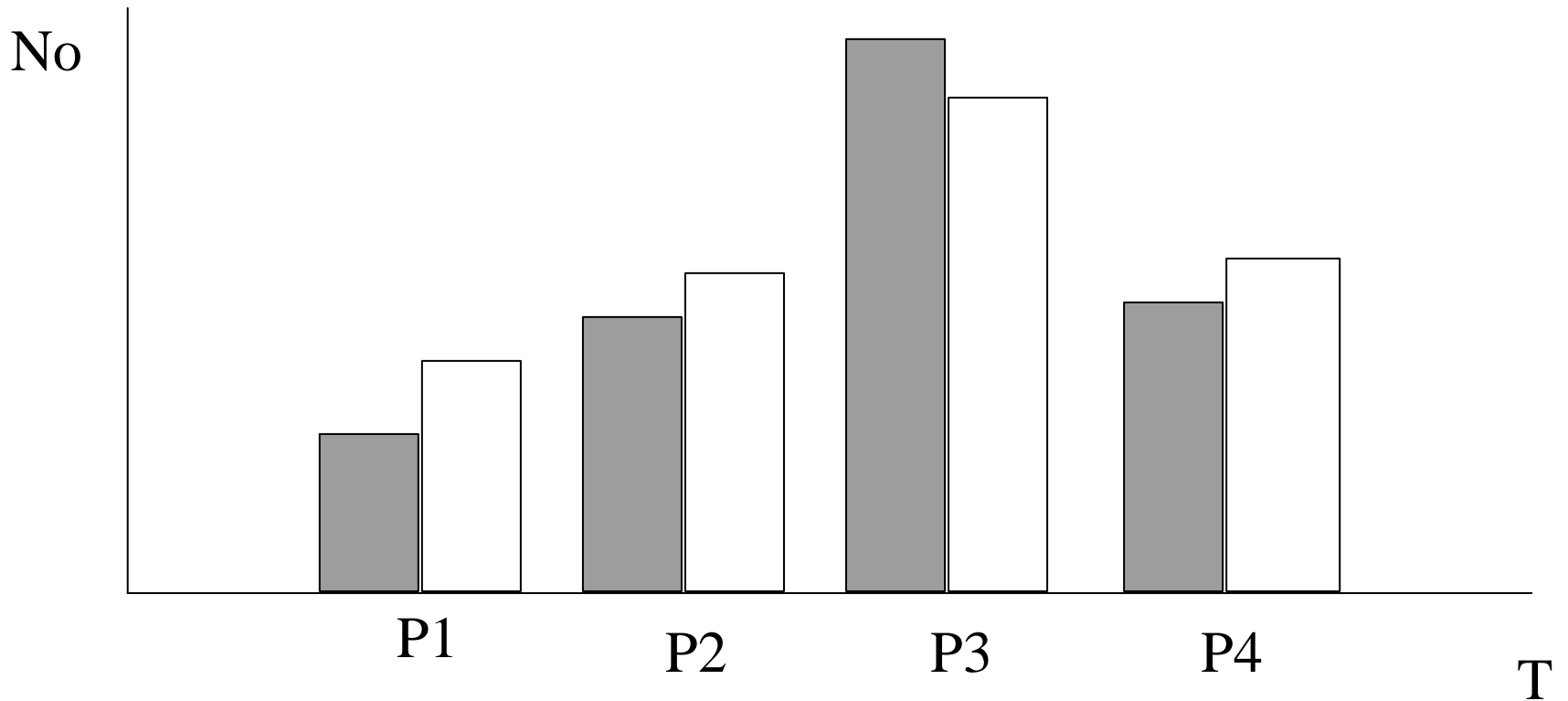
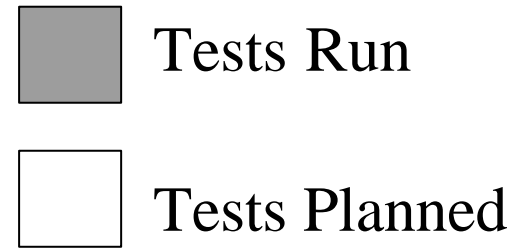
How Many Test Cases?

- one test case per 30-50 LOC, for fairly intensive test
- one test case per 300-500 LOC, for less intensive test
- 2-3 test cases per detailed feature in functional requirements definition
- 10-20 test cases per detailed feature in functional requirements definition
- 2-3 test cases per function point
- 20-30 test cases per page of functional requirements

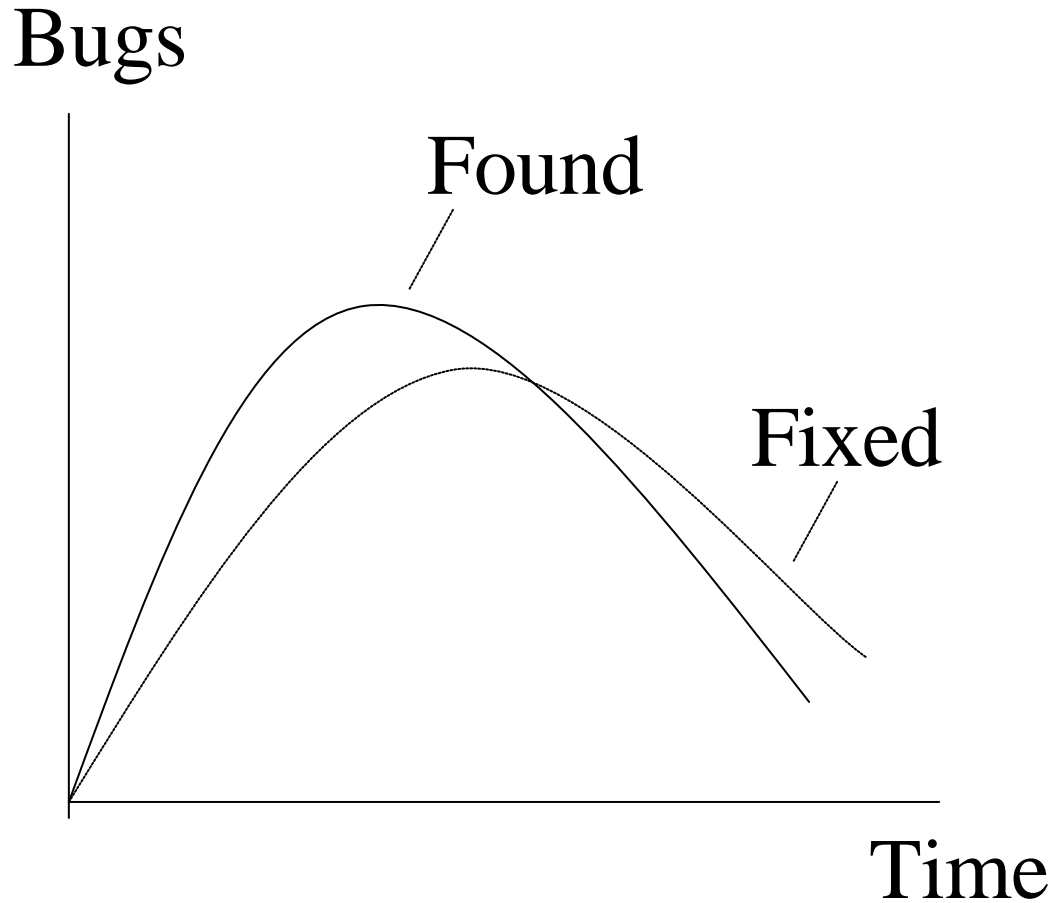
Time per Test Case

- Test case development - depends on project
 - 1 hour per test case (Capers Jones)
 - 9 hours per test case (Rex Black)
 - 3 to 10 test cases per day (Ross Collard)
- Test cases per day - depends on project
 - 20 to 50 per day for manual testing
- Retesting
 - 15 to 20%

Graphical Reports - Test Cases



Graphical Reports - Incidents





"It's electronic—it goes up and down without you doing anything."

The Benefits Of Automated Testing

- Without Automation, Comprehensive Testing (Particularly Regression Testing) Is Not Possible
- Manual Testing Is Typically Ineffective, Costly and Engenders False Confidence. Tests Are Poorly Planned, Poorly Documented and Not Repeatable.
- Automation Improves the Processes of Test Planning, Test Design, Test Execution and Test Management
- Automation Lets Humans Do What They Do Best (Use Their Expertise and Creativity) While Computers Provide the Support and Do the Hackwork
- Overall; Faster Delivery, Lower Costs, Better Quality

Reasons For Failure Of Automated Tools

- Lack of Support by Management and Business
- Poor Evaluation and Selection - the Wrong Tool
- Processes Not Mature Enough for Automation
- Lack of Training
- Vendor Failure - Out of Business

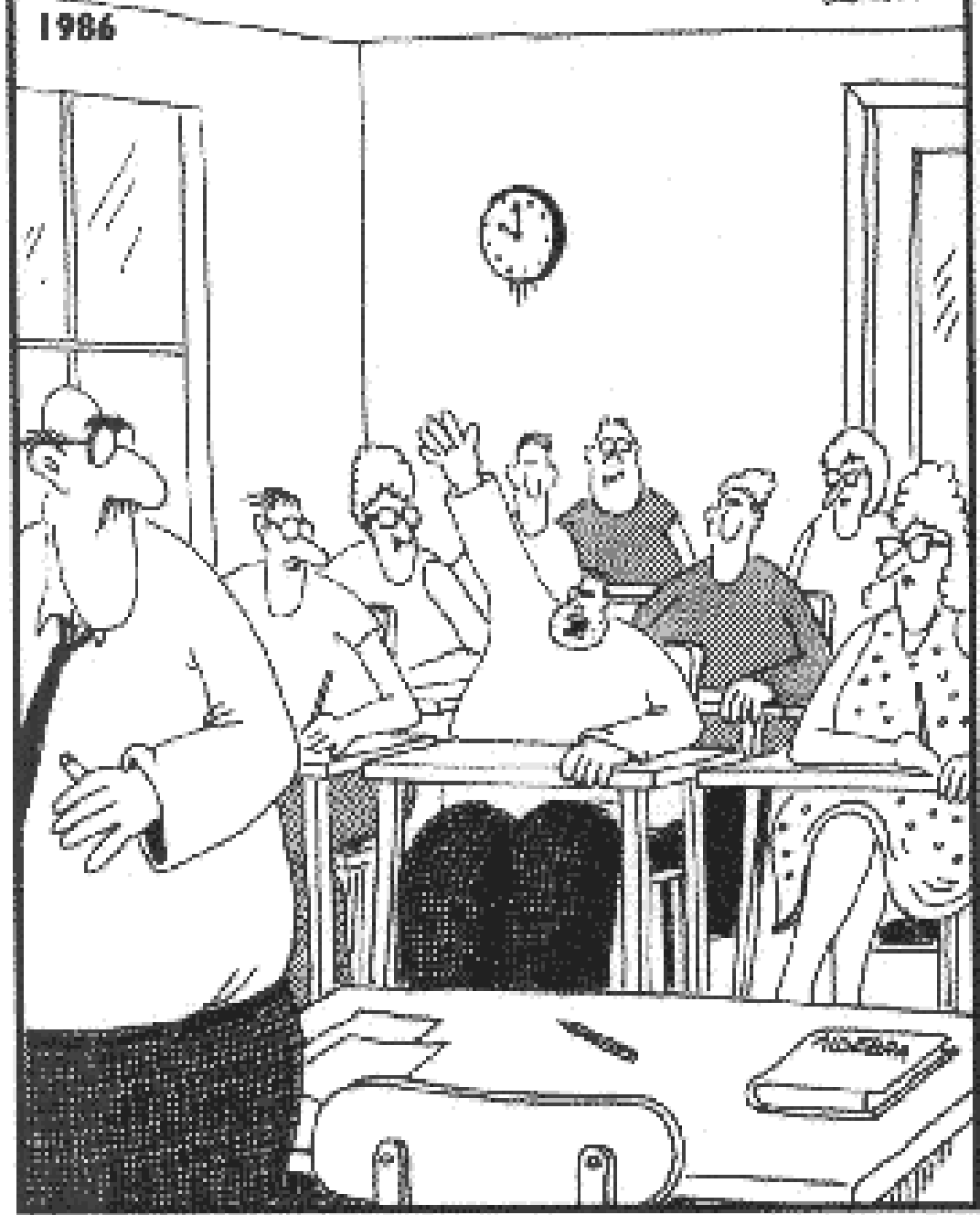
Test Tool Supplier List

- Test Design Tools
- GUI Test Drivers and Capture/Replay Tools
- Load and Performance Tool
- Non-GUI Drivers and Test Managers
- Other Test Implementation Tools
- Test Evaluation Tools
- Static Analysis Tools
- Miscellaneous Tools
- Other Sources of Tool Information

Test Automation Key Points

- Define the Purpose of Test Automation.
 - What to Automate, Where in the Testing Lifecycle, Which Type(s) of Tools.
- Develop a Test Automation Strategy and Project Plan.
- Treat the Test Automation Project Like a Software Development Project (Follow Development Lifecycle Approach)
- Recognise That Main Benefits Are Seen in Future Releases - Ensure Test Scripts Can Be Easily Maintained.
- Identify Skills Required - “A Good Tester Does Not Necessarily Make a Good Test Automator”

1986



"M. C. Jones would be surprised! Mechanics is full!"

Bibliography

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