

Surviving the Top Ten Challenges of Software Test Automation

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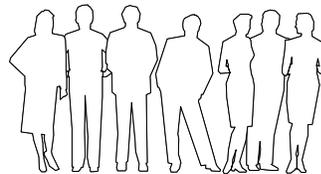


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The Top Ten Challenges of Software Test Automation

- Qualitative research since 1995 with:
 - Test tool users and practitioners
 - Test tool vendors
 - QA and test management
 - Testing conference and seminar attendees
 - RCS clients



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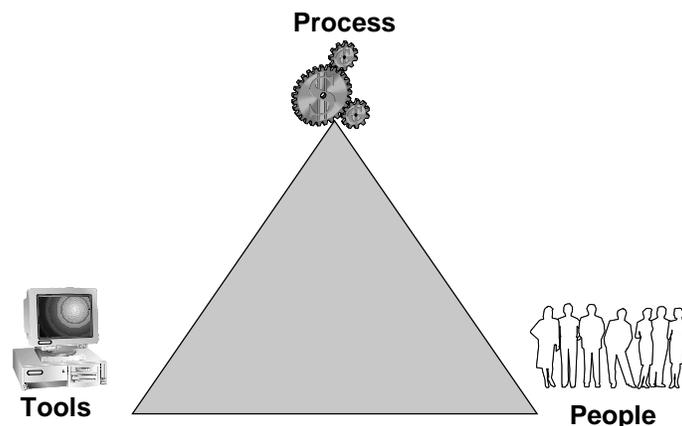
The Top Ten Challenges of Software Test Automation

1. **Buying the Wrong Tool**
2. **Inadequate Test Team Organization**
3. **Lack of Management Support**
4. **Incomplete Coverage of Test Types**
5. **Inadequate Tool Training**
6. **Lack of Tool Ownership & Acceptance**
7. **Lack of a Basic Test Process or Understanding What to Test**
8. **Lack of Configuration Management**
9. **Lack of Tool Compatibility & Interoperability**
10. **Lack of Tool Availability**

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The Role of Test Tools



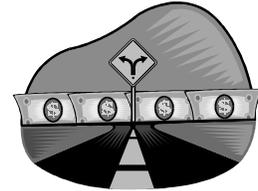
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Challenge #10 – Lack of Tool Availability

- If funding is the issue:
 - Measure the current cost of defects, especially in post-implementation rework. Use this information to help build a case for faster and more reliable testing using tools.
 - Show the value of automated test tools for other groups besides testers, such as the value of developers using the tools.



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Challenge #10 – Lack of Tool Availability

- If getting a good technical fit is the issue:
 - Network with other testers to find information about lesser-known test tools.
 - www.qaforums.net
 - www.softwareoxide.com
 - www.stickyminds.com
 - Try to find tools that will work between platforms.
 - This will likely require the use of PC-based emulators as opposed to host-based tools.
 - Investigate the possibility of building your own tools, using free or low-cost tools
 - www.riceconsulting.com/cheaptools.htm

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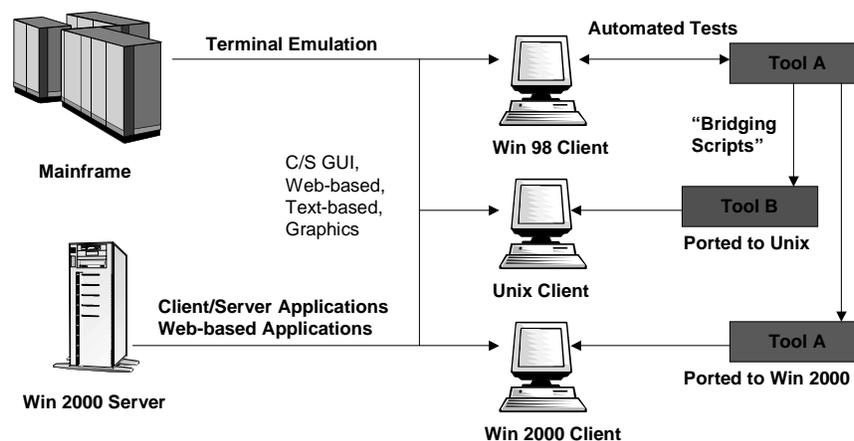
Challenge #9 - Lack of tool compatibility and interoperability

- Solution strategies:
 - Select tools that have cross-platform capability to the greatest extent possible.
 - Consider writing shell scripts and bridging scripts, perhaps in non-proprietary scripting languages, such as Tcl.
 - Evaluate critically whether the ability to perform cross-platform testing is a firm requirement.

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Using Bridging Scripts for Tool Interoperability



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⁸Source: *Integration and Interoperability Testing Course*, Rice Consulting Services, Inc.

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Challenge #8 – Lack of Configuration Management Processes

- Without Software Configuration Management (SCM) for automated test tools:
 - Effort is duplicated because different people may each be building similar test scripts
 - Reuse is not realized because people are all creating test scripts for single-use purposes.
 - Existing automated test scripts are at risk of corruption if they are modified without the knowledge of the original author.

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Challenge #8 – Lack of Configuration Management Processes

- What's required for effective SCM for test automation is:
 - A workable process that everyone using the tool can understand and follow,
 - A tool to manage the ownership, versions and organization of the automated test scripts, and
 - A person to own the SCM process and ensure that people are following it.

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Challenge #8 – Lack of Configuration Management Processes

- Solution strategies:
 - Consider the people and processes that will be required to manage the automated test cases and test scripts.
 - Look for tools that accommodate changes to the user interface gracefully.
 - Consider automated test scripts as part of an application's configuration set.
 - Involve the prospective test automation SCM person in evaluating test tools and their respective test management offerings.

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Challenge #8 – Lack of Configuration Management Processes

- Solution strategies (cont'd.):
 - Investigate the use of existing SCM tools currently owned by your organization.
 - Trace your automated test scripts to functional requirements and defects.



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Challenge #7 – Lack of a Basic Testing Process or Understanding What to Test

- **Solution strategies:**
 - Create a set of evaluation criteria for functions that you will want to consider when using the automated test tool. These criteria may include:
 - Repeatability of tests
 - Criticality/Risk of applications
 - Simplicity of operation
 - Ease of automation
 - Level of documentation of the function (requirements, etc.)

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Challenge #7 – Lack of a Basic Testing Process or Understanding What to Test

- Examine your existing set of test cases and test scripts to see which ones are most applicable for test automation.
- Examine your current testing process and determine where it needs to be adjusted for using automated test tools.
- Be prepared to make changes in the current ways you perform testing.
- Involve people that will be using the tool to help design the automated testing process.
- Train people in basic test planning skills.

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Challenge #6 – Lack of Tool Ownership and Acceptance

- Some of the reasons for lack of tool ownership and acceptance include:
 - Difficulty in using the tool
 - Not enough time to learn the tool and perform their normal level of work
 - Lack of tool training
 - Lack of management support for using the tool
 - Lack of tool support, either internally or from the vendor
 - Tool obsolescence



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Challenge #6 – Lack of Tool Ownership and Acceptance

- Solution strategies:
 - Don't cut the tool training.
 - Training doesn't guarantee success, but without it you are at risk of tool abandonment.
 - Have someone in your organization in the role of a "tool smith."
 - This person's job is to be the resident expert on the tools used for testing.
 - Management needs to emphasize that the tool effort is important to them and tool usage is a required part of the testing process.

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Challenge #5 – Inadequate Tool Training

● Issues:

- Skipping the vendor's training
- Not getting the right training, due to the incorrect selection of topics
- Inability to apply the training to your environment
- Trying to learn by self-study
- “Not enough time” for training



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Challenge #5 – Inadequate Tool Training

● Solution strategies:

- Include money in the tool proposal for training at least a core group of people.
- Match people to the most applicable training topics.
- Have tool training performed by the vendor at your location using some of your own applications as exercises.
- Find a skilled local consultant experienced with the tool to sit with your team for about 3 to 4 weeks.

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Challenge #4 – Inadequate Coverage of Test Types

- Solution strategies:
 - During tool evaluation, prioritize which test types are the most critical to your success and judge the candidate tools on those criteria.
 - Understand the tools and their tradeoffs. You may need to use a multi-tool solution to get higher levels of test type coverage.
 - For example, you will need to combine the capture/playback tool with a load test tool to cover your performance test cases.
 - Manage expectations by reminding people that 100% test type coverage is not likely.
 - However, by automating 80% of the tests, you have time to deal with the rest manually.

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Challenge #3 – Lack of Management Support

- Solution strategies
 - Communicate that it takes time and planning to build a firm foundation of people, processes and the right tools.
 - When making the case to management for acquiring test tools, present the challenges as well as the benefits.
 - Reinforce to management that they carry a great deal of influence in how people will accept automated test tools.
 - Keep management informed of tool progress and issues that arise.

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Challenge #2 – Inadequate Test Team Organization

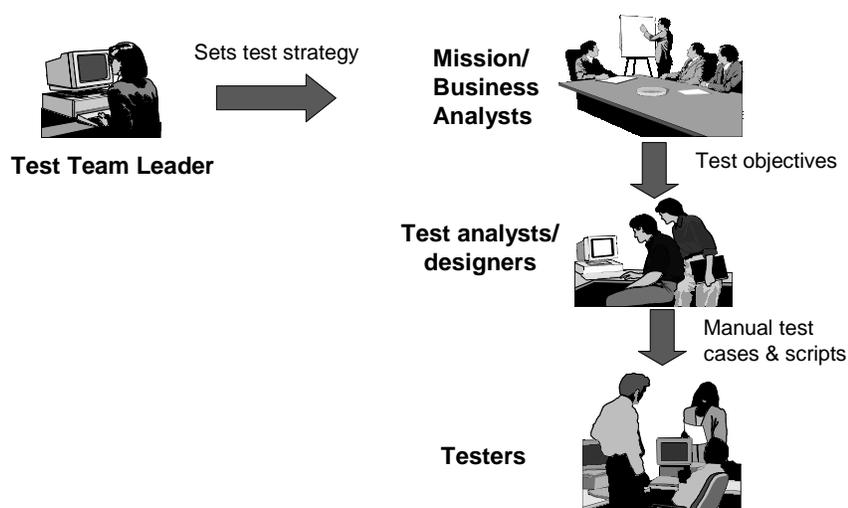
● Solution strategies

- Add a person to the test team who is a “test scriptor.”
 - This person should be comfortable in working with code and be able to take the basic test that has been designed by a test analyst and convert it into an automated script.
- Start simple with basic scripting concepts and add complexity later.

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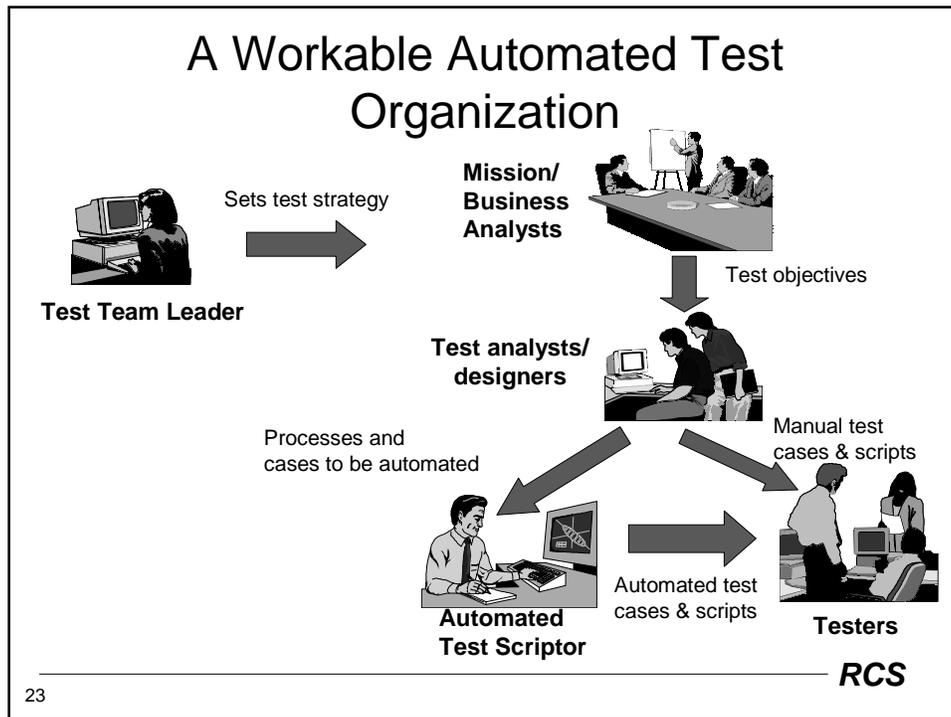
Typical Manual Test Organization



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Challenge #1 – Buying the Wrong Tool

- **Solution strategies:**
 - Take time to define the tool requirements in terms of technology, process, applications, people skills and organization.
 - Involve potential users in the definition of tool requirements and evaluation criteria.
 - Build an evaluation scorecard to compare the performance of the tools against a common set of criteria.
 - Perform a "proof of concept" (POC) as opposed to an evaluation.

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Summary

- There are more challenges than these!
- Successful software test automation is possible if fundamental issues are addressed and managed.
- Success depends on multiple factors that require the coordination of efforts between various groups in an organization.
- Automated software testing is truly a different way of testing and requires adjustments to current test methods and organizational structures.
- The payback from test automation can far outweigh the costs.



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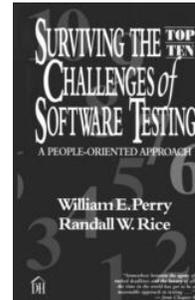
● Read this article at:
www.stsc.hill.af.mil

Crosstalk, May 2002

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Bio - Randall W. Rice

- 25 years experience in building and testing information systems in a variety of industries and technical environments
- Certified Quality Analyst
- Certified Software Test Engineer
- Conference chair 1995 - 2000, QAI's annual software testing conference
- Co-author with William E. Perry, *Surviving the Top Ten Challenges of Software Testing*
- Vice-President and Principal Consultant, Rice Consulting Services, Inc. since 1990



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