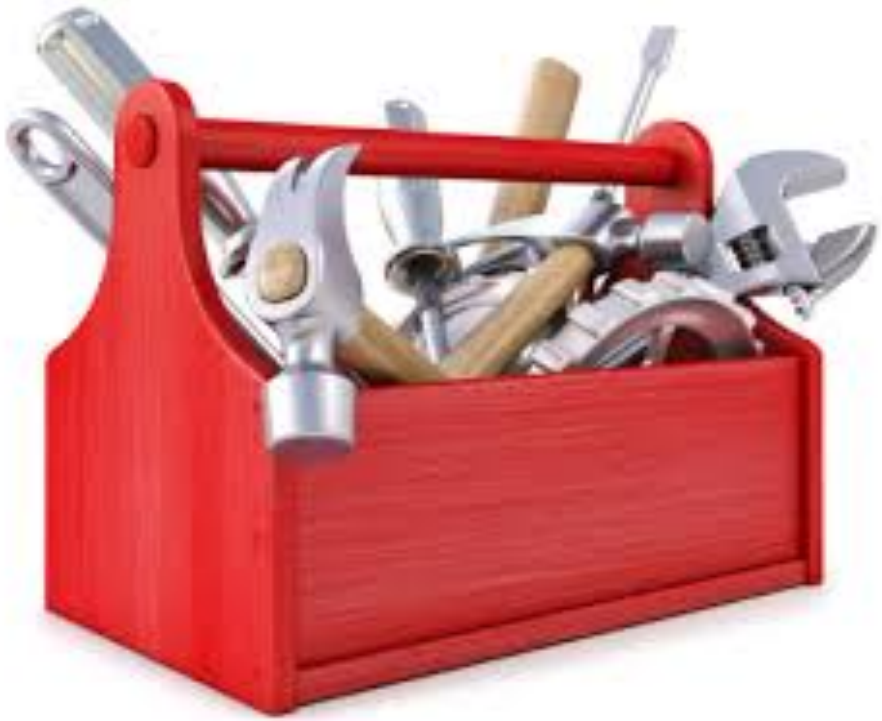
Case Studies of Free Test Tools

Successful Test Tool Use without a Big Budget



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Introduction

- Tools are great…except when they're not
- Gee-whiz tools often have gee-whiz price tags to go with them
- Okay, free tools are great…except when they're not
- Tools, free or pricey, can waste your time if you misuse them
- As a tester and/or developer, you should know your options so you can use them
- As a manager, you should know your team's options so you can help to choose the right ones
- Let's look at some examples of free tool use—successful and unsuccessful…

GUI Test Automation

- There are open-source tools for GUI test automation
- Selenium is the one most commonly mentioned
- Keyword-driven architecture is essential for maintainability
- Otherwise, you'll hit the same problems that occur with commercial tools
- Using an experienced lead is necessary for good architecture

Performance Testing

- JMeter (part of the Apache project) is the most commonly encountered
- OpenSTA has some users
- Maintenance of tests is not such an issue
- Expertise with performance is critical, and trying to use these tools without such skills will result in misleading results
- Some previously open-source performance testing tools have gone away

Web Services Testing

- Here options are more limited
- SoapUI is the free tool most often mentioned
  - SoapUI, while workable, is not a very reliable tool
  - SoapUI is the open-source variant of a commercial offering (with similar problems)
- TestMaker and WebInject show up in web searches, but none of our clients have mentioned them

Dynamic Analysis

- Most operating systems have some built-in options (e.g., top, perfmon)
- Additional open-source tools are also available
  - Valgrind in Linux/Android/Mac world
  - Winleak for PCs
- Valgrind works well, but it does consume a lot of resources

Functional Verification Testing

- Many tools for these activities
  - Fitnesse used commonly for ATDD
  - Cucumber family used commonly for BDD
- These tools are not limited to agile development, but came from that world
- Developers and testers use these tools collaboratively
- Business stakeholders ideally review tests as well
- Often (but not always) included in continuous integration frameworks

Continuous Integration

- Present in all our clients with successful agile implementations
- Most use either Jenkins or Hudson
- Most include some additional tools for unit testing, etc. (more later)
- Supports testing by making the build process faster, more reliable
- Can create problems when builds are auto-deployed to test environments

Unit Testing

- Most of our clients using continuous integration extend it with unit testing
- The xUnit family of tools is most typically used (Cpp-Unit, J-Unit, etc.)
- Some report developers using it for TDD
- Code coverage analysis tools (e.g., gcov) are often used in conjunction with these tools
- Many developers don't have training in proper test design, so these tests are less useful than they could be
- Testers should learn the basics of unit testing, white-box test design, etc., and help developers get more value

Static Code Analysis

- Some of our clients extend continuous integration with static code analysis
- Sonar and splint are typical open-source options, though many clients opt for commercial static tools
- Open-source complexity analysis tools are available (e.g., pmccabe)
- To understand the output of these tools, knowledge of the programming language is required
- These tools are not a replacement for proper code reviews

Test Design Tools

- Certain types of tests require tools for design
- Pairwise testing is one good example
- PICT and ACTS are good free tools for pairwise testing
- Model-based testing gets talked about a lot, but few of our clients use it
- We have built model-based test systems for some of our clients, using open-source tools

Scripting Tools

- Many testers automate tests using scripting tools
- Ruby, Python, Tcl/Tk, and Unix shells are in common use
- If anything, there are too many different options, leading to Tower of Babel problem
- Scripting is best done by people with some programming skill and knowledge
- However, testers can learn or even teach themselves
- Care must be taken to avoid maintainability problems
- Very large, complex, sophisticated test systems can be built

Conclusions

- We've looked at ten areas where open-source tools can support testing by testers, developers, or both
- Managers should remember that free to download doesn't mean free to use
  - Direct costs of people's time
  - Opportunity costs (what could be done)
- Many of our clients are experiencing good success with these open-source tools
- Support options can be limited, which is a consideration for less-technical teams

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