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Developing Your Testing Approach: A Context-Driven Analysis

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Context: “It Depends”

- **“It depends” is a frustrating answer**
 - But we don’t (or shouldn’t) respect people who tell us to do the same things under all circumstances.
 - Complex circumstances require tailored responses.
 - The challenge is to figure out the relevant factors and how to deal with them in appropriate ways.
- **Rather than accepting an alleged best practice, ask:**
 - When and why a given practice would be beneficial?
 - What risks and benefits are associated with it?
 - What skills, documents, development processes, and other resources are required to enable the process?

Seven Basic Principles of the Context-Driven School

- The value of any practice depends on its context.
- There are good practices in context, but there are no best practices.
- People, working together, are the most important part of any project's context.
- Projects unfold over time in ways that are often not predictable.
- The product is a solution. If the problem isn't solved, the product doesn't work.
- Good software testing is a challenging intellectual process.
- Only through judgment and skill, exercised cooperatively throughout the entire project, are we able to do the right things at the right times to effectively test our products.

Example: Test Group Missions

- Find defects
- Maximize bug count
- Support a unit testing effort
- Block premature product releases
- Help managers make ship / no-ship decisions
- Help stakeholders translate their requirements into acceptance tests
- Minimize technical support costs
- Conform to regulations
- Minimize safety-related lawsuit risk
- Assess conformance to specification
- Find safe scenarios for use of the product (find ways to get it to work, in spite of the bugs)
- Verify correctness of the product
- Assess quality
- Assure quality

Example: Test Documentation

- How should we document our testing?
 - Common testing templates, based on IEEE Standard 829, call for very extensive documentation.
 - Should we follow the standard and generate all the paper? Ignore the standard?
 - Or should we decide on our project's requirements, and adopt a documentation approach that meets our actual needs (which may or may not involve 829)?

Example: Test Documentation

- Common documentation requirements questions:
 - Will the documentation be a product or a tool?
 - Do you expect to need test documentation in lawsuits?
 - How quickly is the design changing?
 - How many tests are you trying to document?
 - Will you check test results against an oracle or against a planned result?

Example: GUI Regression Automation

- Will the user interface of the application be stable or not?
- To what extent are oracles available?
- To what extent are you looking for delayed-fuse bugs (memory leaks, wild pointers, etc.)?
- Does your management expect to recover its investment in automation within a certain period of time? How long? How easily can you influence these expectations?
- For more, see “Architectures of Test Automation” www.kaner.com/testarch.html and “Avoiding Shelfware” <http://www.kaner.com/pdfs/shelfwar.pdf>.

A List of Major Test Techniques

- Partition driven
- Stress driven
- Specification driven
- Risk driven
- Random / statistical
- Function
- Regression
- Scenario driven
- Flow driven
- User testing
- Exploratory

**Different situations call
for different test techniques.**

The Five-Fold Testing System

All tests involve choices and tradeoffs in at least these five areas:

- **Coverage:** What you're testing
- **Risks:** Problems you are trying to find
- **Evaluation:** How you know a test passed or failed
- **Activities:** How you test
- **Testers:** Who is testing

How you think about these issues dictates what combinations of test techniques you will use.

Examples

We Must Reappraise

- Over the last 30 years, the context of our work has shifted dramatically
 - When Kaner started programming (1967), 10,000 lines of code was a lot
 - James wrote games for Commodore 64 16K cartridges in 1984.
 - In early 1980s, 100,000 lines was a lot.
 - Now, we routinely crank out multi-million line systems
- Yet, many of the practices and approaches we recommend to testers today, and see on tester certification exams, are unchanged from the 1980's.

Reappraisal (Some Thoughts)

- Study / train skills rather than practices.
- Build skills and experience in multiple areas, not just testing.
- Look for opportunities to collaborate technically with programmers (e.g. on testability or unit testing).
- Learn a wide range of testing techniques. Select and combine them appropriately for the project at hand. (see *Paradigms of Software Testing*, www.kaner.com/pdfs/slides/paradigm.pdf)
- Appraise the techniques you use (and the documentation you create) against the need to test massive systems. You may need to lighten your processes.



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Questions?



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Thank You!

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