

## Usability Testing

### Course Summary

#### Description

Application and software usability is an increasingly important part of software design and development which means that usability testing is now also an important part of any testing plan of activities. Usability testing is distinctly different from functional or nonfunctional testing conceptually, uses different types of test methods as well as different evaluation metrics. This course is intended to introduce software testers into the theory and practices of usability testing.

The course begins with an analysis of what usability is, how it relates to software quality, the problem of defining metrics for usability testing and the business case for effective usability testing. The standard types of usability are discussed as well as using software quality techniques and concepts to identify what usability means within a specific testing plan and how we define what sort of test metrics and criteria will be used.

The different types of usability are covered which an integrated usability test plan should include. The problem of developing usability criteria is examined in detail by understanding how testers work with requirements analysts to understand what usability means to the user population. Various population analytic techniques are discussed, such as demographic/psychographic segmentation, cross cultural concerns and the construction or representative personas, which are all used to develop usability evaluation criteria for testing.

A number of different test methodologies are introduced including focus groups, surveys, early prototyping, walkthroughs, task evaluations and guided explorations. For each of the techniques, the basic procedure is outlined along with suggested best practices and possible pitfalls to avoid.

The process of developing a test plan, test methodology and test criteria are discussed as well as how test results are evaluated and communicated to developers and other stakeholders. The topic of "User Experience" or Ux is introduced and students are shown how those topics integrate with the usability testing concepts and techniques discussed in class.

The course conclude with a look ahead at emerging issues in man machine interactions such as natural language interfaces, physical interactions via robotics and the internet of things, and adaptive interfaces that modify themselves in response to different users.

#### Topics

- Introduction to Usability
- Types of Usability
- Usability and Requirements I
- Usability and Requirements II
- Basic Usability Test Methods I
- Basic Usability Test Methods II
- Planning the Testing
- Test Materials
- Ux – The User Experience
- Reporting
- Looking ahead

#### Audience

The course is intended for software testers and test managers and anyone else involved in working with usability design or testing.

#### Prerequisites

The course has no prerequisites however a working knowledge of testing concepts and ideas is recommended.

#### Duration

Two days

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### Course Outline

- I. Introduction to Usability**
  - A. Usability as a quality concept
  - B. Usability as a design principle
  - C. Dimensions of usability
  - D. The business case for usability
  - E. Issues with usability testing
  - F. Issues with defining usability metrics
  - G. Usability testing throughout the application lifecycle
- II. Types of Usability**
  - A. Functional usability
  - B. Behavioral usability
  - C. Structural usability
  - D. Organizational usability
  - E. Perceptual usability
- III. Usability and Requirements I**
  - A. User centered design
  - B. What usability means to users
  - C. Iconicity, giving users what they know
  - D. Identifying what usability means to users
  - E. Setting usability goals for a specific project
  - F. Defining usability requirements for developers
  - G. Leveraging users' cognitive and perceptual skills
  - H. The Stanford Design Process
- IV. Usability and Requirements II**
  - A. User segmentation analysis
  - B. Developing demographic models
  - C. Developing psychographic models
  - D. Cross cultural issues affecting usability
  - E. Developing "Personas" for testing purposes
  - F. Usability pass/fail criteria for different user groups
  - G. How usability criteria changes over time.
- V. Basic Usability Test Methods I**
  - A. Focus groups
  - B. One on one interviews
  - C. Walkthroughs and persona evaluation
  - D. Field study and observation
  - E. Surveys
  - F. Tracking and benchmarking
  - G. Wizard of Oz (early rapid prototyping)
- VI. Basic Usability Test Methods II**
  - A. Guided interactions
  - B. Co-discovery
  - C. Think aloud
  - D. Task and use case reporting
  - E. Feature inspection and reporting
  - F. Dealing with outliers and what-if scenarios
- VII. Planning the Testing**
  - A. Integrating usability testing into development
  - B. Developing usability tests iteratively
  - C. Data collection methodology
  - D. Identifying participants
  - E. Defining test pass/fail criteria
  - F. Risk modeling and testing thoroughness
  - G. Integration with quality objectives
- VIII. Test Materials**
  - A. Focus group scripts
  - B. Surveys and questions
  - C. Behavioural scripts and use cases
  - D. Recording results
  - E. Reporting methods
- IX. Ux – The User Experience**
  - A. Man-machine interface concepts
  - B. Iconicity yet again
  - C. Ergonomics in perceptual and organizational design
  - D. Gestalts and look-and-feel design issues
  - E. Behavioral design
  - F. Survey of existing standards
  - G. Integrating Ux concepts into usability testing
- X. Reporting**
  - A. Analysis of results
  - B. Providing feedback for developers
  - C. Test reporting and test assessment
  - D. Qualitative versus quantitative
  - E. Statistical analysis
- XI. Looking ahead**
  - A. Trends in interfaces and man-machine interactions
  - B. Natural language and spoken interfaces
  - C. Adaptive interfaces and artificial intelligence
  - D. Physical interactions: robotics and internet of things.