



Usability Techniques for Technical Communicators

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About Linda

Hats I wear

- User advocate
- Technical writer
- Online help developer
- Information designer
- Independent consultant and contractor
- Instructor and trainer

Current interests and focus

- Information Architecture
- Usability
- Accessibility

About you

Your work

- Develop documentation?
- Create online help?
- Develop training?
- Managers?
- Students?
- Other?

Experience with usability

- Conducted or observed a usability test?
- Work at a company with a usability lab?
- Attended workshops on usability?
- Concerned with 508 compliance (accessibility)?

Objectives for tonight

- Introduction to usability
- Define some of the “usability jargon”
- Introduce some usability techniques you can try in your work
- Point you to where to learn more



Your expectations

- What are you hoping to learn?

Usability jargon

- Usability
- User-centered design
- Usability engineering
- Task analysis
- Ethnography
- Contextual design
- Developing personas
- Usability testing
- Heuristic review
- Participatory design
- Paper prototype
- Card sorting
- Cognitive walkthrough

Techniques to try

- Develop personas
- Card sorts
- Cognitive walkthroughs
- Heuristic reviews
- Usability tests



Defining usability

- What is usability?

Usability is...

According to ISO 9241-11: Guidance on Usability

... the extent to which a product can be used by specified users to achieve specified goals with

- **effectiveness** (measures the accuracy and completeness with which users achieve specified goals)
- **efficiency** (measures the resources expended in relation to the accuracy and completeness with which users achieve goals)
- **satisfaction** (measures the freedom from discomfort, and positive attitudes towards the use of the product)
- **...in a particular context of use**
- <http://www.usabilitysa.co.za/ISOtemplate.htm>
- <http://www.usability.serco.com/trump/resources/standards.htm>
- http://www.usabilitynet.org/tools/r_international.htm#9241-11

According to Jakob Nielsen

- Learnability
- Efficiency
- Memorability
- Errors
- Satisfaction

From *Usability Engineering*, Morgan Kaufman, 1993

According to www.usability.gov (National Cancer Institute)

“Usability is a combination of factors that affect the user's experience with the product or system, including:

- **Ease of learning**
 - How fast can a user who has never seen the user interface before learn it sufficiently well to accomplish basic tasks?
- **Efficiency of use**
 - Once an experienced user has learned to use the system, how fast can he or she accomplish tasks?
- **Memorability**
 - If a user has used the system before, can he or she remember enough to use it effectively the next time or does the user have to start over again learning everything?
- **Error frequency and severity**
 - How often do users make errors while using the system, how serious are these errors, and how do users recover from these errors?
- **Subjective satisfaction**
 - How much does the user *like* using the system?”

According to Jeff Rubin

- Effectiveness (ease of use)
- Learnability
- Attitude (likeability)

AND

- Usefulness

- **From *Handbook of Usability Testing*, John Wiley & Sons, 1994**

From information architecture circles

- The notion of “Findability”
 - Extremely relevant to the usability of information products



Usability is not an end in itself

- Context is everything
- Usability needs to be considered within the context of use

Usability and usefulness

- Usability implies “ease of use”
- Yet something can be easy to use, and provide no substance
- Or it can be useful for one audience, but not another

Examples in technical communications

- **Simple instructions for using a product interface**
 - Who do these help? Who do they not help?
- **A help system that focuses on introductions to key concepts**
 - Who do these help?
 - What about a company with experienced users and low-turnover?
 - What about more expert-level information?
- **An index to a help system**
 - The basics of using it seem easy
 - But what if the topics that you are taken to don't contain the information you need?
 - The usability of the index is ok; the usefulness is not

Making usability concrete

Web usability

■ E-commerce

- Can a person perform a task on a website, such as buy a book at Amazon

■ Findability

- Can a person find the information they need on a website?

■ Satisfaction

- Do they like it? Do they feel satisfied with their use? Will they return?

Product usability

- Efficiency

- Can a person do their work easily?

- Learnability

- What's it like to master a new tool?

- Memorability

- What's it like to return to a tool after some time and use it again?

(Think about software you used recently—how does your experience match up?)

Information usability

- Findability
 - Can a person find the information, via search, index, flipping, cross references, links...
- Scannability (related to findability)
 - Can a person skim through the information, to find what they need?
- Usefulness
 - Does it contain the information the person needs?
 - Is there an appropriate level of detail?
- Digestibility
 - Can a person understand the information once they find it?
- Learnability
 - Can they master it, and make use of it?
- Satisfaction
 - What was their experience like? Do they have confidence that they'll find what they need? Will they return?

Accessibility

- Can people with special needs use it?
- What if they have
 - Difficulty using a mouse?
 - Problems with sight?
 - Problems with hearing?
 - Cognitive disabilities?

User-centered design (UCD)

A process that

- Develops requirements based on user needs
- Incorporates knowledge of users
- Gathers user input throughout the design in different ways
- Validates decisions with users along the way
- Iterates

The results of a non-UCD process



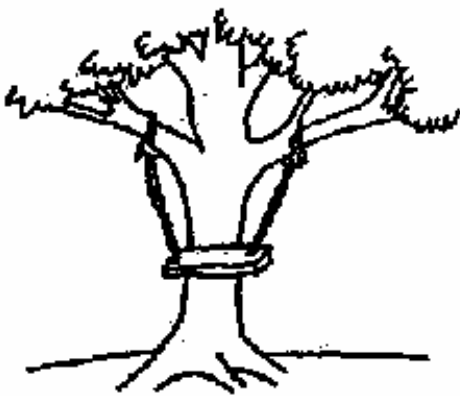
As proposed by the project sponsor.



As specified in the project request.



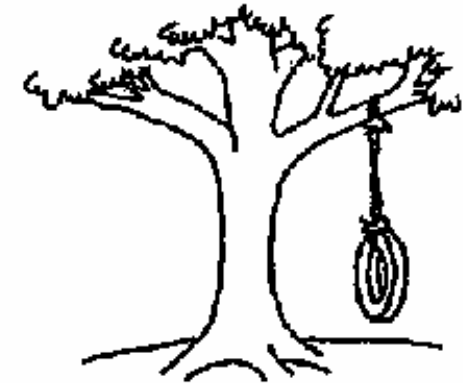
As designed by the senior analyst.



As produced by the programmers.



As installed at the user's site.



What the user wanted.

From Fred Tepfer's website at Oregon State:

<http://www.uoregon.edu/~ftepfer/SchIFacilities/TireSwingTable.html>

Usability engineering

“... methodical approach to producing a Web site or any user interface.

It is a practical and systematic way to deliver a product that works for users.

Usability engineering involves several methods, each applied at appropriate times, including gathering requirements, developing and testing prototypes, evaluating design alternatives, analyzing usability problems, proposing solutions, and testing a site (or other interface) with users.”

From “Usability Basics,” at www.Usability.gov,
National Cancer Institute

How do you make something usable?

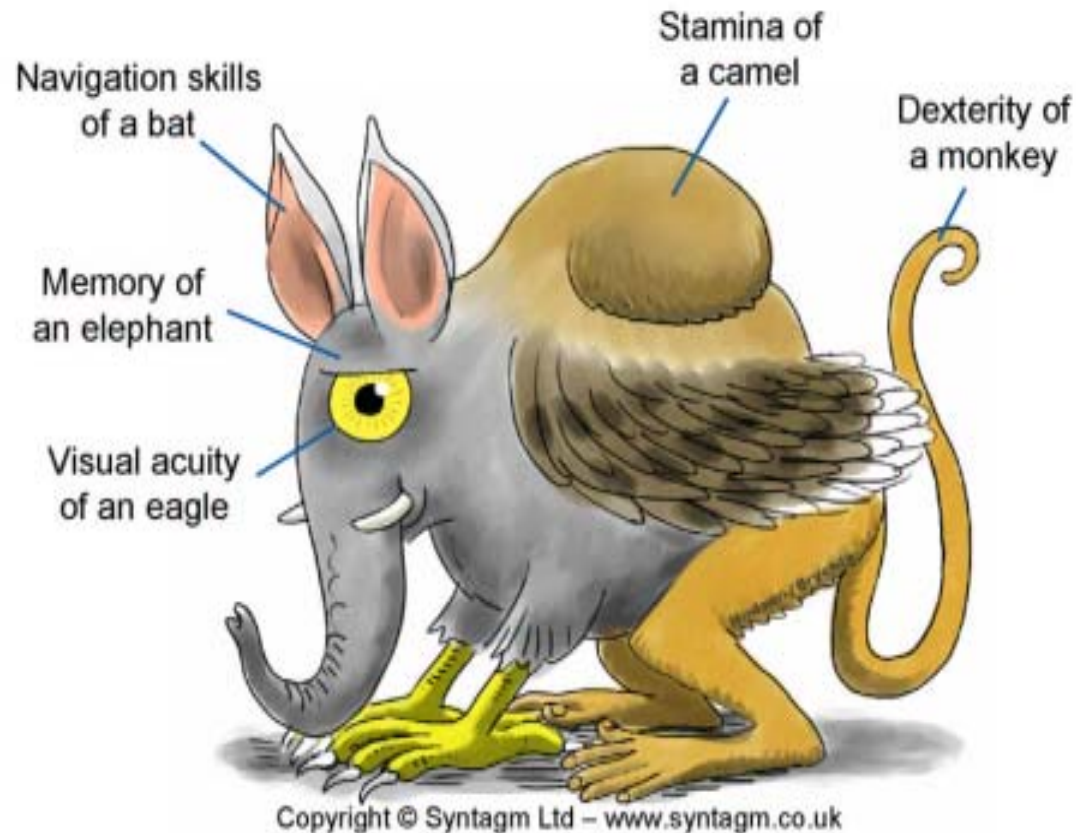
- Create for people—incorporate usability and user-centered design techniques

How do you know if you are designing usable information?

- Have clear goals for what the information should accomplish
- Understand your users and their goals
- Design and write with them in mind
- Use best practices
 - Learn what's known – human factors, related research
 - Consistency, style guides, editing
- Incorporate usability techniques
- Observe your users – at their work, and using your information
- Make adjustments, based on what you learn

Know your users

- Observe them, if at all possible. Your understanding of them will magnify by leaps and bounds.
- Discussion tend to focus on what users should do, or how they can do it. What they actually do is often quite different.



The Perfect User

"This creature is known as an elecamonglebat, being an unusual hybrid of elephant, camel, monkey, eagle, and bat. It represents the perfect user during design meetings. Unfortunately, it is exceedingly rare in the wild."

Image copyright William Hudson and Alex Brychta.

From "User-Centered Design with Use Case Methods," a tutorial by William Hudson.

<http://www.syntagm.co.uk/ucuml.htm> The tutorial notes are at

<http://www.syntagm.co.uk/ucuml.zip> (about 1 MB).



Learning about your users

- Ethnography
- Task analysis
- Contextual inquiry
- Interviews
- Personas

Learning about your users

- **Ethnography**
- Task analysis
- Contextual inquiry
- Interviews
- Personas
- From anthropology – the study of peoples' lives and culture
- Field studies

(one place to learn more...[The Usability Methods Toolbox](#) – see resource list)

Learning about your users

- Ethnography
- **Task analysis**
- Contextual inquiry
- Interviews
- Personas
- Field research that assesses what a user does and why, step by step
- Draws on ethnographic techniques

(To learn more: Book by Hackos and Redish; Online book by Lewis & Reiman -- see resource list)

Learning about your users

- Ethnography
 - Task analysis
 - **Contextual inquiry**
 - Interviews
 - Personas
 - Structured field interviewing method
 - Works from a list of topics
 - Combines observation and dialog
- (To learn more: Book by Hugh Beyer and Karen Holtzblatt, *Contextual Design*, Morgan Kaufman, 1997)

Learning about your users

- Ethnography
- Task analysis
- Contextual inquiry
- **Interviews**
- Personas
- Talk to users about how they do their work, what they do, their concerns and frustrations
- Ideally at user's workplace, but can be anywhere
- Use open ended questions
- Avoid leading questions
- Great in conjunction with observation
 - (Keep in mind that what users say they do isn't always what they do)

Learning about your users

- Ethnography
 - Task analysis
 - Contextual inquiry
 - Interviews
 - **Personas**
- A technique for developing a verbal picture of specific users, who represent primary user types
 - Based on interviewing identified users and understanding their goals with respect to particular tasks

(To learn more: Cooper's Newsletters on Personas and their Goal Directed Design -- see link on resource list)

Learning about your users

- If you can't get to users—talk with people who work with them
 - Technical support
 - Marketing
 - Sales
- Do remember: customers (the ones who make the purchase) may not be users

Involving users in the design

- **Participatory design**
- Card sorting
- Involving users in the designing process
- Can occur in many ways, at many levels
- Early design meetings with users
- Discussions of early prototypes
- “Feature validation” with working prototypes
- Not the same as having the user dictate the design!

Involving users in the design

- Participatory design
- **Card sorting**
 - Make a stack of cards with names of topics
 - Shuffle
 - Ask user to sort into groupings that go together
 - Ask user to label stacks
 - Provide blanks for items they think are missing
 - Allow a “huh?” pile

More about card sorts

- Card sorting can be great for
 - Deciding how to group and organize information for the user
 - Seeing if your list of topics makes sense to users
 - Discovering missing topics
 - Learning user terminology
- Especially helpful when developing the information architecture for online help and web sites
- See the Resources list for useful links

Really easy card sort

- List all your topics in Word
- Assign Heading 1 style to all
- Send them to PowerPoint (File→Send To command)
 - Result: One slide for each heading
- Print handouts, six or nine to a page
- Cut them up – you have your cards!

(This technique comes from Dan Brown's article on the BoxesAndArrows website:

http://www.boxesandarrows.com/archives/understanding_powerpoint_special_deliverable_5.php)

Paper Prototyping

- Typically a lo-fi mockup
- Even very early (sketch-level) prototypes
- Can use screenshots

- Useful to get early user feedback, and to do usability testing
- Participants often feel more comfortable comments and suggestions when the UI doesn't feel too finished
- Can also be used with Cognitive Walkthroughs and Heuristic Reviews

Cognitive walkthroughs

- Define scenario of tasks users will want to accomplish
- Walk through the steps required to accomplish the task
- Include the steps the user must go through in their head—things they must recall, or calculate
- Have a particular user in mind, to consider their mind set
 - Walk through from the perspective of different users
- Surfaces issues that you haven't considered
- Useful to do before conducting usability testing
 - Catch and fix errors early, so that usability testing catches the next level

Heuristic review

- Heuristics: Commonly accepted principles
- Multiple experts evaluate the product, interface, or document against the list of heuristics (principles)
- Can be done early, middle, or late in development
 - Against specifications, paper prototypes, or working product

Jakob Neilson's Heuristics

(originally developed with Rolf Molich)

- Visibility of system status
- Match between system and the real world
- User freedom and control
- Consistency and standards
- Error prevention
- Recognition rather than recall
- Flexibility and efficiency of use
- Aesthetic and minimalist design
- Help users recognize, diagnose, and recover from errors
- Help and documentation

For definitions of each, see http://www.useit.com/papers/heuristic/heuristic_list.html

Heuristics for online information, from Tec-Ed

(Kantner, Shroyer, & Rosenbaum)

- Orientation
- Efficiency
- Flexibility
- Control
- Recognition
- Familiarity
- Consistency
- Readability and aesthetics
- Context-sensitivity
- Clarity

Examined from the
standpoint of

- Structure
- Presentation
- Dynamics

■ For definitions, discussion, and method, see
http://www.teced.com/PDFs/kantner_HE_of_online_doc.pdf

Traditional usability testing

- “...part of the process of usability engineering. Usability testing includes a range of methods for having users try out a site (or other system).”
- “The goal of most usability testing is to uncover any problems that users may encounter so those problems can be fixed.”

From “Usability Basics,” at www.Usability.gov,
National Cancer Institute

When to do usability tests

Almost any time! Don't wait 'til the end

- Early stages – Exploratory
 - Middle stages – Assessment (Is it working?)
 - Late stages – Validation (Have we built it right? What needs adjusting?)
 - At any time – Comparison
 - Shall we do THIS or *This*? (design/development)
 - Or, competitive benchmark
 - Or, did we make an improvement? (old/new)
- (For more information, see Jeff Rubin's *Handbook of Usability Testing*)

What to test

- Test specific tasks that apply to your situation, for your users
- No need to reinvent the wheel
 - Apply best practices and techniques
 - Learn what's been tested and established
 - However, things change
 - Follow current research
 - Example: Current studies show scrolling much more accepted than previously.
 - Learn about Human Factors

Testing product versus testing documentation

- Observing tests of the product may let you
 - Learn what needs emphasis in the docs
 - See where help links are warranted
 - Gain an improved understanding of users
- It may not tell you much about the docs, unless you direct users to use them
- It's tricky to create a test of both at once that tells you what you want to learn about the docs.

How many users do you need?

- Much debate
 - Some say 3-5 for each type of audience
 - Others say about 12
 - Jared Spool is suggesting larger numbers, for web sites
 - Partly depends what type of test, what you are trying to learn
 - May depend largely on budget and time
- But - when you test with one, you know way more than when you test with none!
- Don't give up the idea because you can only test a few
- Issues with small numbers
 - Edge cases
 - How many of the issues have you found?
 - Have you found the critical issues?

Basic steps in doing a usability test

- Select participants
- Decide what to test
- Create a test script that asks users to perform tasks
- Facilitate the test (using paper prototypes is fine)
 - Ask the user to perform tasks, and to think out loud as they do so
 - Capture the user's responses
 - Debrief with them, and ask questions based on watching them
- Repeat with more users
- Summarize what you observed
- Decide what it means
- Make changes
- Test again!

This is oversimplified, but you can get up to speed for some simple tests pretty quickly. See books by Steve Krug and Jeff Rubin for starters.

Techniques to try

- Develop personas
 - Based on data (interview users)
- Cognitive walk-throughs
- Card sorts
 - Involve users in the design
- Heuristic reviews
- Usability tests

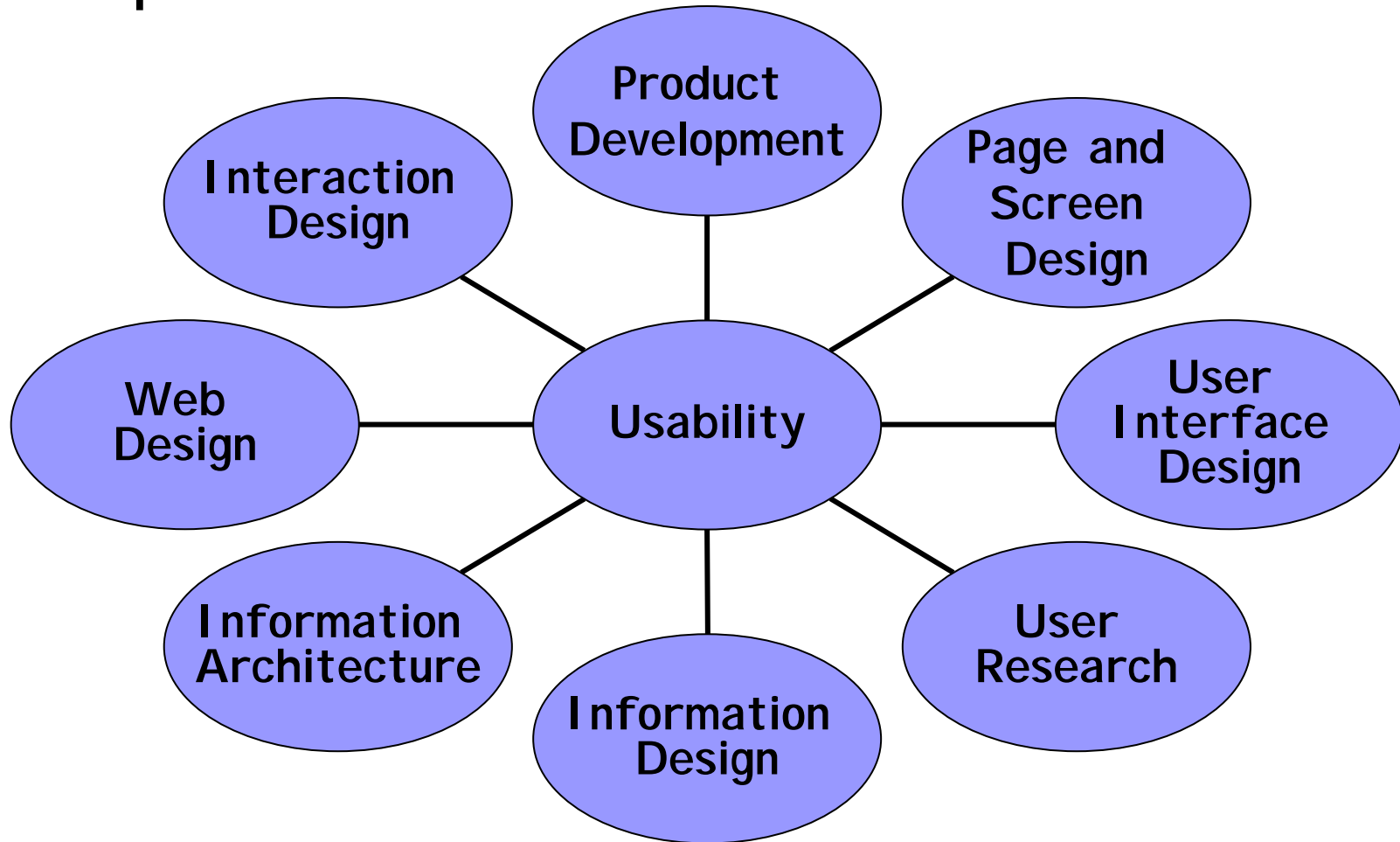
Creating usable information

- It's not only about “usability” techniques
- Best practices you already use contribute to the usability of information
- Augment them with additional techniques from user-centered design and usability engineering
- “Creating Usable Information” handout provides a checklist

Learning more

- So many books out there!
- Much of what's oriented at “web usability” is useful when applied to information
- Tons of information on the web
- Resources list has starting points

Usability overlaps with many related disciplines and tasks



Related fields to explore

- Human factors
 - (Some of this you probably already know, but probably don't know you know)
- User-centered design
- Product development (hardware, software, other)
- User interface design
- Information architecture
- Visual design

Questions? Thoughts?

- Thank you for coming!
- You can contact Linda at lurban@earthlink.net