Requirements for Test Automation

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Requirements Considerations

- Software Under Test
- Tools and environment
- Test management
- Organizational situation
- Automation architecture
Automated Software Tests

- Able to run two or more specified test cases
- Able to run a subset of all the automated test cases
- No intervention needed after launching tests
- Automatically sets-up and/or records relevant test environment
- Runs test cases
- Captures relevant results
- Compares actual with expected results
- Reports analysis of pass/fail
Levels of Automation

- Fully automated software testing
- Semi-automated software testing
- Manual software testing
Questions About Requirements†

• Is the product stable?
• To what extent are oracles available?
• Who is the client for test information?
• Will the product live through multiple releases?
• How good is the source control management?
• Do you need requirements traceability?
• How capable are the current testers?
• How cooperative are the programmers?

Product Considerations

• Components of SUT
• Access points for inputs and results
• Important SUT features and capabilities
• SUT environments
• Test data elements
• Oracle availability
Testing With An Oracle
Automation Requirements

• What are your wants and needs?
• Where is automation practical?
• Where does automation pay off?
• What are the expected benefits?
• Criteria for make / buy decision?
Automation Architecture

• Model for SUT and environment
• Break down software testing problem
• Decide on location(s) of automation
• Decide on level(s) of automation
• Describe automation architecture
A Model For SUT

System Under Test

User → GUI

API

Functional Engine

Remote GUI

Data Set

User
Automated Software Testing Process Model
Process Model Example

1. Testware creation, version control, and configuration management
2. Selecting the subset of test cases to run
3. Set-up and/or record environmental variables
4. Run the test exercises
5. Monitor test activities
6. Capture relevant results
7. Compare actual with expected results
8. Report analysis of pass/fail
Factors in Test Tool Selection†

- Capability
- Reliability
- Capacity
- Learnability
- Operability
- Performance
- Compatibility
- Non-Intrusiveness

† Bach, J. “Test Automation Snake Oil”, 1999. Published in Windows Tech Journal, 10/96, and proceedings of the 14th International Conference and Exposition on Testing Computer Software
Summary

- Requirements begin with analysis
- Identify critical requirements
- Model the SUT
- Model the testing process
- Analyze available tools
References

• Bach, J. “Test Automation Snake Oil”, 1999. Published in Windows Tech Journal, 10/96, and proceedings of the 14th International Conference and Exposition on Testing Computer Software