Testing Software Quality Characteristics – Part 1

Usability Testing

Objective

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Generate usability tests

Usability Testing

Verify the behavior of the system meets its requirements when its resources are saturated and pushed beyond their limits.

Attempt to find the stress points and ensure the system performs as specified

Usability Testing

Close to one-half of code in many applications is in the user interface

Usability is the degree to which intended users are:

- Able to perform tasks the product is intended to support in intended environment
- Satisfied by the procedures they must follow and the resultant output
- Protected from consequences of their actions

Usability Requirements

Usability requirements are typically stated in terms of:

- **Learnability**: the type and amount of training required to bring users to a desired level of performance
- **Memorability**: addresses the ability to retain skills in using a product once it is learned
- **Errors**: measures the number of incorrect actions a user makes in trying to accomplish a task
- **Efficiency**: measures the speed with which tasks can be performed
- **Subjective satisfaction**: the user's overall feeling about the product

Usability Testing Reliability and Validity Concerns

Reliability: would you get the same results if test were repeated

- Best user is 10X faster than slower
- Best 25% are 2X faster than

Validity: does usability test measure something of relevance

- Wrong users
- Wrong task

Test Goals

Formative Evaluation

- Learn which aspects of interface are good and bad
- How can design be improved

Summative evaluation

- Assess the overall quality of the interface
- Measurement test

Test Plan Concerns

Who are the users?

What task will they perform?

What user aids will be available?

What data is to be collected?

What criteria will be used to determine success?

Pilot Tests

Test procedures must be tried out in a pilot study

Evaluate

- Instructions
- Success criteria
- Time to perform tasks
- Evaluation criteria

Identifying Test Users

Users must be representative

Evaluate with both novice and expert users

Be prepared to train users to achieve expert level

Usability Comparison

When evaluating usability choices care must be taken when using the following testing strategies:

- Between subject testing
- Within subject testing

Within subject testing is preferable

Ethical Aspects with Human Subjects

Subjects may have concerns about performing inadequately

Need to make subjects feel comfortable

Emphasize system is being tested and not the user

Maintain privacy issues

Test Tasks

Must be representative

Begin with easy tasks to boost confidence

Give tasks one at a time

Stages of Test

Preparation (ensure environment is set-up)

Introduction (welcome, purpose, overview)

Running the test

Debriefing

Thinking Aloud

Test subject uses system which continuously thinking out loud

Testers may need to periodically prompt test subject

Usability Lab

Two-way mirror

Video cameras

- User faces
- How user is interacting with system, doc, etc.

Summary