# Usability Testing

## of software / interfaces, but it applies more generally too...

Shneiderman, Chapter 4
Preece et al, Ch 12-15
Krug, Rocket Surgery Made Easy
Rubin, Handbook of Usability Testing
Norman Neilsen Group www

# Usability Testing: Overview

**What** is usability testing?

**Why** bother with the usability of software / interfaces?

**How** to test?

- **What** gets tested?
- **Who** does the testing?
- **Where** does the testing happen?

Downside to usability testing, and alternative ways to get user feedback

Commercial aspects of user testing - how to persuade companies that user testing is worthwhile

# Before Usability Testing

Obviously, test functionality.

- white box testing
  - check buttons link to right place, media appears, control code works as expected

- black box testing
  - does the software/tool/presentation/www site match the specification?
  - Can tasks (identified as part of your task profiles) be carried out?

# Testing techniques: Heuristic evaluation

- Done without users!

- Usability guidelines are many, so it can be useful to focus on one small set of guidelines, such as Shneiderman's

# What is usability testing?

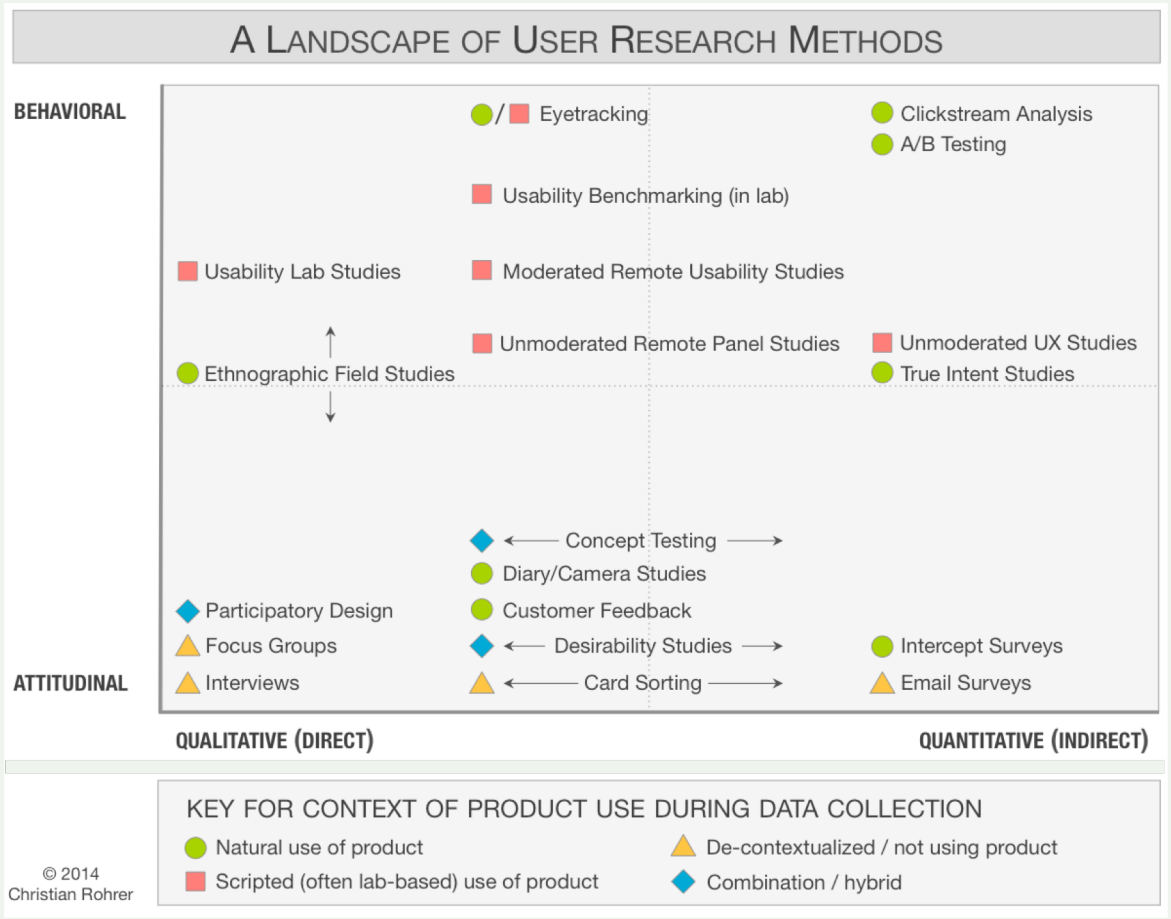
Simply carrying out experiments to find out specific information about a *design*

Getting users to give feedback

- may involve statistical analysis but doesn't have to

Output: usability error reports (so they can be fixed)

# Research Methods for Usability




https://www.nngroup.com/articles/which-ux-research-methods/

# Why bother with usability testing?

(you ≠ me)

Just because something has been carefully *designed* doesn't mean that it has been well designed

Designers have a very designer-centric view of their creations

# Why bother with usability testing?

**What happens if we don't test?**

- It is a lot more expensive to fix a design fault after a software release than to fix it before release
- On a web site the expense is low, but it is a greater effort to win back lost customers

**Just how many errors are there anyway?**

- Can be very large
- Check any bug report site to see many examples in software

Old idea is that usability testing is part of beta testing.

# How to do usability testing

Very simply: get some users, and see how they work with your product.

Phases of testing (from Rubin's Handbook of Usability Testing)

1. Determine what it is you're trying to find out, e.g.
   - Is the product good enough?
   - Does it meet company standards?
   - How well does it work in the real world?
   - Which is best, our product or our competitors?

   Then use the purpose to create some objectives, e.g.
   - Can customers successfully use the help facility?
   - Is the downloading time of the front web page too long?

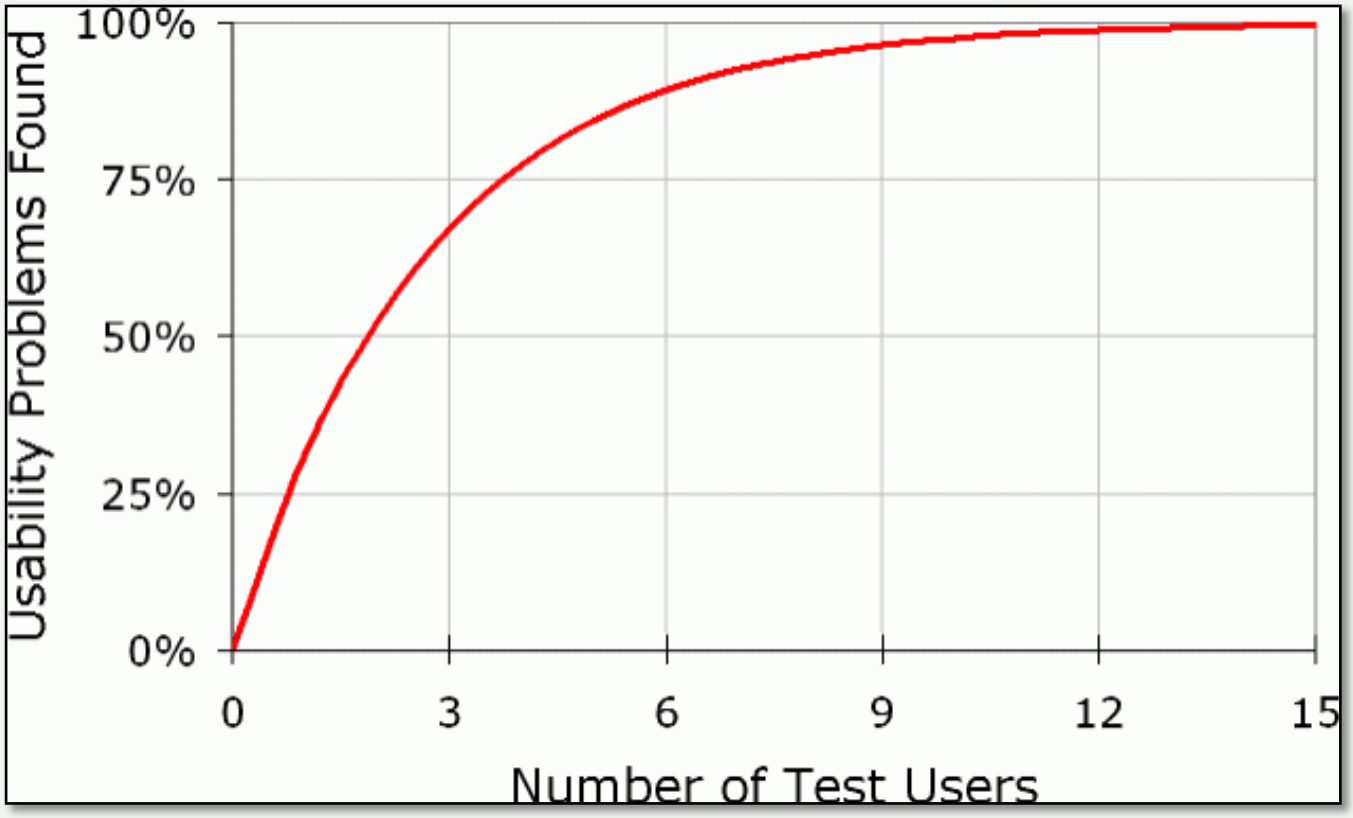
# How to do usability testing

2. Design the test
   - Identify the people you are going to need - do you need men, women, novices, experts?
   - Determine the experimental design - the arrangements of when folks do what
   - Develop the tasks that your users will perform
   - Specify what equipment and personnel you' ll need

3. Get some users
   - Fellow employees, friends and family of employees
   - For specialist user populations you might use a recruitment agency
   - But don' t use biased people (e.g. inside knowledge)

# Users - You only need 5?

Nielsen and Landauer's study showed...



# Users - You only need 5?

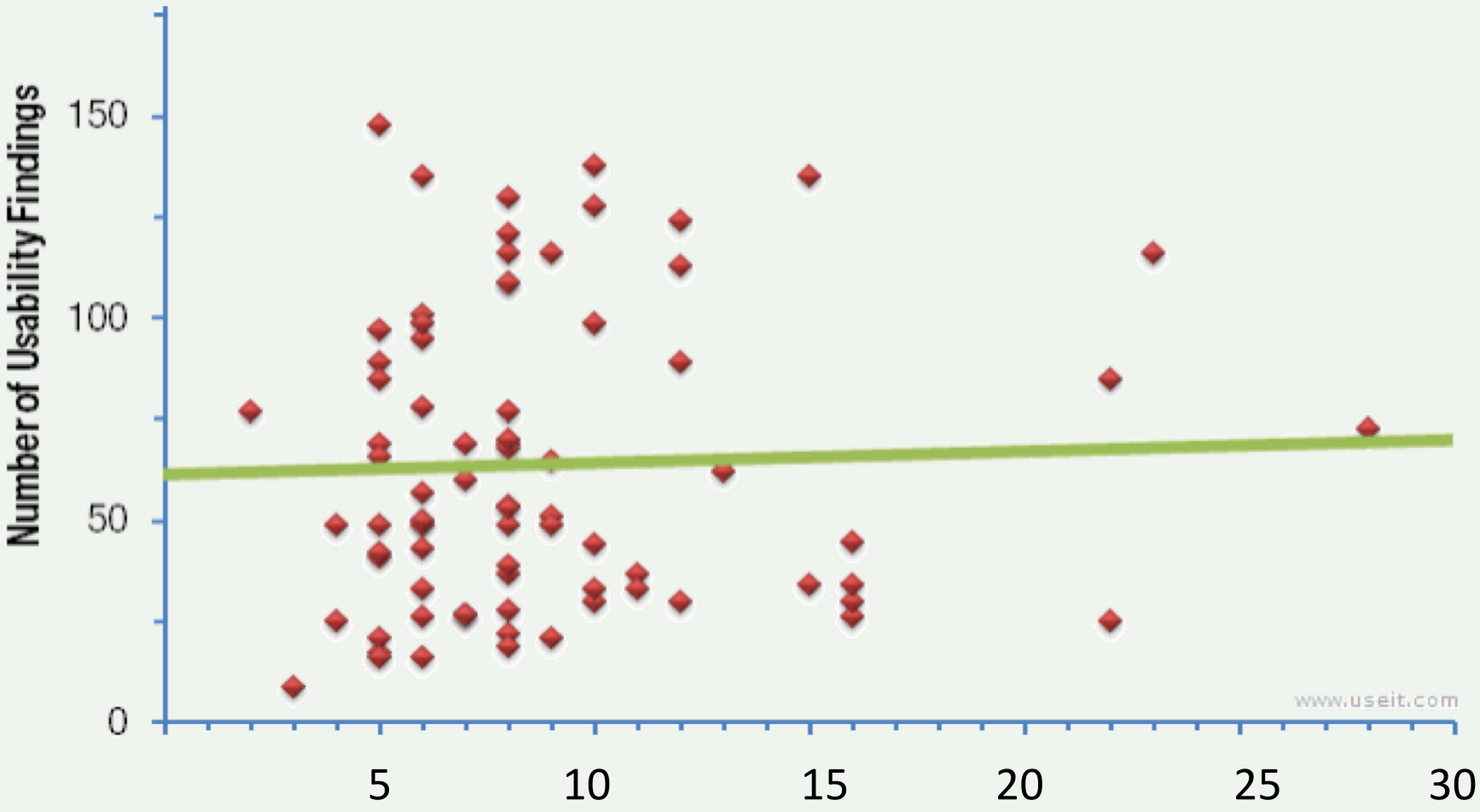
Note other insights:

- With zero users, you detect zero usability problems
- You do find more problems with more users, but with 5 users you can find 80% of the problems

- If you have the money for 15, better to run 3 small tests of 5 users each, at different stages of the development
- 15 tests with 1 user is not a better plan because people vary widely so 1 individual gives you skewed data results

- But 15 tests with 15 users, spread over time, is ok
- Krug suggests testing little and often (1 day a month)

# Neilsen Studies with Number of Users



# How to do usability testing

4. Set up the test
   - prepare the equipment
   - provide a script for your test supervisors

5. Run the test
   - prepare your users (put them at ease, explain test conditions to them, get them to sign consent forms)
   - run your users through their tasks and collect their data

6. Don't forget to thank your users afterwards!
   - you might want to use them again in future

7. Analyse your data

# Testing techniques: Think Aloud

Thinking aloud protocol

- User talks through their thought/action process

- Krug script
  See the demo usability video from *Rocket Surgery Made Easy*

# Testing techniques: Usability labs

Labs range from the very simple to the very sophisticated

Features may include:

- desks, chairs, computer... nice décor (comfortable, non-intimidating)
- audio/visual recording equipment
- eye tracker
- two-way mirrors
- computer logging
- intercom
- soundproofing
- good lighting

# Testing techniques: Online testing

There are a few cases where it is appropriate:

- International usability
- Specialized testers are needed, e.g.
  - people suffering from a rare disease
  - teachers of an obscure topic
- Scarcity of local testers, e.g.
  - the average Silicon Valley resident is more aware of technology

Can be quite easy to get people online to do this (e.g. Amazon Mechanical Turk)

# Testing techniques: Online Surveys

Pluses:

- Surveys can collect information from real users when they are actually using your software/interface
- Good at conveying
  - why people want to use the product
  - if they like/dislike the product, in particular its visual appearance
  - what additional features they might like

Minuses:

- Surveys collect opinions and not facts
- Users have selective memories
- Users can't always tell you why or where they have difficulties, only that they do have difficulties

# Usability testing isn't perfect: how to get more feedback

Testing won't catch certain sorts of errors:

- Obscure errors
- Errors only found after a long time of use
- Complex feature interaction

Additional forms of feedback can be very valuable. These include:

- User groups, mailing lists, surveys
- Technical support (online or telephone) - log those calls!
- Test comparison of products with others on the market
- beta testing

# Commercial Usability Testing

Common reasons (myths) why some companies don't carry out usability testing:

- Testing is expensive - "we can't afford a usability lab"
  - Studies can be tailored to be anything from cheap to expensive; even a handful of testers can be very valuable. Nielsen has carried out studies that show that 50 testers don't reveal that much more information than 5.
- Testing is time-consuming
  - Again, even a short test with an hour per tester can provide valuable information. Even on a larger scale, Gram and Molich performed a study with students conducting full usability tests on selected web sites. The average test, including preparation, took 39 hours.
  - Krug likes 45 minutes!

# Commercial Usability Testing

Lack of usability expertise

- but this isn't necessary. You can do usability tests better and quicker with more expertise, but even with a bit of knowledge you can do some usability testing.
- Even just getting the designers to sit down and watch someone use what they have designed doesn' t require any expertise and gives the designer a whole new insight into how users use the design.

Nielsen has developed a "discount usability engineering" to tempt companies into getting into usability in a small way

# Nielsen's Discount Usability Engineering

Based on

- Scenarios
- Simplified thinking aloud
- Heuristic evaluation

This helps companies to get into usability in a small way, and then having seen the benefits, it is then more cost-justifiable for the managers to provide better usability testing for their designers

# Krug Usability Test

45 minutes

Trunk test (where am I, what is this, where do I go?)

Think aloud for a given task

Resources available on sensible.com

# End of Lecture

Further reading: Preece chapters 7 and 8 on data gathering.

**Homework: watch the Krug video before the third design practical**

What questions do you have?