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Never Stand Still

LOGISTICS

Human Computer Interaction
COMP3511 and COMP9511

Dr Alexandra Vassar (Sasha)
School of Computer Science and Engineering
T0, 2021

Today

- Course Administration / Course Outline
- Course Aims
- Design principles, Usability goals, User Experience and Heuristics

Administration: People

- Dr Sasha Vassar (Lecturer in Charge, Admin)
- Tutors: Ali Darejeh, Alli Murray, Jennifer Henoch, Rushenka J, Alyssa, Jamie D, Stephanie Kan

Communication

- Web Forum
- Consult with your tutor in time slots
- E-mail lecturers
- Teams channels
- Consultation

Official E-mail

- cse.comp3511@unsw.edu.au for all course related queries.
- Please ensure you use your official UNSW e-mail address for all correspondence.
- Please also ensure you regularly check your UNSW emails for any course related correspondence.

Places – All online in T0!

- Lectures (Teams Live Events, link to join will be available before the live event commences on Moodle and on Teams)
 - Monday 2-4pm
 - Tuesday 2-4pm
 - Wednesday 10-12pm
- Recordings will be made available

Places – All online in TO!

- Laboratories and Tutorials
 - Online discussion in Teams
 - You have been added to your enrolled class
 - Classes are over Zoom – you will be provided a link by your tutor in your Teams channel
 - Start in Week 1 – some of you today!

Moodle

Dashboard > My courses > COMP9511-COMP3511-5212_00016

UNSW Engineering Information



Your health and the health of those in your class is critically important. You must stay at home if you are sick or have been advised to self-isolate by [NSW health](#) or government. [Click to expand](#)

Support Services For Students

Student Responsibilities and Conduct



Students must complete the **Safe Return to Campus Agreement** before returning to uni.
[Click here](#)

TELT ADMINS DO NOT DELETE THIS BLOCK

Course Convenor



Your Name Here

Office hours:

Email : youremail@unsw.edu.au

News and Assignments

Access to your Lecture Recordings

Course Outline 2021 Summer Session [A▼ 256.9KB PDF document](#)

Forums

Announcements

General Forum [1 unread post](#)

Assignment 1 - COMP3511/COMP9511

Assignment 2

Click here to view course contact details



Telling us about your experience of learning and teaching at UNSW can make a big difference.

What you say is confidential and you will not be identified to any of your teachers.

Click here to complete your myExperience survey now!

Open all Close all

Week 1

This section contains all your necessary resources for Week 1

Readings

Monday 14-16



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Teams

The screenshot shows the Microsoft Teams application interface. On the left, the sidebar includes icons for Activity, Chat, Teams, Assignments, Calendar, Calls, Files, and Location, along with a three-dot menu and Apps/Help buttons. The main area displays the 'General' channel of the 'COMP3511/9511 T0, 2021' team. The channel header features a blue icon with a white document and the word 'General'. Below the header are tabs for Posts, Files, Class Notebook, Assignments, Grades, and a plus sign. A search bar is at the top right, and a user profile picture is in the top right corner.

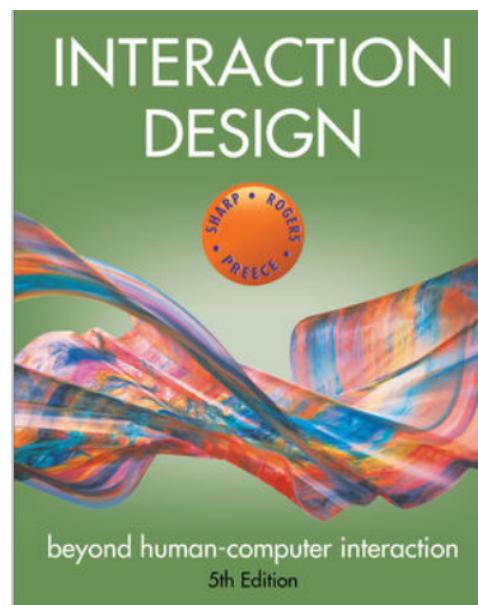
The main content area starts with a welcome message: "Welcome to COMP3511/9511 T0, 2021" followed by "Choose where you want to start". It includes two decorative icons: a blue folder with a red pencil and a spiral notebook with a pink pen. Below these are two buttons: "Upload Class Materials" and "Set up Class Notebook".

A post from Alexandra Vassar (21:14 Edited) is displayed. The post title is "Lecture Live Stream Link (Monday 4th Jan)". The post content begins with a bold "IMPORTANT!" section. It then states: "Good Evening General and welcome to the summer term of COMP3511/9511. I hope you have all had a small break and are feeling refreshed and excited about the course! We will discuss logistics and begin the content in tomorrow's lecture, which will be a live stream on Teams, you can join the live stream by using the link: https://teams.microsoft.com/l/meetup-join/19%3ameeting_Y2JmNzE5OTMtZmNkOS00MDZkLThjMjlY2JmMjjNGZmY2Mw%40thread.v2/0?context=%7b%22Tid%22%3a%223ff6cfa4-e715-48db-b8e1-0867b9f9fba3%22%2c%22Oid%22%3a%2227bb7cd0-3f82-48f4-8afdb89dfdf713%22%2c%22lsBroadcastMeeting%22%3atrue%7d". It continues with: "A Q&A session will be open during the live stream, so you can ask any questions as the lecture progresses. I look forward to "seeing" you all tomorrow for the start of an amazing term. Cheers, Sasha (LiC)" and ends with a "See less" link.

At the bottom of the post, there is a "Reply" button with a reply arrow icon and a "New conversation" button with a speech bubble icon.

Reading Material

- Prescribed Text
 - Preece, Rogers & Sharp, Interaction Design: Beyond Human Computer Interaction (ID) – 5th edition



Reading Material

- Undergrad and Postgrad
 - Available through library website
 - Links to be posted in Moodle

References

- Buxton (2007), Sketching User Experiences: Getting the Design Right and the Right Design, Morgan Kaufmann.
- Cooper et al (2007), About Face 3.0: The Essentials of Interaction Design, John Wiley (COMP4511 Text)
- Goodwin (2009), Designing for the Digital Age, John Wiley

References

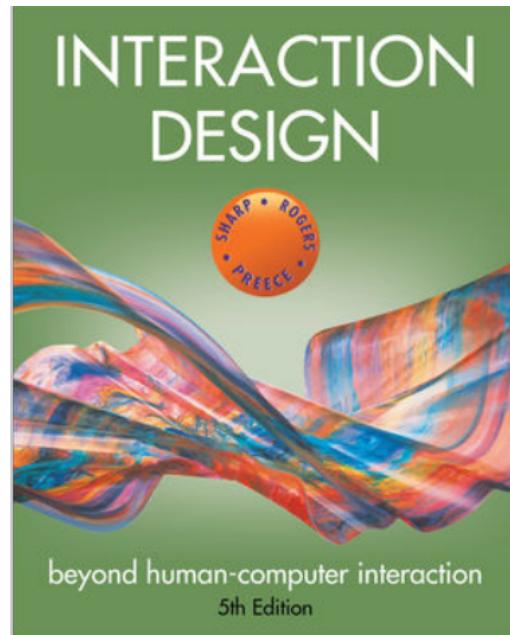
- Lazar, Feng & Hochheiser, (2010), Research Methods in Human-Computer Interaction, John Wiley
- Nielsen (1993), Usability Engineering, Morgan Kaufmann.
- Norman, D.A. (1998), The Design of Everyday Things (Paperback), MIT Press, London

References

- Rubin (1994 or 2008) Handbook of Usability Testing, John Wiley Publishing.
- Snyder C (2003), Paper Prototyping, Morgan Kaufmann
- Cooper A (2004), The Inmates are Running the Asylum.

Interaction Design Reading

- Chapter 1 will help introduce some of the issues described tonight



Materials – pen and paper tools

- Required materials for design/evaluation
 - *This term for the first time, we will be using online digital design journals – each of you will have a private OneNote journal that only your tutor can access for marking*
 - *You can still use pen and paper and upload images into your digital diary*

Where to find your digital space (design diary)

The screenshot shows the Microsoft Teams interface on the left and the OneNote Class Notebook interface on the right.

Microsoft Teams (Left):

- Header: All teams
- Team: COMP3511/9511 T0, 2021
- General channel list:
 - H10A_THU10FRI10_1503
 - H10B_THU10FRI10_2042
 - H18A_THU18FRI18_2046**
 - M16A_MON16FRI16_1506
 - M16B_MON16THU12_2137
 - M18A_9511_MON18WED18_2027
 - M18A_MON18TUE18_1507
 - T10A_TUE10THU16_2139
 - T16A_TUE16THU16_2138
 - T18A_TUE18THU18_1511
 - T18B_TUE18THU18_2043
 - W12A_WED12FRI12_1510
 - W13A_WED13THU13_1505
 - W14A_WED14FRI14_2026
 - W16A_C9511_WED16FRI16_2045**
 - W16A_WED16THU16_1504
 - W16B_WED16THU16_2047**
 - W18A_WED18FRI18_2044
- 1 hidden channel

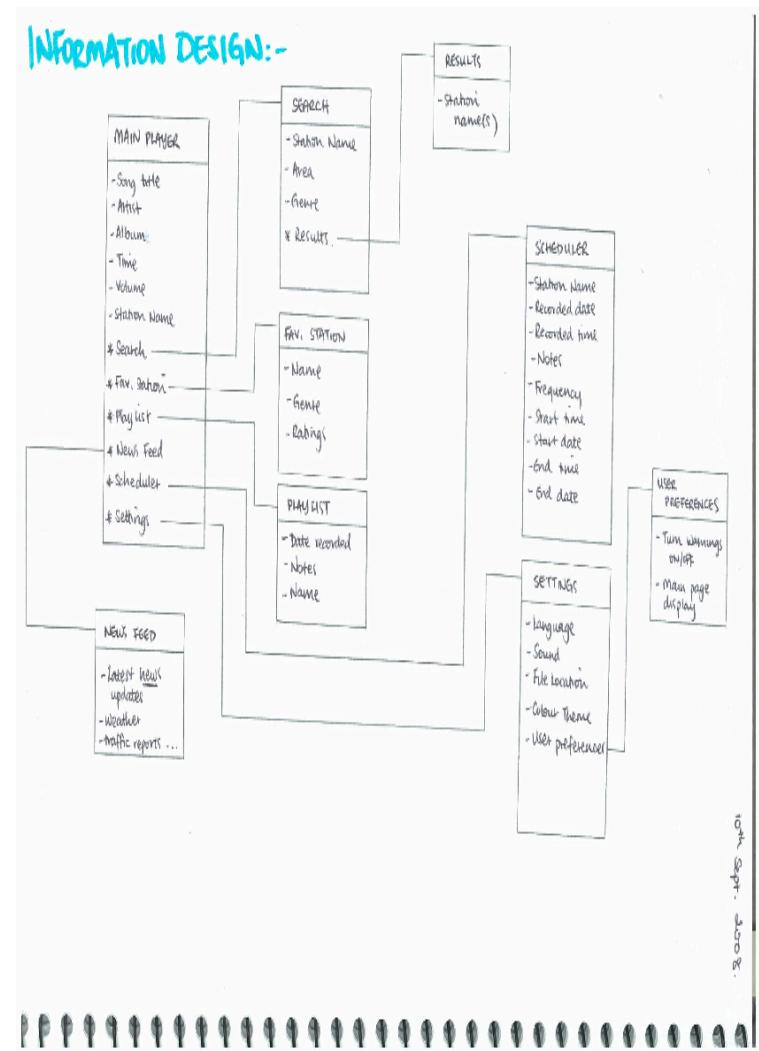
OneNote Class Notebook (Right):

- Header: General, Posts, Files, Class Notebook (selected), Assignments, Grades
- Toolbar: File, Home, Insert, Draw, View, Help, Class Notebook, Open in Browser, Tell me what you want to do, ribbon icons
- Search bar: Segoe UI, 18, font style dropdown
- Section: Welcome to Class Notebook
- Text: Your **OneNote Class Notebook** is a digital notebook for the whole class to store handwritten notes, attachments, links, voice, video, and more.
- Text: Each notebook is organized into three parts:
 1. Student Notebooks – A private space shared between the teacher and each individual student. access every student notebook, while students can only see their own.
 2. Content Library – A read-only space where teachers can share handouts with students.
 3. Collaboration Space – A space where everyone in your class can share, organize, and collabora
- Image: Illustration of a digital notebook with a pencil writing on it.

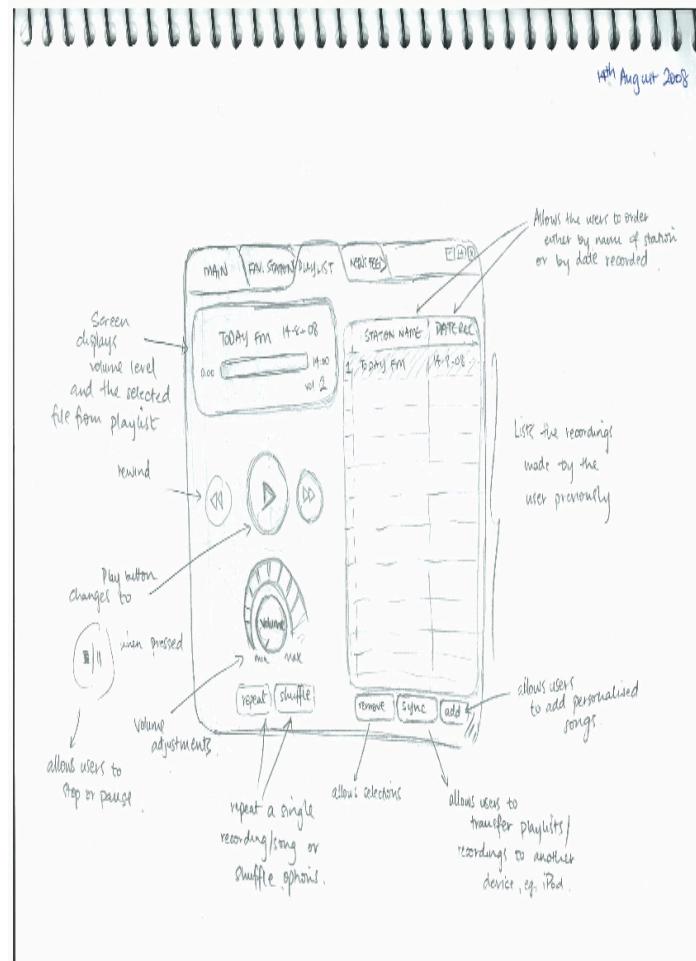
Materials – pen and paper tools

- Recommended materials for design/evaluation
 - Butcher's paper (or other large paper), variety of coloured marking pens, sticky notes (e.g., Post-It™)
 - You can then upload images of any work you have done in this analog format to your design journal

Design Diary Samples



Design Diary Samples



Tutorials T0, 2021

	Monday	Tuesday	Wednesday	Thursday	Friday
10		T10A (2139) - Jennifer	Lecture	H10A (1503) - Jamie H10B (2042) – Stephanie	H10A (1503) - Jamie H10B (2042) – Stephanie
11					
12					
13			W12A (1510) – Alyssa W13A (1505) - Jennifer	M16B (2137) – Jennifer W13A (1505) - Alyssa	W12A (1510) – Stephanie
14	Lecture	Lecture	W14A (2026) - Ali		W14A (2026) - Ali
15					
16					
17	M16A (1506) – Ali M16B (2137) - Rushenka	T16A (2138) - Rushenka	W16A_9511 (2045) – Alyssa W16A (1504) – Ali W16B (2047) - Jamie	T10A (2139) – Stephanie T16A (2138) – Jamie W16A (1504) – Ali W16B (2047) - Alyssa	M16A (1506) – Ali W16A_9511 (2045) - Rushenka
18					
19	M18A_9511 (2027) – Alli M18A (1507) – Ali	M18A (1507) – Ali T18A (1511) – Alli T18B (2043) - Rushenka	M18A_9511 (2027) – Alli W18A (2044) - Ali	H18A (2046) – Ali T18A (1511) – Alli T18B (2043) - Jamie	H18A (2046) – Rushenka W18A (2044) - Ali

Laboratories and Tutorials

- 2 hour combined tutorial and laboratory
- Every week
- Supervised assignment work / checkpoints
- Group discussion
- Practical activities
- Compulsory attendance – please make sure to login at the designated lab time

Laboratories and Tutorials

- Using Zoom
- You will get invited to a tutorial team
- Have your camera on if you can
- Mute the microphone, if you are not speaking

Weeks to remember

- There is no lecture in Week 4 on the Tuesday (26 Jan) as it is a public holiday (Australia Day).

Assignments

- Assignment 1
 - Website based Individual Design Critique
- Assignment 2
 - Group User Interface Design
 - Individual Design Experience Reflection

Assignment 1

- Will be released after the lecture and is due 11th January midnight
- It relies on the content covered in the lecture today/tomorrow and the first tutorial.

Assessment

Task	COMP3511	COMP9511
Assignment 1 User Interface Critique	15%	15%
Assignment 2 Consolidated Group Design and Evaluation	40%	40%
Design Diary	10%	10%
Final Exam*	30%	30%
Participation (in tutorial)	5%	5%

*A harmonic mean may be applied to the final grade so that you need to pass the exam to pass the course

Assessment

- You must attend at least 80% of all tutorials to pass the course, unless documented special consideration is in place.
- Peer review is used for group work
 - who did the work and who did not
 - it is a confidential process
- If you fail the final exam, you can fail the course - If you fail your assignments, you can also fail the course
- A harmonic mean may be used to ensure consistent performance across individual and group performance
- **No non-medical supplementary exam - ensure you get date, time and location of exam correct!**

Late Penalties

- Late penalties will apply to all assessable work
- Assignments -10% per day deducted from the assessable mark
- Not accepted or marked after 5 days

Special Consideration

- Must be documented
- Must be officially lodged via MyUNSW and Student Central
- See <https://student.unsw.edu.au/special-consideration>
- **NOTE: UNSW now has a Fit to Sit / Submit rule**, which means that if you sit an exam or submit a piece of assessment, you're declaring yourself fit to do so and cannot later apply for Special Consideration.

Plagiarism

- Don't submit work that is not your own
- Provide all references to quoted material
- Paraphrase information in your own words
- Zero tolerance -> zero marks
- Academic misconduct-> instant fail
- Applies to all submissions (assignments, tutorials and laboratories)
- See <https://student.unsw.edu.au/plagiarism>

Course Aims

- to develop your skills in the area of user-centred design
- to provide the background knowledge about how people think and process information
- to demonstrate techniques/heuristics necessary to evaluate systems for their usability

Course Aims

- to give you the capability of executing a user-centred design process
- to give you experience in using paper-based design techniques
- to give you experience in the formal evaluation of user interfaces

Course Aims

- to give you an understanding of how to develop electronic prototypes of user interfaces
- to ensure that your design work includes user needs analysis
- to give you an awareness of user centred design tools, methods, and techniques

Course Aims

- to maintain a real-world perspective so this knowledge can be applied in industry

Questions?



Never Stand Still

Usability Goals, User Experience Goals, Heuristics and Design Principles

Human Computer Interaction
COMP3511/COMP9511 – T0, 2021
Dr Sasha Vassar

Firstly, what is HCI?

Design, implementation and evaluation of interactive systems that considers the users at every stage of the process



Image Credit: dilbert.com

What you see is just the tip of the iceberg



This is what people see

What Really Happened Behind



Framework for Evaluation

- This lecture aims to provide a framework for you to use in order to categorise or breakdown user interface issues in your evaluations
- The first assignment asks you to consider these attributes and critique various user interfaces against these frameworks

Goals

- To evaluate an interface, we must think of what goals a user wants to achieve
- Goals are time invariant

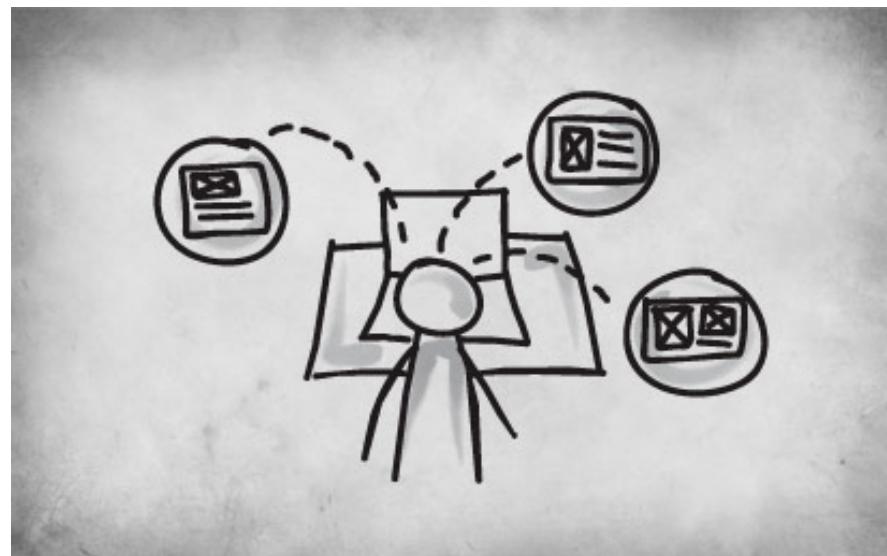


Image credit: <http://www.uxpassion.com/blog/usability-tutorial-setting-goals-requirements-user-testing/>

Goals vs Tasks

- We make the distinction between goals and tasks (see Cooper About Face)
- Tasks could be related to the technology available at the time
- People have goals, and in order to achieve them they have to carry out tasks (steps) to reach the goal

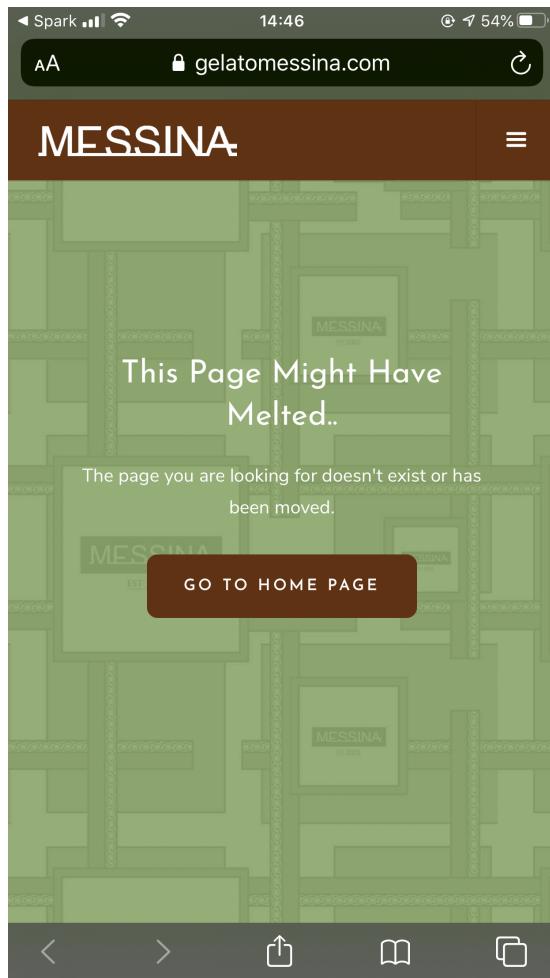
Readings

- Chapter 1 in Interaction Design
- In particular, see section 1.7 Interaction Design
- Norman The Design of Everyday Things
- Also see section 16.2.1 in ID

Exercise

- What makes a good or bad user experience?
 - think about an interface you have recently used that involved a good user experience
 - think about another that involved a bad user experience
 - does not have to be computer based

My experiences!



Welcome to our Parent Portal! Sign in using your main contact email registered with us. On your **first visit** please click 'Forgot password' and follow the steps to create your unique password. If the system doesn't recognise the email you provide but you have an account with us, please contact us at info@inthedeep.com.au

Important Info For Smooth Sail'in

Current enrolments that want to change time, day or level can easily request a new class from our **Classes Tab** on the main page. **However**, make sure to request to **DROP your current class** or you will be enrolled in both classes.

(Click **Enrolments -> View Enrolment -> Drop (enter date 22/12/2019) -> Request Drop** (write us a note to let us know you are requesting a change)

For **new enrolments**, **wait list requests** or to enrol into an **extra class**, also go straight to the **Classes tab**, set your desired filters and submit to see classes.

Payment details must be entered to secure enrolment. **Payments -> Manage Payment Options -> Forms Of Payment**. Choose from either **Credit/Debit Card** (fees apply 1.98% Visa/MCard or 3.85% Amex) or **E-Check** (Bank Account Debit - enter BSB in **Routing Number** field & disregard **Account Type**)

The **start date** for **Term 1 2020** is **28/1/2020** and the last day is **9/4/2020**.

Already have an account with us?
Please sign in!

Email Email

Password Password

First time here?
Please call us to create an account.

My experiences!

Please supply an image of your receipt to verify your claim

Receipt Number*

[REDACTED]

Receipt Date*

29/10/2019

 UPLOAD IMAGE OF RECEIPT

File type : jpg

Size: 2.88 MB

File not uploaded. Please make sure your file is in jpg/png/gif/pdf format and less than 3.0 MB and then try again. You will not be able to continue until the file meets these requirements.

Retailer *

Harvey Norman

Retailer Suburb *

Moore Park

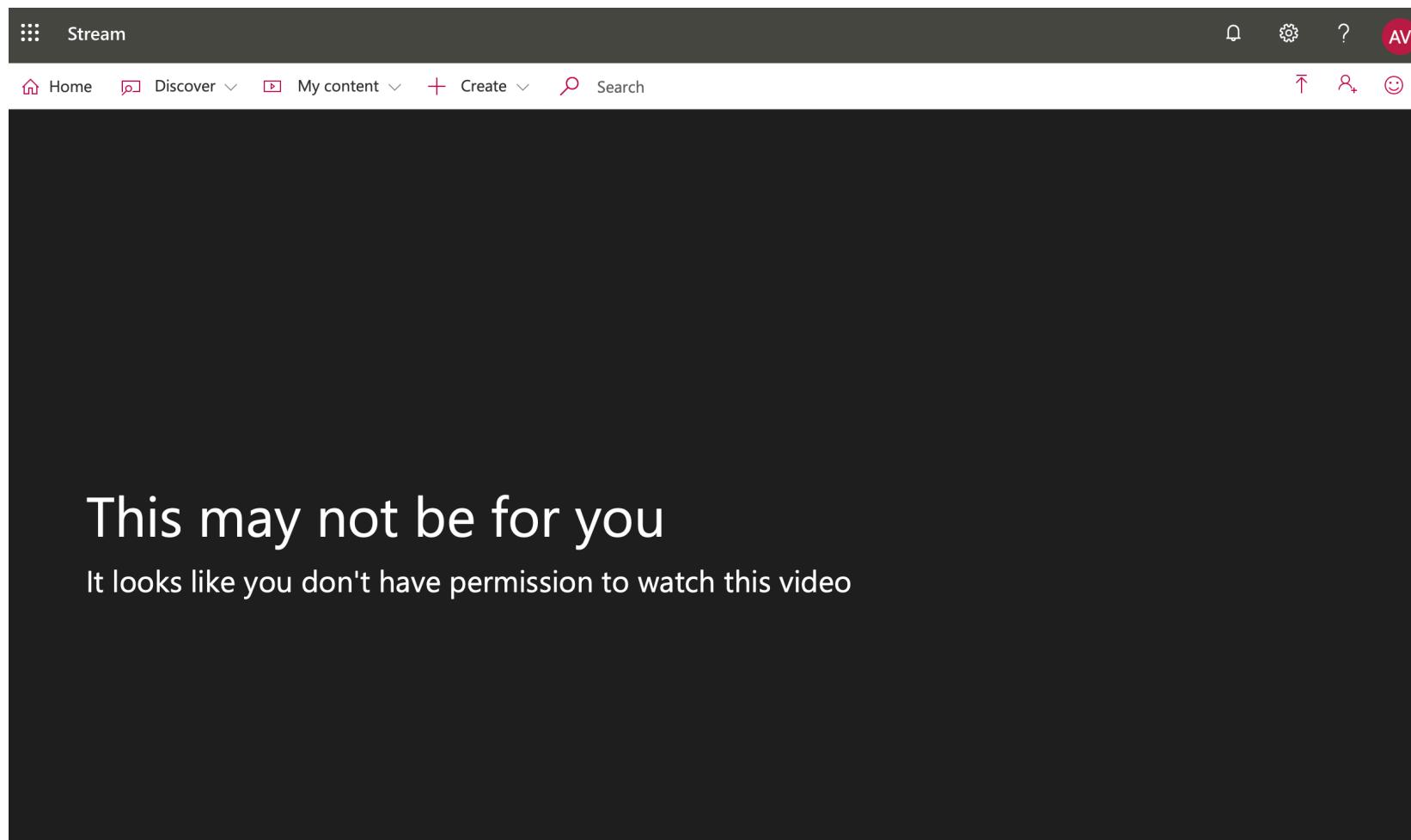
Retailer State *

NSW

ADD ANOTHER RECEIPT



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Widely used, but widely disliked!

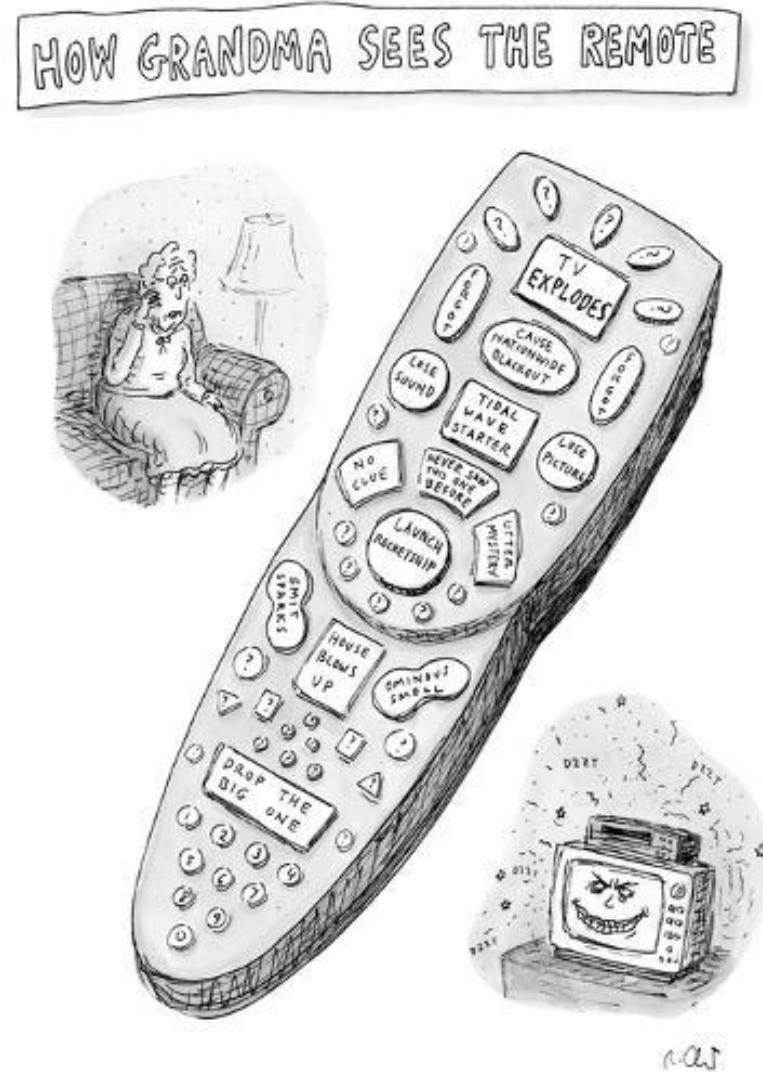


Image © Roz Chast, *The New Yorker*

Good and bad design

- One of the most difficult every day items to use is a remote control
 - What makes the older remote controls so difficult to use?





Image credit: <https://www.uxmatters.com/mt/archives/2017/03/3-kinds-of-simplicity.php>

Two remotes, two designs



- What is wrong with the Apex remote?
- Why is the TiVo remote so much better designed?
 - Peanut shaped to fit in hand
 - Logical layout and color-coded, distinctive buttons
 - Easy to locate buttons

Simplified remotes - simplicity vs function



Good and bad design

- What can you do to improve the design of this remote control?



See <http://www.simpleandusable.com/simplify-this>

Goals of interaction design

- Develop usable products
 - Usability means easy to learn, effective to use and provide an enjoyable experience
- Optimise user interaction with a system, environment or product so that they support and extend user's activities in effective, useful and usable ways (p6, Preece et al, 2007)
- Involve users in the design process

An example...



From: <https://www.flickr.com/photos/markhillary/2598795623>



Image Credit: <https://shreevatsa.wordpress.com/2010/06/29/examples-of-bad-design-2/>

Evolution of the iPod



Image credit: <http://awesomeislandinc.tumblr.com/post/5672469888/ifyoucare-evolution-of-the-ipod>

Why was the iPod user experience such a success?

- Quality user experience from the start
- Simple, elegant, distinct brand, pleasurable, must have fashion item, catchy names, cool, etc.,

What is involved in the process of interaction design

- Establishing requirements
- Developing alternatives
- Prototyping
- Evaluating

Core characteristics of interaction design

- users should be involved through the development of the project
- specific usability and user experience goals need to be identified, clearly documented and agreed at the beginning of the project
- iteration is needed through the core activities

Why bother?

- Help designers:
 - understand how to design interactive products that fit with what people want, need and may desire
 - appreciate that one size does not fit all
 - e.g., teenagers are very different to grown-ups
 - identify any incorrect assumptions they may have about particular user groups
 - e.g., not all old people want or need big fonts
 - be aware of both people's sensitivities and their capabilities

What do professionals do in the Interaction Design business?

JOB OPPORTUNITIES FOR UX PROFESSIONALS					
	USER RESEARCH	USABILITY ANALYST	INFORMATION ARCHITECT	INTERACTION DESIGNER	VISUAL DESIGNER
JOB DESCRIPTION	User Researchers provide a deep understanding and insight of user behavior, needs and motivations. They offer feedback in all phases of the design process from project conception, to implementation, to development.	Usability Analysts apply user research & usability principles to identify usability problems. They help ensure usability goals are met by identifying project objectives, evaluating the success of studies, and measuring outcomes.	Information Architects focus on scoping, building and optimizing how information is organized and presented to users. They develop thorough, realistic plans that support organizational user experience objectives.	Interaction Designers draw upon user data, research and team input to generate interaction concepts that enable seamless, fluid, relevant and engaging experiences for users.	Visual Designers turn wireframes/prototypes into visual designs that are both user friendly and adhere to brand guidelines. They rely on keen understanding of graphical elements, style guides, brand standards and design systems.
JOB RESPONSIBILITIES	<ul style="list-style-type: none">Conduct user and task analyses to identify opportunities to improve user experienceSynthesize research findings into meaningful recommendations and actionable results	<ul style="list-style-type: none">Investigate and resolve user experience issues through evaluation and testingEffectively improve upon and communicate actionable insights that materially improve the customer experience	<ul style="list-style-type: none">Create wireframes, process maps, functional specifications, prototypes and other artifacts to describe the intended user experienceApply user personas and scenarios to develop relevant process and user flow models	<ul style="list-style-type: none">Participate in the creation of rapid prototypes to illustrate a service or applicationCooperate with visual designers to solve problems and create full design solutions on projects	<ul style="list-style-type: none">Create engaging, usable, and effective visual design solutions to achieve user centered goalsValidate the effectiveness of designs through research and usability studies

Image Credit: <http://www.onwardsearch.com/2011/08/user-experience-careers-guide/>

Affordances

- "the perceived and actual properties of the thing, primarily those fundamental properties that determine just how the thing could possibly be used"
- "affordances give strong clues to the operations of things"

Norman (1988)

Affordances: to give a clue

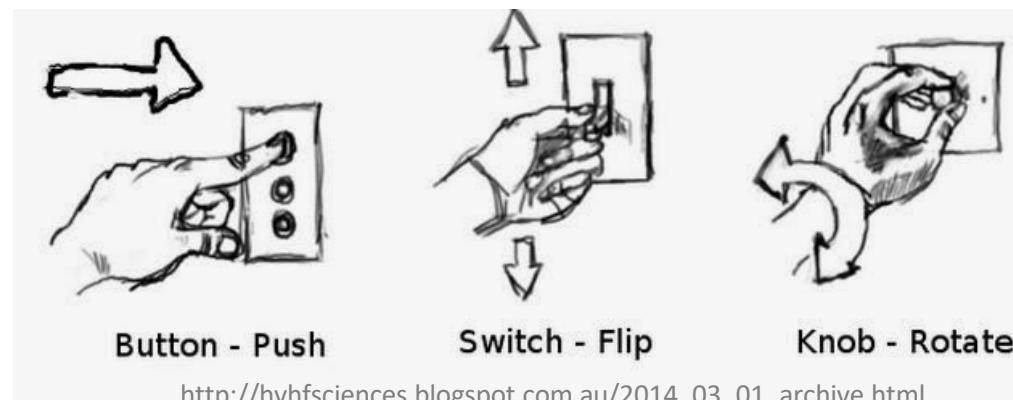
- Refers to an attribute of an object that allows people to know how to use it
 - e.g. a mouse button invites pushing, a door handle affords pulling
- Norman (1988) used the term to discuss the design of everyday objects
- Since has been much popularised in interaction design to discuss how to design interface objects
 - e.g. scrollbars to afford moving up and down, icons to afford clicking on

What does ‘affordance’ have to offer interaction design?

- Interfaces are virtual and do not have affordances like physical objects
- Norman argues it does not make sense to talk about interfaces in terms of ‘real’ affordances
- Instead interfaces are better conceptualised as ‘perceived’ affordances
 - Learned conventions of arbitrary mappings between action and effect at the interface
 - Some mappings are better than others

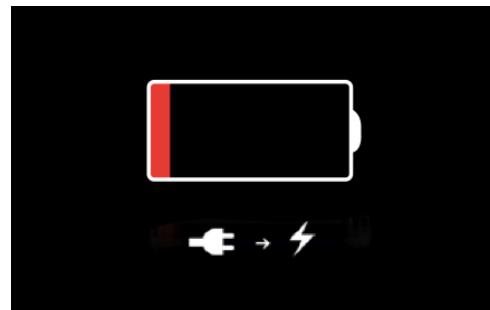
Activity

- Physical affordances:
 - How do the following physical objects afford? Are they obvious?



Activity

- Virtual affordances
 - How do the following screen objects afford?
 - What if you were a novice user?
 - Would you know what to do with them?



[Buy now](#)

Usability goals

- Effective to use (effective)
- Efficient to use (efficiency)
- Safe to use (safety)
- Have good utility (utility)
- Easy to learn (learnability)
- Easy to remember how to use (memorability)

Effective

- how well does a product do what it is supposed to do?
- does it help people achieve their goals?

Efficiency

- does it help people carry out their tasks with minimal steps
- removes unnecessary tasks that are more likely to be "system related" rather than what people would do naturally

Safety

- doesn't kill or injure people
- helps avoid people from making mistakes
- actions too close together?
- doesn't delete user's important information
- undo provided

Utility

- does the product have the functions that the user needs to achieve the goals
 - not too many (feature bloat) and not too few
- a library web site that does not allow students to reserve books could be an example of poor utility

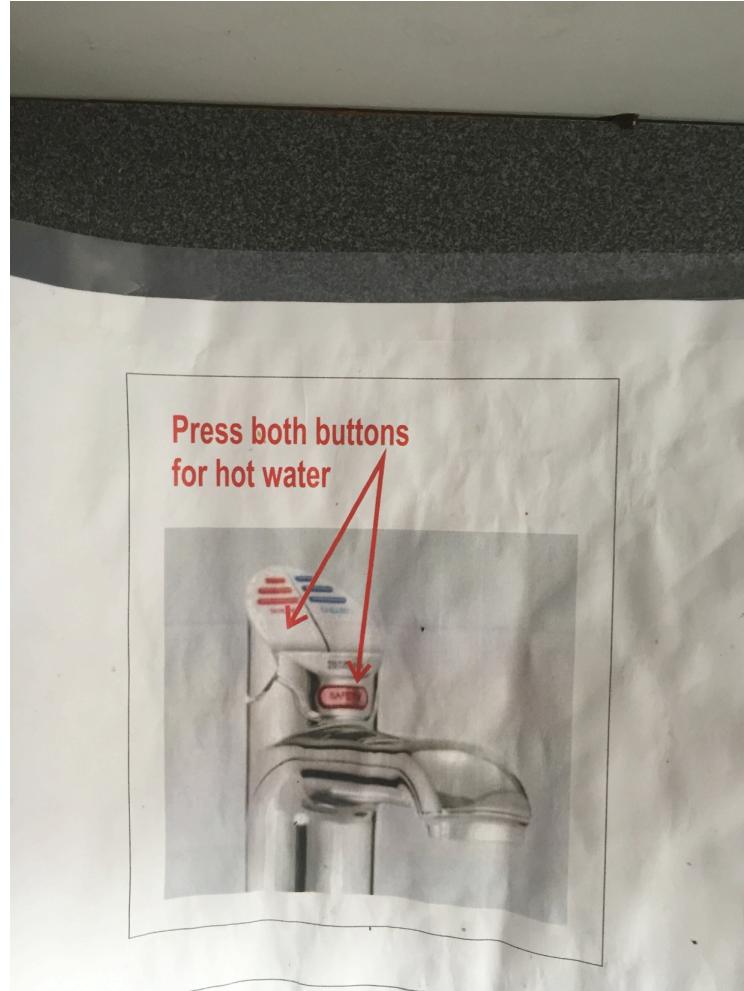
Learnability

- is the system easy to use
- can the user walk up to the system and start using it with minimal confusion / cognitive load
- doesn't take a long time to become productive
- similar tasks have similar interactions

Memorability

- once you have used the system once, will they recall how to use the system the next time or will they have to "start from scratch"
- how often do people use this system? everyday, once every quarter or year

Example: Trade off between Learnability & Safety



User experience

- how the system "feels" to the user
- emotional connection
- positive or negative

Desirable user experience goals



Undesirable user experience goals



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Design principles

- Generalizable abstractions for thinking about different aspects of design
- The do's and don'ts of interaction design
- What to provide and what not to provide at the interface
- Derived from a mix of theory-based knowledge, experience and common-sense

Design principles

- see The Design of Everyday Things and 1.7.3 in ID

Design principles

- Visibility
- Feedback
- Constraints
 - Physical
 - Semantic
 - Cultural
 - Logical

Visibility

- helps the user understand what to do with the system
- the visual design provides clues about how to interact with the system



Image Credit: <https://becomingaprofessional.files.wordpress.com/2012/05/sensor-faucet.jpg>



<http://idyeah.com/blog/2011/03/visibility-principle-in-user-interfaces/>

Visibility



Visibility



- You need to swipe your dongle where the display for the floor number is to get the elevator to work!
 - How would you make this action more visible?
 - Make the card reader more obvious:
 - provide an auditory message, that says what to do (which language?)
 - provide a big label next to the card reader that flashes when someone enters
 - make relevant parts visible eg. light up section of pad or make it physically stand out
 - make what has to be done obvious

Feedback

- related to visibility
- the way that the system reacts to the user input, sending a "signal" back to the user
- if I turn this knob, this part moves in the same direction
- when I press on a touch screen, the button icon depresses and a click is audible

Constraints

- how many different ways could an operation be possibly carried out?
- if there is more than one way to do something then it is easier for people to get it wrong, not remember the sequence, ...
- constraints limit the possibilities - which can be a good thing for the user

Physical constraints

- this shape key goes into this lock
- this handle is about the right size for my hand to hold
- the plastics and cans recycling bin has a round hole, I can't put in my lunch container

Semantic constraints

- Semantics - the meaning of things
 - some things just don't make sense!
 - requires that we have knowledge of the real world and that we understand and share the same "meanings"
 - you would expect that a driver of a car faces the road ahead

Cultural constraints

- socially acceptable behaviour in one culture could differ from another culture
- people learn the rules of their culture as they grow up, they also know how to react to certain events
- localised products might work in a particular way eg. US indicators were/are connected to the brake light
- learned arbitrary conventions, like red triangles for warning

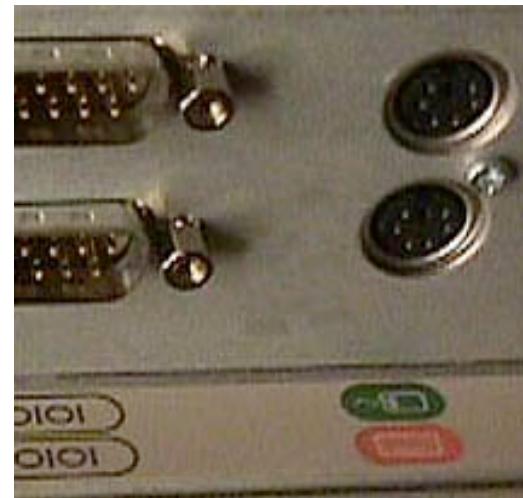


Logical constraints

- logic / reasoning
- not physical, not cultural, not semantic
- exploits people's everyday common sense reasoning about the way the world works
- building a model and there are pieces left over
- An example: the logical relationship between physical layout of a device and the way it works as the next slide illustrates

Logical or ambiguous design?

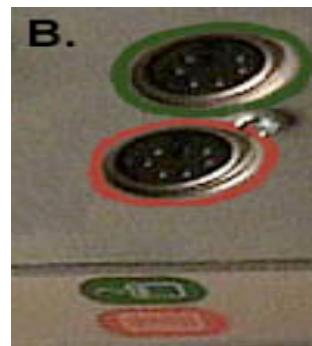
- Where do you plug the mouse?
- Where do you plug the keyboard?
- top or bottom connector?
- Do the color coded icons help?



How to design them more logically



- (i) A provides direct adjacent mapping between icon and connector



- (ii) B provides colour coding to associate the connectors with the labels

Norman's Lego Example

- The design cleverly exploits physical, semantic and cultural constraints so that there is basically only one construction solution.

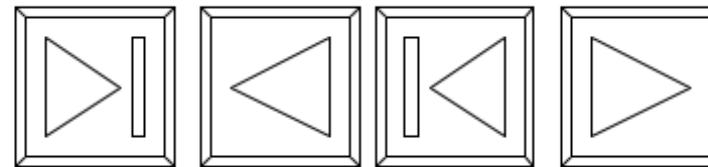


Natural Mappings

- Spatial relationship between the controls and the outcome
- Example: Light switches, cook tops

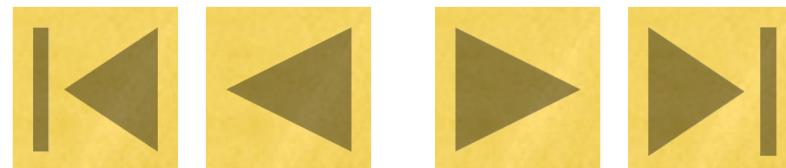
Mapping

- Relationship between controls and their movements and the results in the world
- Why is this a poor mapping of control buttons?



Mapping

- Why is this a better mapping?
- The control buttons are mapped better onto the sequence of actions of fast rewind, rewind, play and fast forward



Mapping



Activity on mappings



Image Credit: http://gamasutra.com/view/feature/134989/intuition_expectations_and_.php?print=1

Why is this a better design?



Image Credit: <https://rules.ssw.com.au/DesignandPresentation/RulestoBetterInterfacesGeneral/Pages/Default.aspx>

'Duck boat' accident in USA due to poor design

- Designed to operate on both land and at sea – too much functionality
- On land too wide on the roads and many blinds spots as too high, so safety and visibility compromised.
- On water the boat is too low which means poor driver control and easy flooding in bad weather. The canopy also traps passengers if the boat goes under, so safety compromised. Not surprising, that there have been many accidents as increased functionality was put ahead of designing for safety. Utility and efficiency also compromised.
- Design Principles and Usability goals not heeded.



See <https://www.sbs.com.au/news/inspector-warned-duck-boat-company-of-design-flaws-last-year>

Usability principles

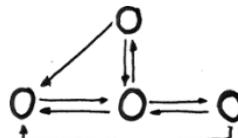
- originally referred to as "heuristics"
- Similar to design principles, except more prescriptive
- Used mainly as the basis for evaluating systems
- Provide a framework for heuristic evaluation (see 16.2 Interaction Design)

Ten Usability Heuristics by Jakob Nielsen



Visibility of system status

Give the users appropriate feedback about what is going on.



User control and freedom

Support undo, redo and exit points to help users leave an unwanted state caused by mistakes.



Aesthetic and minimalist design

Don't show irrelevant or rarely needed information since every extra elements diminishes the relevance of the others.



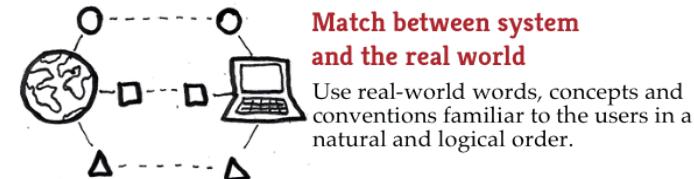
Flexibility and efficiency of use

Make the system efficient for different experience levels through shortcuts, advanced tools and frequent actions.



Help and documentation

Make necessary help and documentation easy to find and search, focused



Match between system and the real world

Use real-world words, concepts and conventions familiar to the users in a natural and logical order.



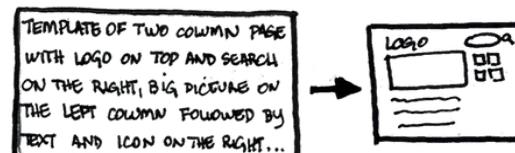
Error prevention

Prevent problems from occurring: eliminate error-prone conditions or check for them before users commit to the action.



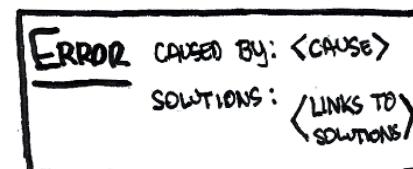
Consistency and standards

Follow platform conventions through consistent words, situations and actions.



Recognition rather than recall

Make objects, actions, and options visible at the appropriate time to minimize users' memory load and facilitate decisions.



Help users recognize, diagnose, and recover from errors

Express error messages in plain language (no codes) to indicate the problem and suggest solutions.

Image credit to:
<http://innovationequalsfeedback.tumblr.com/post/34587880366/ten-usability-heuristics-by-jakob-nielsen>

Usability principles

- There have been variations to the list of principles since Nielsen's 2001 proposal
- More recent lists focus on newer products such as mobile devices, digital toys, online communities, new web services, etc
- See Box 16.1 p553 (ID 5th Ed) for some Web focused heuristics

Visibility of System Status

- Feedback
- What is the system doing now?
- Keep the user informed
- Show status with minimal delay
- Make the feedback appropriate, meaningful

Visibility of System Status: Rule of thumb

- System should continuously inform the user about what the system is doing and how it's interpreting the user's input!
 - < .1 sec – no special feedback required
 - > 1 sec – provide feedback (e.g., hourglass)
 - > 10 sec – allow user to do other tasks simultaneously
- Nielsen, Designing Web Usability, p42-44

Visibility of System Status: Examples

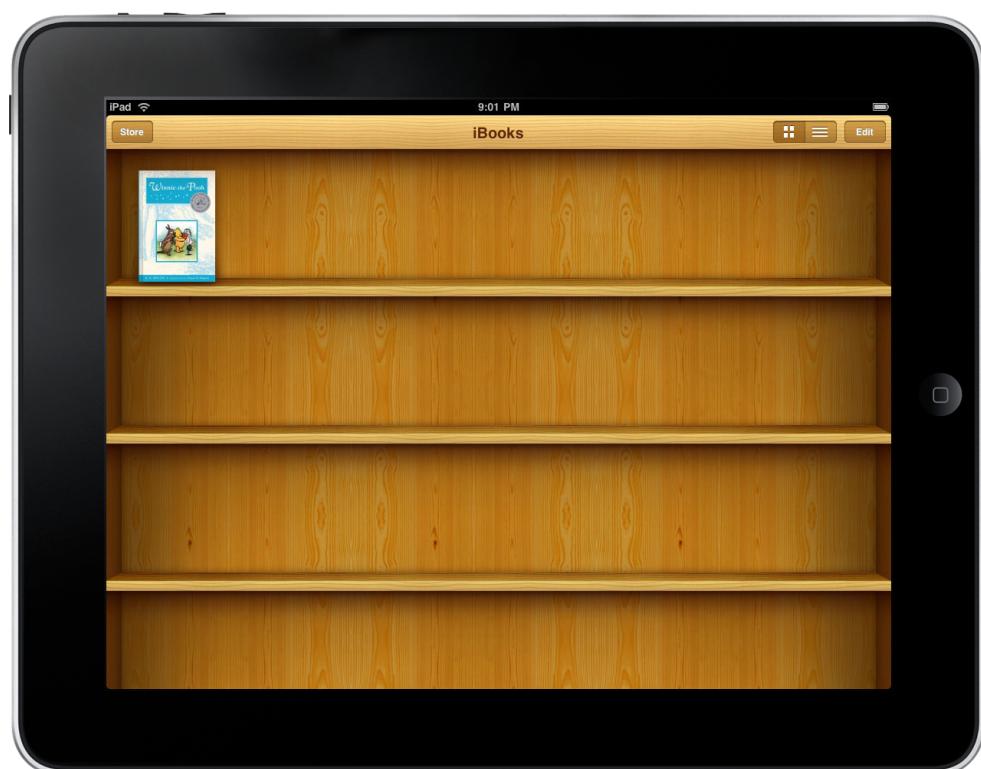
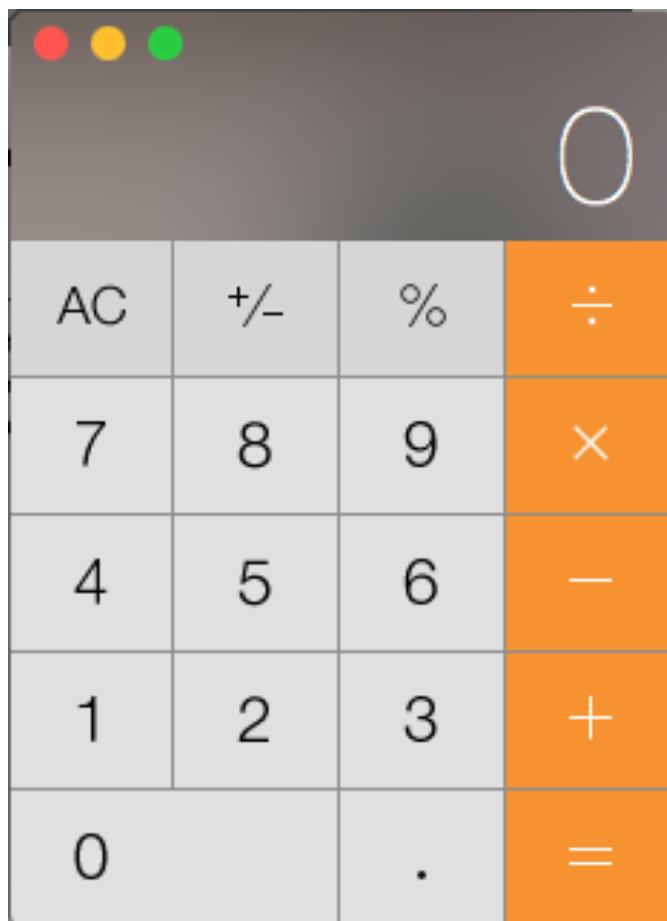
The image displays three examples of system status visibility:

- Amazon Progress Bar:** A progress bar showing "Copying 32 items to ‘Google Drive’" with a blue bar indicating progress from 344.5 MB to 363.3 MB, estimated to take about 5 seconds.
- UpCloud Upload Progress Bar:** A progress bar showing "Uploading Wk01-UsabilityGoals2015_SV.ppt" with 23 seconds left.
- Dropbox Upload Progress Bar:** A progress bar showing "Wk01-UsabilityGoals20...SV.ppt - 6.31 MB" with 35 seconds left.

Match between system and the real world

- Familiar concepts to the target audience
- “Speak the user’s language”
- Avoid system-oriented jargon
- Use metaphors wisely
 - understandable, applicable, translatable
- Workflow is reflected in the system

Match between system and the real world: Example



Match between system and the real world: Example

🚚 DELIVERY



Music



Photo Booth



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User control and freedom

- The user needs to feel that they are in control of the interaction
- Actions are not taking place in unpredictable, automatic ways
- It is obvious for the user to find an exit if they have traversed into an area of the application that they were not expecting

User control and freedom

Your basket

You have 1 item in your basket

**Proceedings of HCI 2007:
Volume 1 (Paperback)**

Availability: Available - dispatched in 3 business days

Quantity AUD\$99.41
Save \$80.15
\$179.56 [Update](#) [Remove](#)

Free delivery worldwide
to these countries

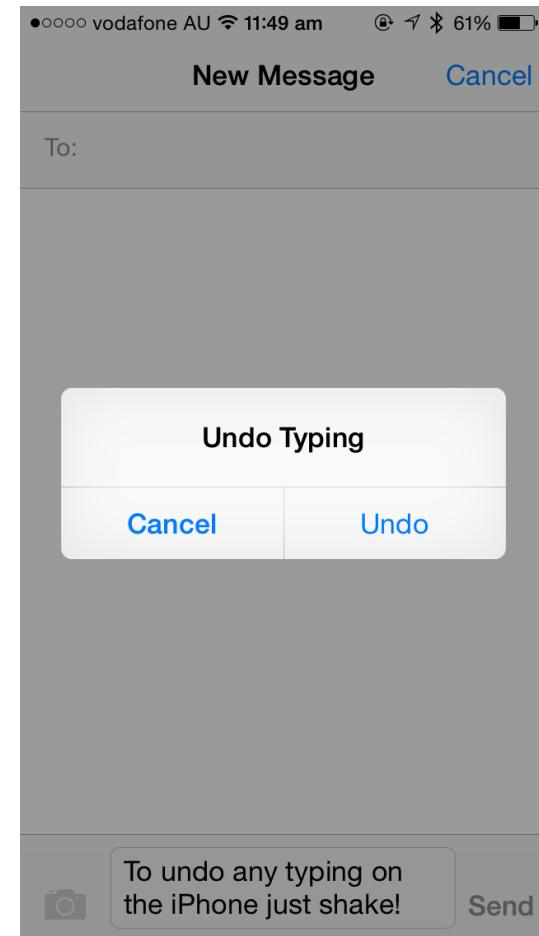
Delivery cost: FREE

Total: AUD\$99.41

[Checkout](#)

[PayPal Check out](#)
The safer, easier way to pay

A toolbar with various icons, including a red circle, a yellow circle, a green circle, a file icon with a plus sign, a folder icon, a download icon, a printer icon, a scissors icon, a file icon, a clipboard icon, a magnifying glass icon, and a refresh/circular arrow icon. The refresh/circular arrow icon is circled in red.



Consistency and standards

- Consistency helps users understand what they could do since they can build on knowledge they have acquired elsewhere (internal or external)
- Terminology means the same thing
- Actions or sequences of actions are conducted in the same manner

Consistency and standards

THE ICONIC Women Men Search: Senso, Party Dresses, Calvin Klein

Over 250 fashion brands 1000+ styled outfits Inspiration free style guide Express delivery FREE on all orders over \$200 365 day returns 1300 696 378

birdsnest Search birdsnest

ASOS MARKETPLACE

ASOS discover fashion online Search ASOS

Welcome to ASOS. Join | Sign In Help | Saved items | Bag \$0.00 (0)

The screenshot shows the top navigation bar of THE ICONIC website. It includes links for Contact us, FAQ, Delivery, Returns, and Track Orders. Below this is a main menu with categories for Women, Men, and a search bar. Promotional banners for various services like styling guides and express delivery are visible. Below the main header is a section for 'birdsnest' with its logo and a search bar. Further down is the ASOS Marketplace section with its logo and a search bar. The ASOS section also features a welcome message, currency selection (AUD), and user account links.

VERSUS

Contact us | Help | Track order Login/register

Search for books by keyword/book title/author/ISBN

Find book Advanced search

Currency selection \$ Australian Dollar Go to basket/checkout Quick basket view

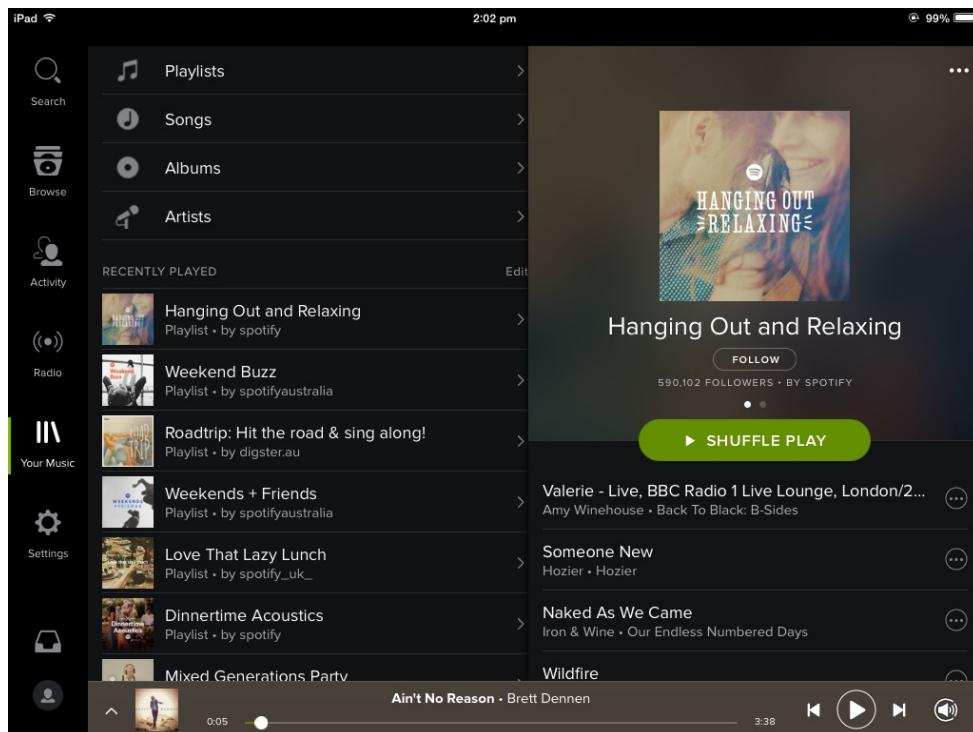
Home Free delivery worldwide 1 item AUD\$99.41

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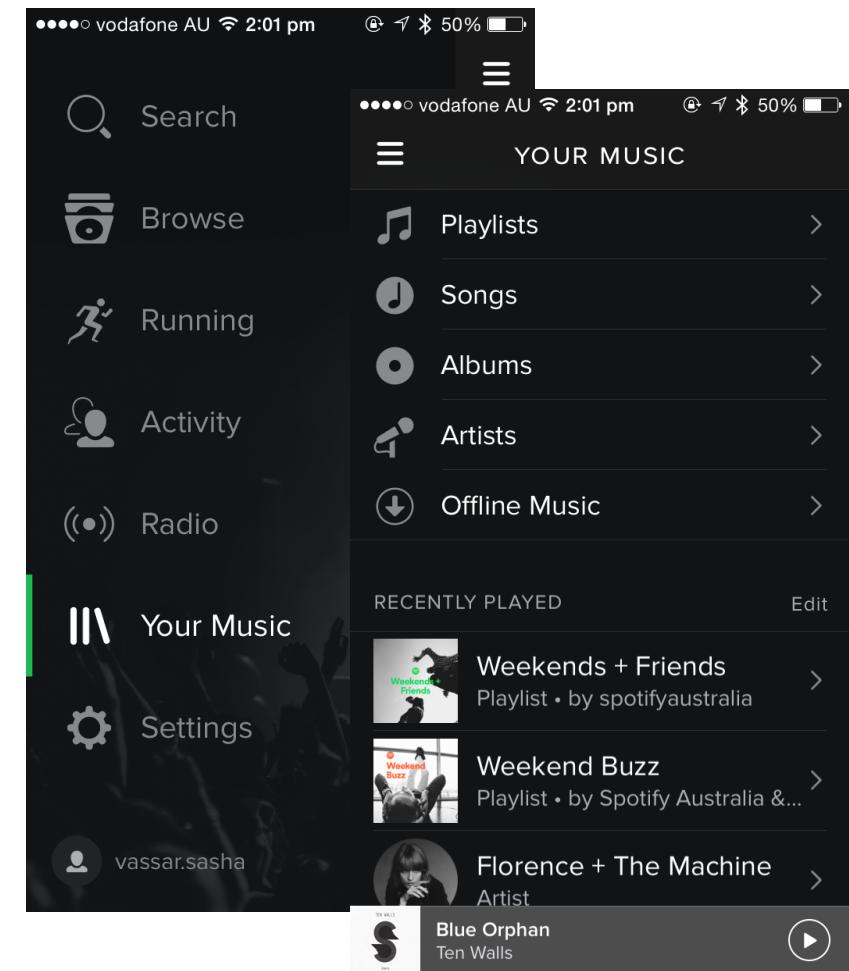
The screenshot shows the Book Depository website. It features a search bar for books, a 'Find book' button, and links for advanced search, currency selection (set to Australian Dollar), and a basket/checkout area. A prominent red circle highlights the 'Login/register' link in the top right corner. At the bottom of the page, there's a yellow banner with links for Home, free delivery, item count, price, and a UNSW Australia logo.

Consistency and standards

Spotify on my iPad



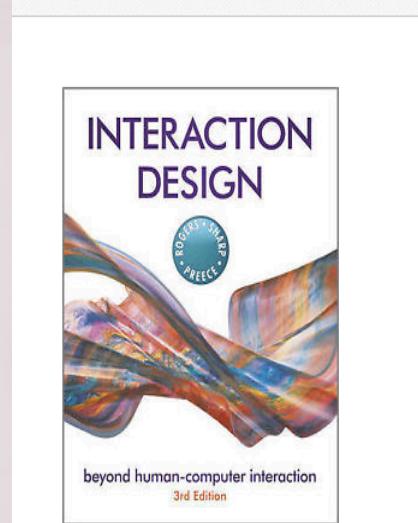
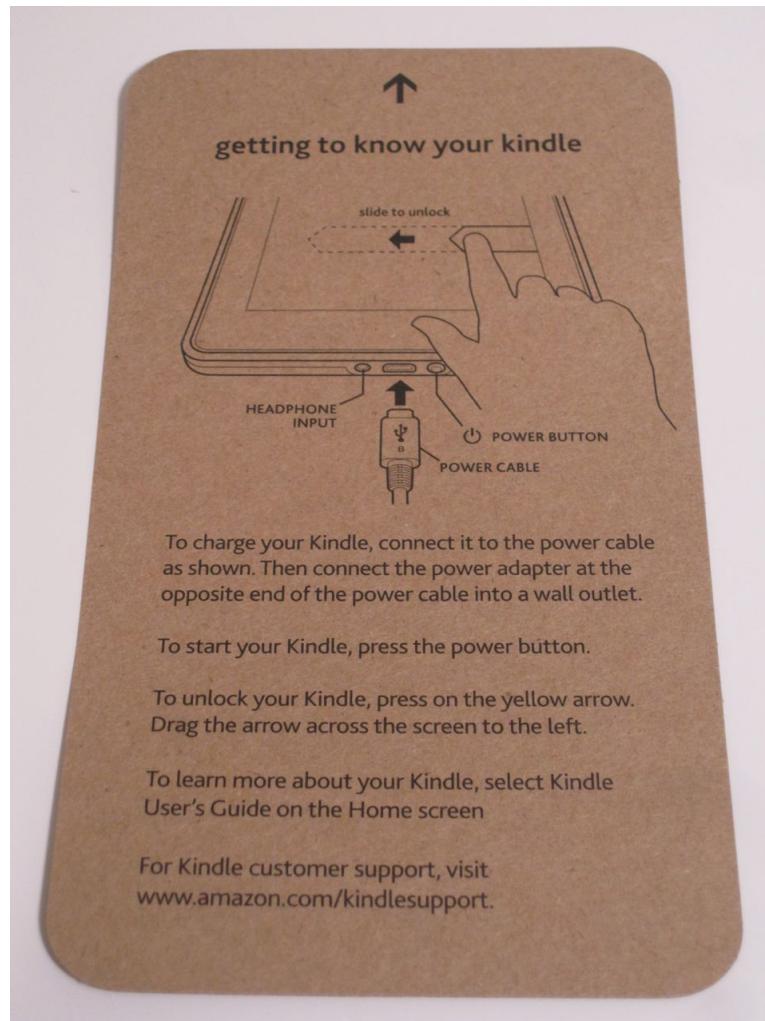
Spotify on my iPhone



Help and Documentation

- Information that can be easily searched
- Provides help in a series of concrete steps that are easily followed

Help and Documentation



Interaction Design Beyond Human-Computer Interaction 3E Rogers 3r

Item Like new
condition:
Time left: 2d 06h (28 Jul, 2015 18:37:48 AEST)

Price: AU \$68.87

Buy It Now

Add to cart

Add to watch list

Add to collection

100% positive

Postage: AU \$15.05 Standard

Item location: Underwood, QLD, Australia

Posts to: Australia

Save, organise and share what you love by adding this to a collection.

Image Credit: <http://goodstuffathome.com/kindle-fire-unboxing.html>

Help and Documentation

Please select your operating system for detailed instructions.



OS X v10.9
Mavericks



OS X v10.8
Mountain Lion



Mac OS X v10.7
Lion



Mac OS X v10.6
Snow Leopard

Upgrade from OS X v10.9 Mavericks to OS X Yosemite

1. If your Mac can run OS X Mavericks, it can run [OS X Yosemite](#).
2. [Back up](#) your Mac.
3. Get [OS X Yosemite](#) from the Mac App Store.
4. Double-click [Install OS X Yosemite](#) to begin installation.

Help users recognize, diagnose and recover from errors

- Error messages are presented using plain language that the user can understand
- They can comprehend that they have encountered an error
- The error is described
- There is a suggested solution to recover from the error that is also in plain language

Help users recognize, diagnose and recover from errors: Example of unhelpful error recovery

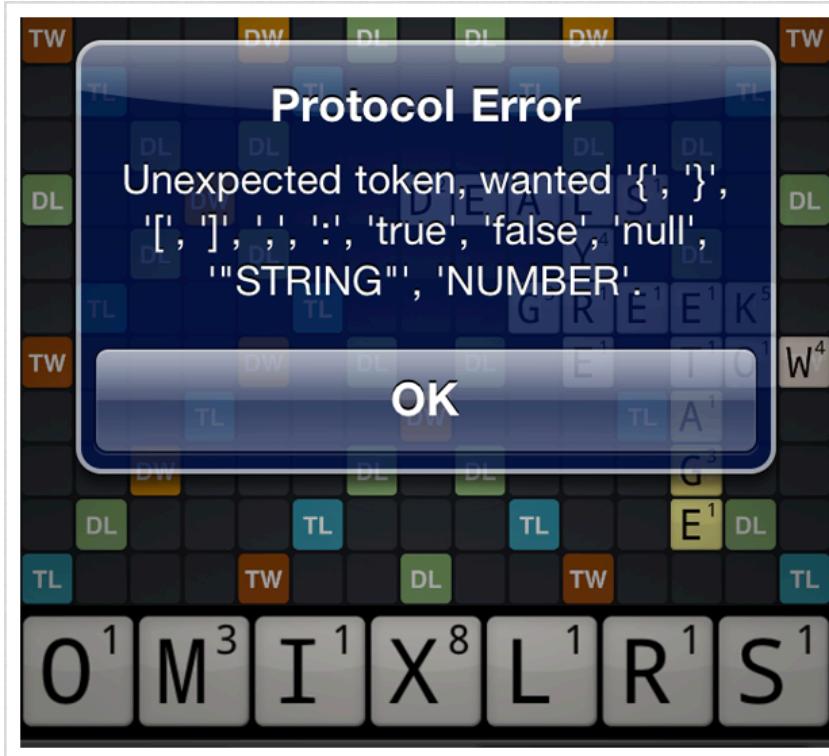


Image Credit: <http://badusability.com/words-with-protocol-error/>

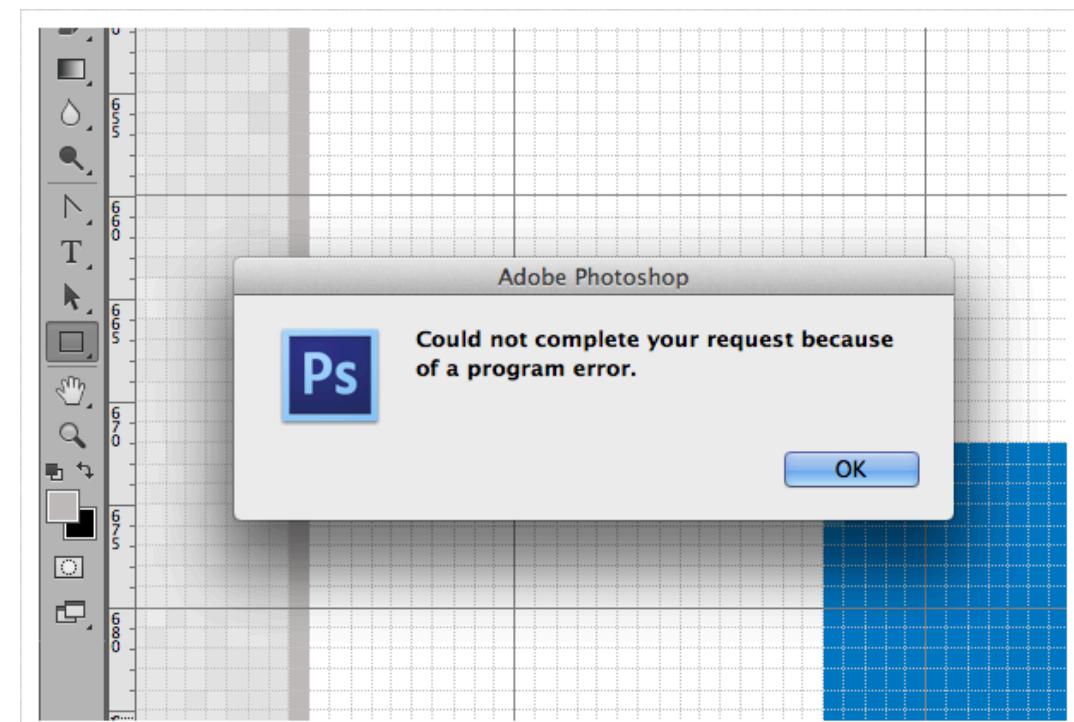
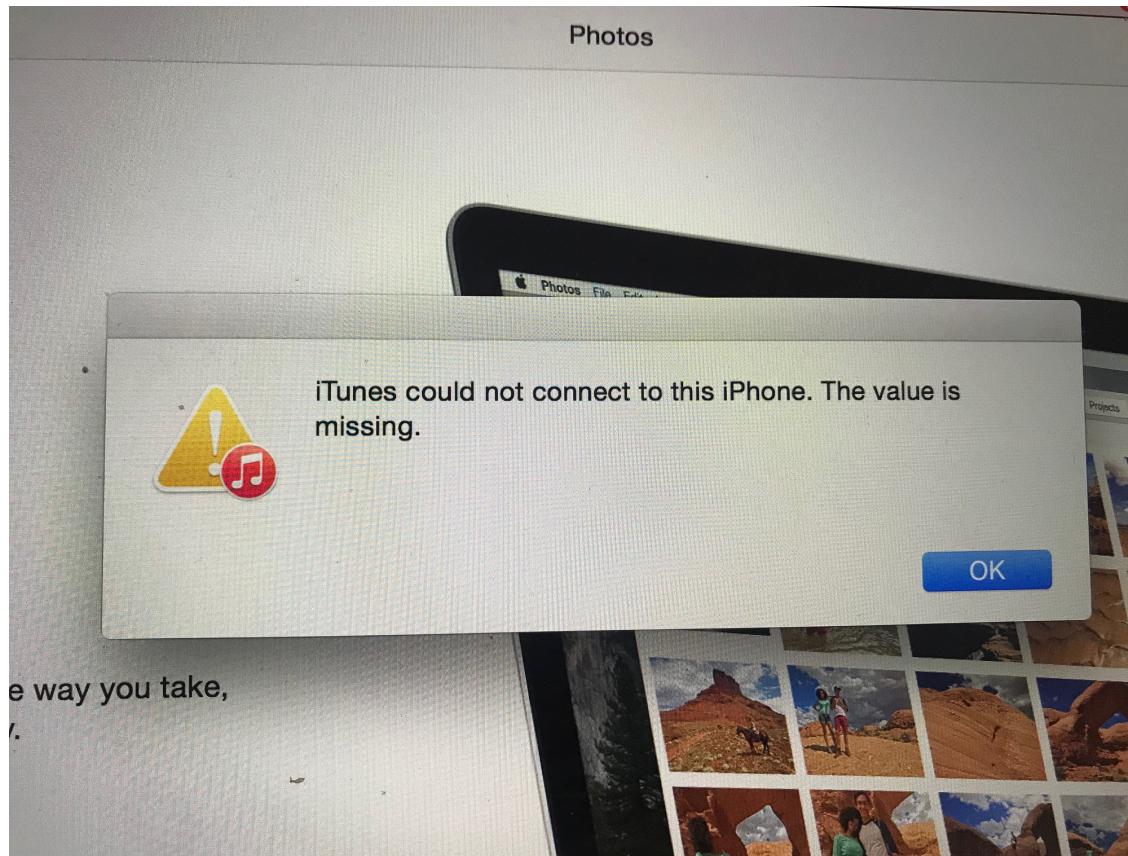
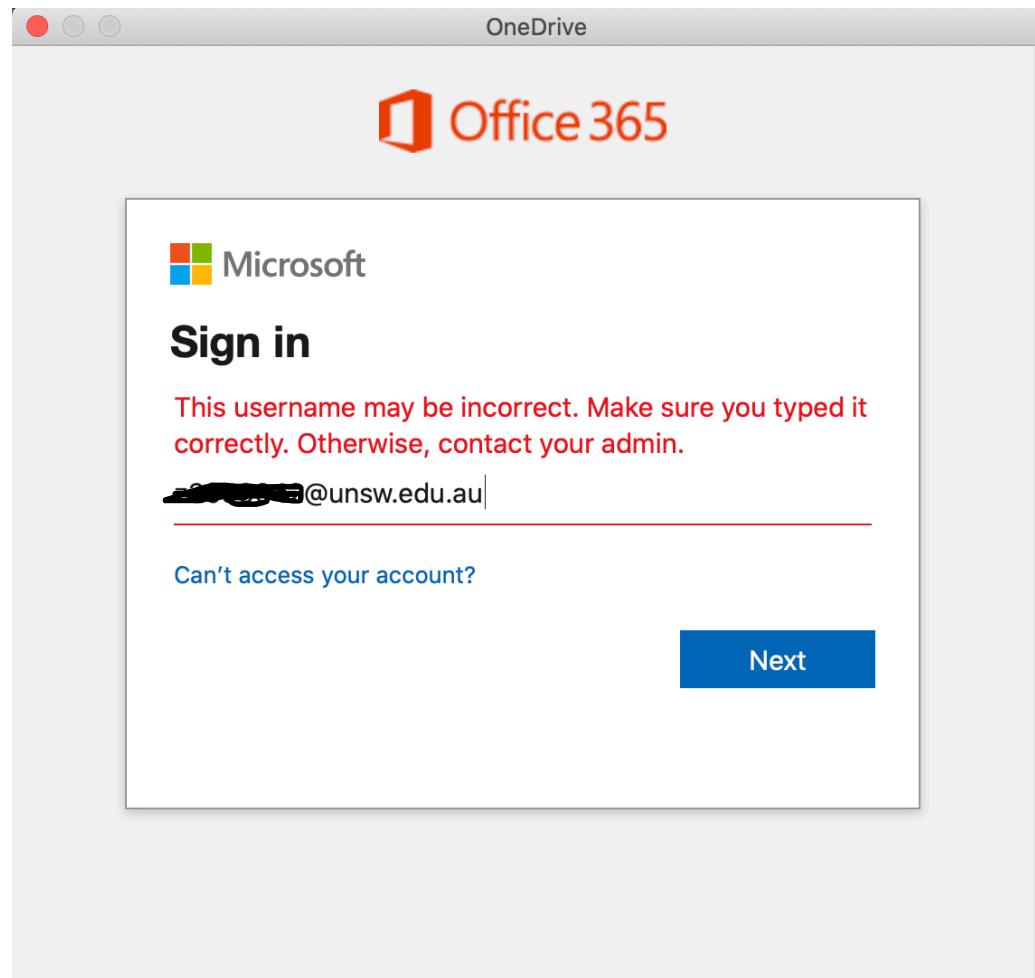


Image Credit: <http://badusability.com/thanks-for-the-info-adobe/>

Help users recognize, diagnose and recover from errors: Example of unhelpful error recovery





Add members to the TUT_F11A_4284 channel

Students [Teachers](#)

You'll need to activate your team to add students to it.

Search for teachers

Add

Something went wrong.

Retry all ⏪

AM

Alli Murray

[REDACTED] Casual Academic

The user is not a member of the team.

Retry ⏪ ×

Close



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Course	COMP3511 Human Computer Interaction	GRD	
Term	Summer Term 2020	Summer Teaching Period	
Faculty	Faculty of Engineering	School	School of Computer Sci & Eng
Campus	KENS - Sydney	Class	All students
Enrolments	71	Item	All selected (6) ▾
			Confirm

An unknown error has occurred.

[Close](#)



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Help users recognize, diagnose and recover from errors: Example of helpful error recovery

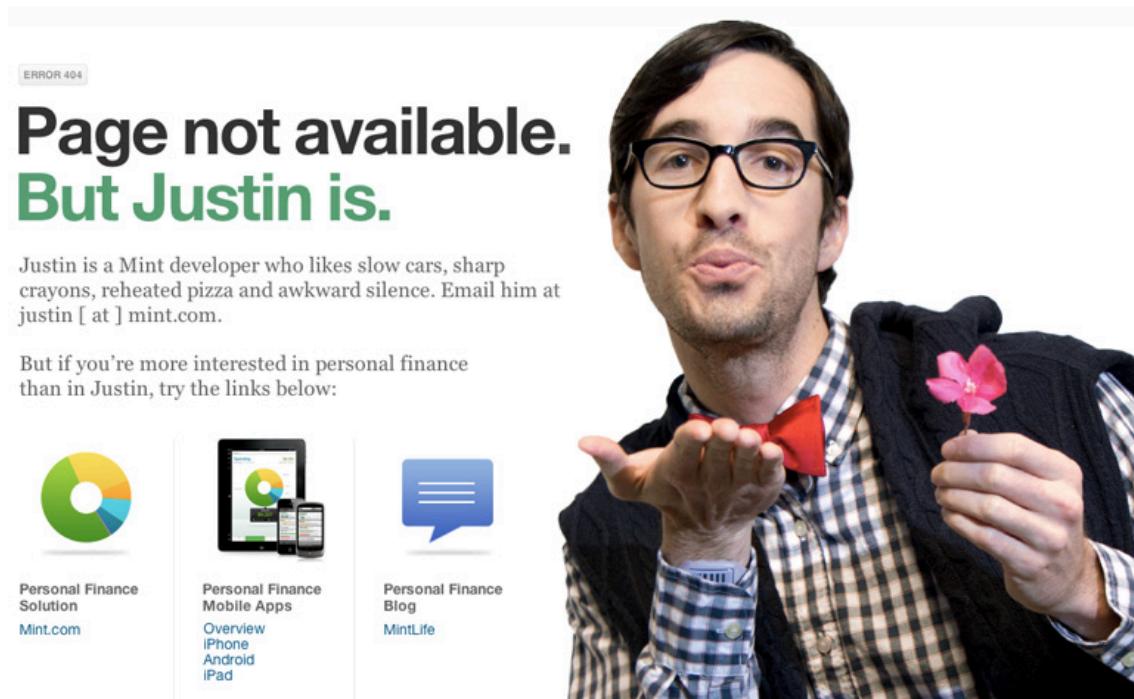


Image Credit: <http://www.404notfound.fr/page/mint>

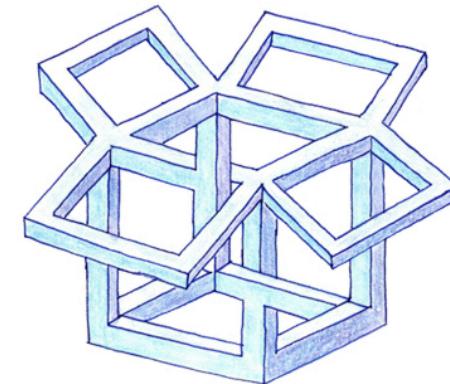


Image Credit: <http://www.404notfound.fr/page/dropbox>

Help users recognize, diagnose and recover from errors: Example of helpful error recovery

kiddicare
part of worldstores

Order in the next **12 hrs 42 mins** for
next day delivery on **Thu 25th Aug**

Search... 

CONTACT US | RETURNS | LOGIN | STORE FINDER | BLOG

 My basket: 0 items - £0.00 | Save for later
Your basket is empty | [CHECKOUT](#)  [log In >](#)

Pushchairs,
Prams, Strollers Car Seats &
Carriers Nursery &
Bedding Bath &
Changing Feeding &
Sterilising Safety &
Healthcare Toys &
Playtime Toddler &
Child **Offers** Buying
Guides **Mother & Baby**

 Price Match Guarantee  Fast, Free delivery  365 day returns

404

**Oops! This page
disappeared whilst we
were snoozing.**

Sorry, it looks like the page you have requested doesn't exist. This may be a mistake in the link you have used, or the page may have been removed. You can find all you need for your little one by trying our search, or by using the category navigation.



ii

Error prevention

- Stop errors from occurring in the first place
- Proximity of controls to each other
- Providing clear labelling or meaningful terminology
- Examples along side where input needs to be made

Error prevention: Example

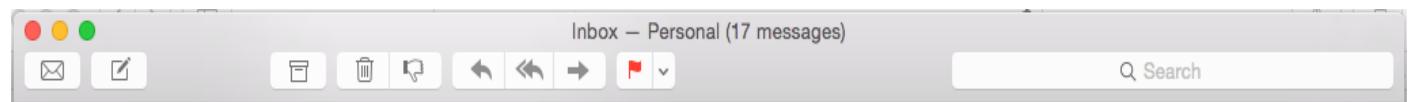
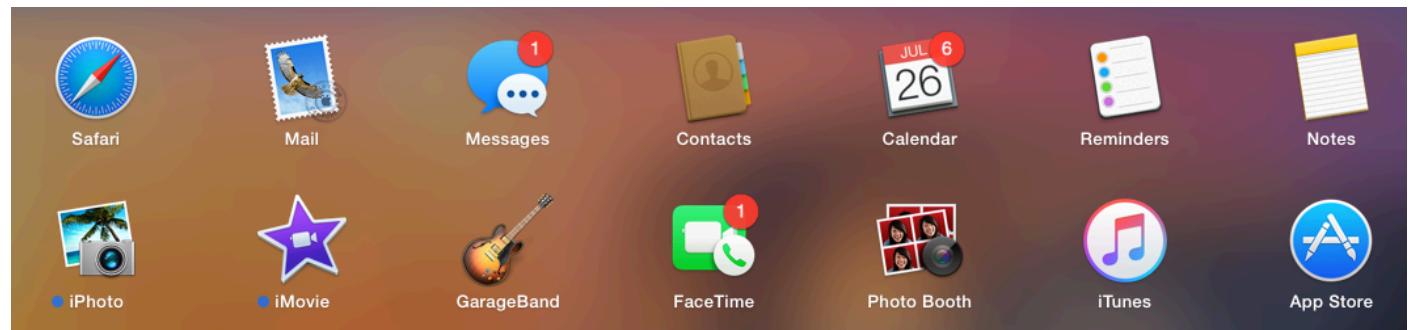
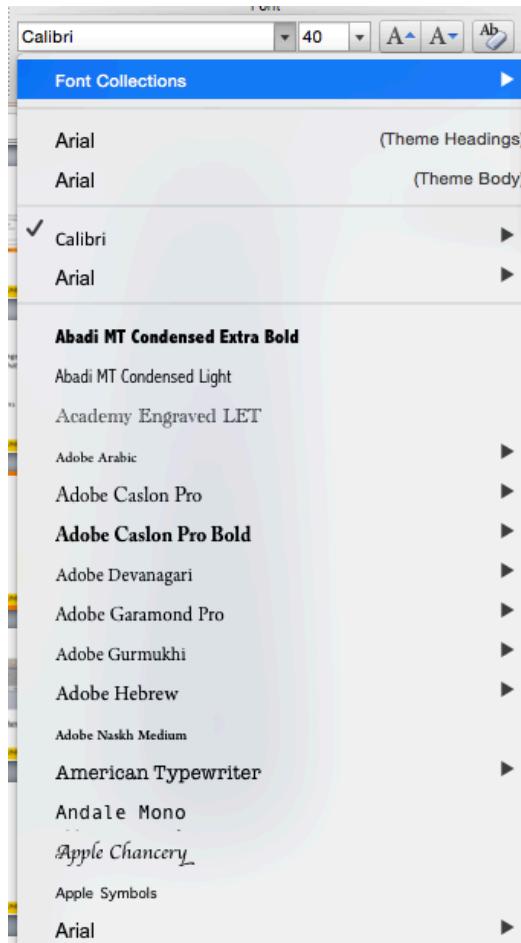
The image displays three examples of user interface design for error prevention:

- Google Mail Attachment Reminder:** A modal dialog box titled "From "mail.google.com"" appears over an email composition window. It contains the message: "It seems like you forgot to attach a file. You wrote "find attached" in your message, but there are no files attached. Send anyway?". It includes "Cancel" and "OK" buttons.
- ASOS Color and Size Selection:** A modal dialog box titled "From "www.asos.com"" asks the user to "Please select from the available size and colour options". It features a preview image of a woman wearing a white floral dress, a dropdown menu for "Multi floral/silver", a dropdown menu for "Select Size", and an "ADD TO BAG" button.
- Login Form Password Strength:** A registration form titled "Create an account" includes a password field with validation text: "Please enter a password with at least six characters." Below the password field is a "Verify password" field.

Recognition rather than recall

- Humans are better at recognising from a range of options than trying to ask them to recall what the options might be
- Make things visible so the user can decide from options presented to them rather than remembering what the (non-displayed) options are

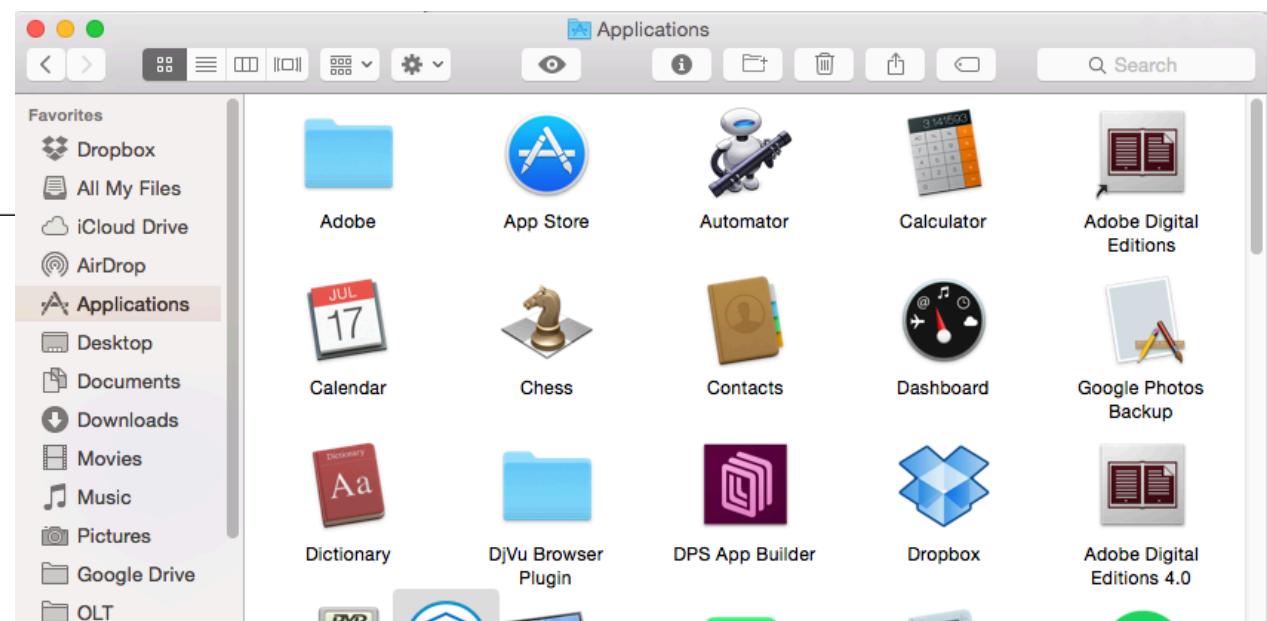
Recognition rather than recall



Recognition rather than recall



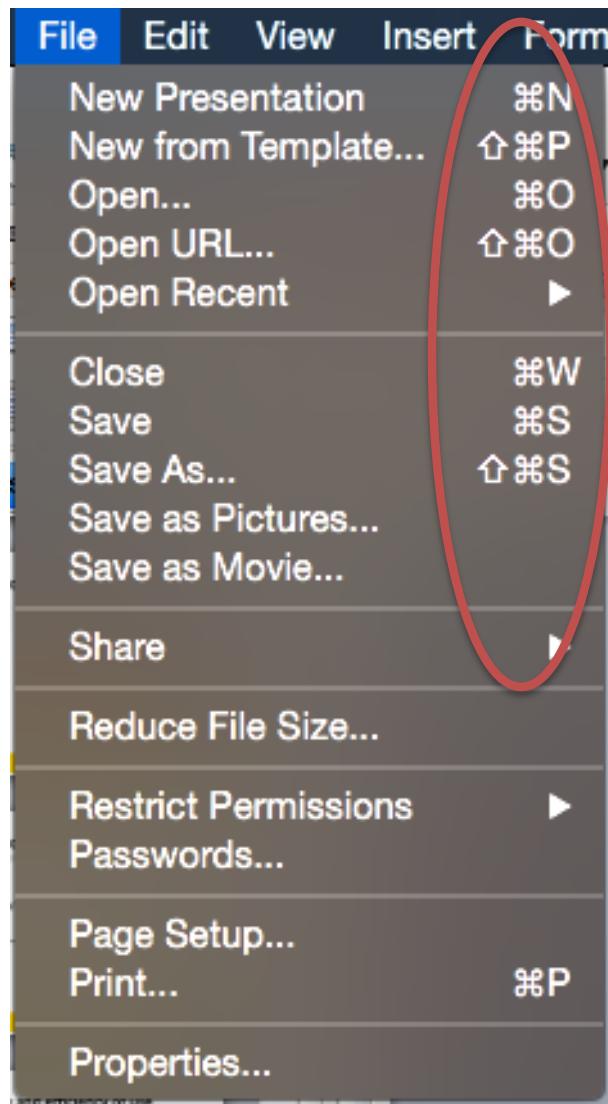
VERSUS



Flexibility and efficiency of use

- Experienced users want to carry out their tasks efficiently and quickly
- Provide alternative ways/paths through an application that can cater for inexperienced and experienced users
- Accelerators not visible to the novice user but provide efficiency for the expert

Flexibility and efficiency of use

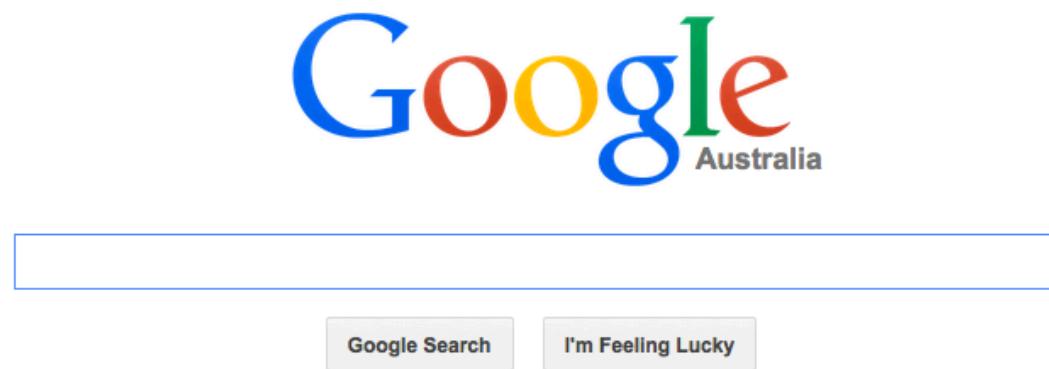


A screenshot of the Airbnb search interface. The search bar shows 'Jervis Bay, New South Wales'. Below it, the 'Dates' section has '01-08-2015' to '04-08-2015' and '1 Guest'. The 'Room Type' section includes 'Entire Place', 'Private Room', and 'Shared Room' with checkboxes. The 'Price Range' section shows a slider from '\$14AUD' to '\$1500+AUD' with '\$219AUD Average' indicated. A 'More Filters' button is present. A notification at the bottom says 'Your trip is coming up in 6 days. Look for the lightning bolt for faster booking.'

Aesthetic and minimalist design

- Avoid providing information that is irrelevant or rarely needed
- How many steps does it take to achieve a task?
Do you have any unnecessary steps?
- “Designed to give pleasure through beauty”
Oxford American Dictionary

Aesthetic and minimalist design



Aesthetic and minimalist design



Google Search

I'm Feeling Lucky

Exercise

- You have just been shown a whole range of examples in this lecture of good and bad examples of the heuristics. We now want you to provide your own examples.
- Sketch 1 good example and 1 poor example in your Design Diary, using the list of 10 heuristics you have just seen. Use examples from your own experiences.
- You can also post these online in the User Interface Examples forum for all to share. Forum participation is encouraged and may count towards your class participation mark. Posts can be screenshots or sketches scanned in.

Criteria

- Note that Nielsen's list is not the only set of principles used in interface evaluation
- There are other lists of design principles
- Some principles may not apply in all situations
- You may need to synthesize something more relevant depending on the context

Web heuristics (from Budd 2007)

- Design for user expectations
- Clarity
- Minimize unnecessary complexity & cognitive load
- Efficiency and task completion
- Provide users with context
- Consistency and Standards
- Prevent Errors
- Help users notice, understand and recover from errors
- Promote positive & pleasurable user experience

Using the Frameworks

- Usability Goals
- User Experience Goals
- Design Principles (Norman's)
- Affordance
- Natural Mappings
- Usability Principles (Nielsen's)

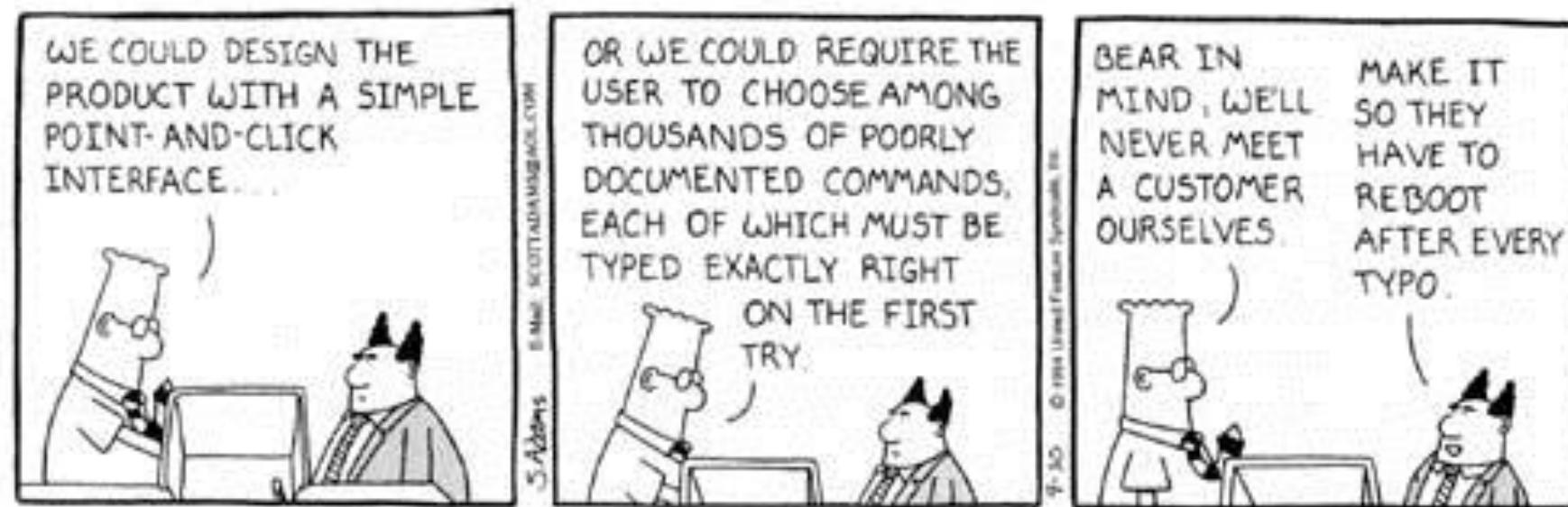
Not Opinion

- Develop some "questions" to ask for each of the frameworks and attributes
 - Is this easy to remember?
 - What mistakes could be made?

Not Opinion

- Look at various systems (physical or online)
- Ask the question and review the system against these principles
- Your learning objective is to be able to use these frameworks to assess (and design) user interfaces and experiences

Questions?



<http://usabilitylab.walkme.com/wp-content/uploads/2014/05/usability-comic.jpg>



Visual Thinking, Design and Sketching

Never Stand Still

COMP3511/9511 Human Computer Interaction
Dr Alexandra Vassar (Sasha)

References

- Shneiderman (2002), Leonardo's Laptop, MIT Press
- Buzan (1993), The Mind Mapping Book, BBC Books
- Preece (2002), Interaction Design, John Wiley
- Lord and Sibley (1998) Cracking Animation, Thames & Hudson

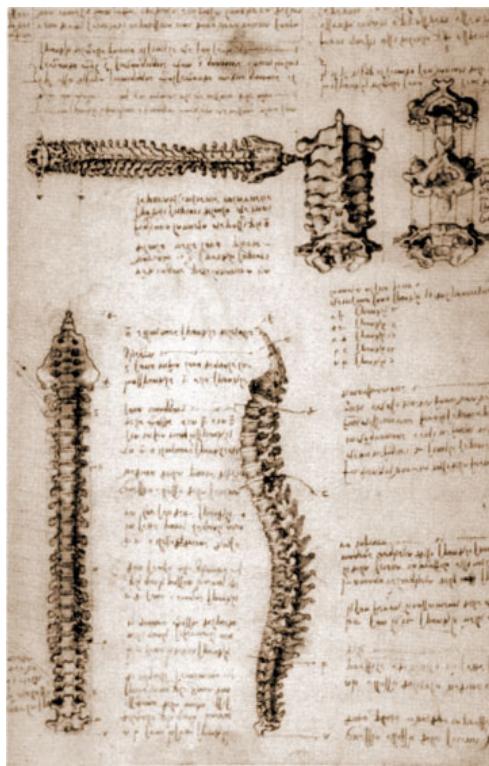
Design Diaries

- Store your design ideas
- Allow you to reflect
- Can be easily annotated - paper is low tech
- Used to record your observations, analysis and design, including lecture activities
- Remember to date all pages
- Will be reviewed and assessed by tutors

Design Diaries

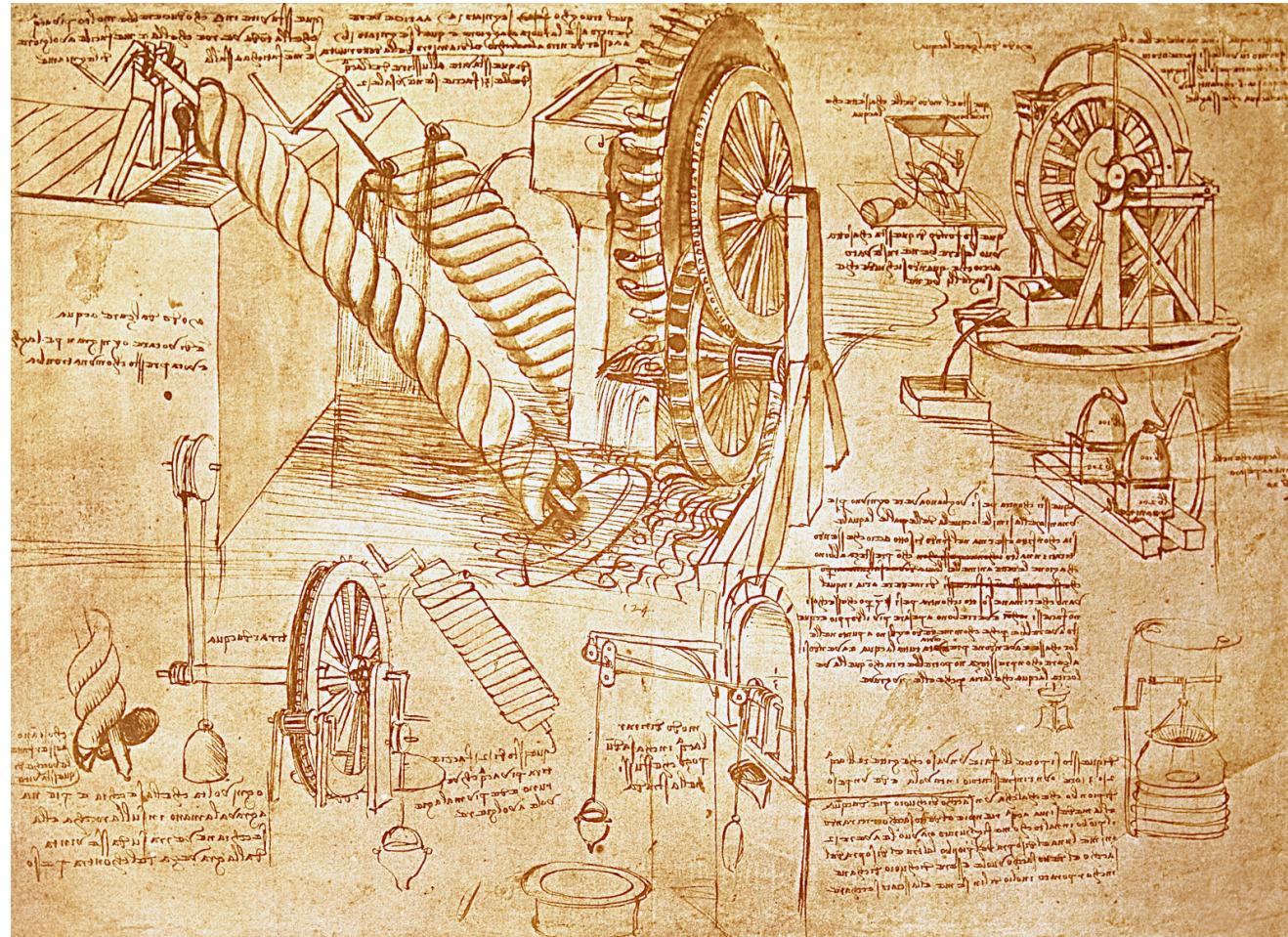
- Documentation is important
- Not only does the final product require documentation, you need to document (and justify) why certain design decisions were made
- Important for understanding the design rationale
 - how did you arrive at the solution?
- Legal implications

Da Vinci



Buzan 1993, The Mind Map Book
Shneiderman 2003, Leonardo's Laptop

Da Vinci



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Brattain - Transistor Effect

DATE Dec 24 1947
CASE No 38139-7

We obtained the following A.C. values at 1000 cycles

$$E_g = 0.10^-11. M.S. with E_p = 11.5 R.M.S volts$$

$$P_g = \frac{600}{5.4 \times 10^{-5}} \text{ watts} \quad P_p = 2.25 \times 10^{-5}$$

Voltage gain 100 Power gain 40

Current loss $\frac{1}{2.5}$

This unit was then connected in the following circuit.

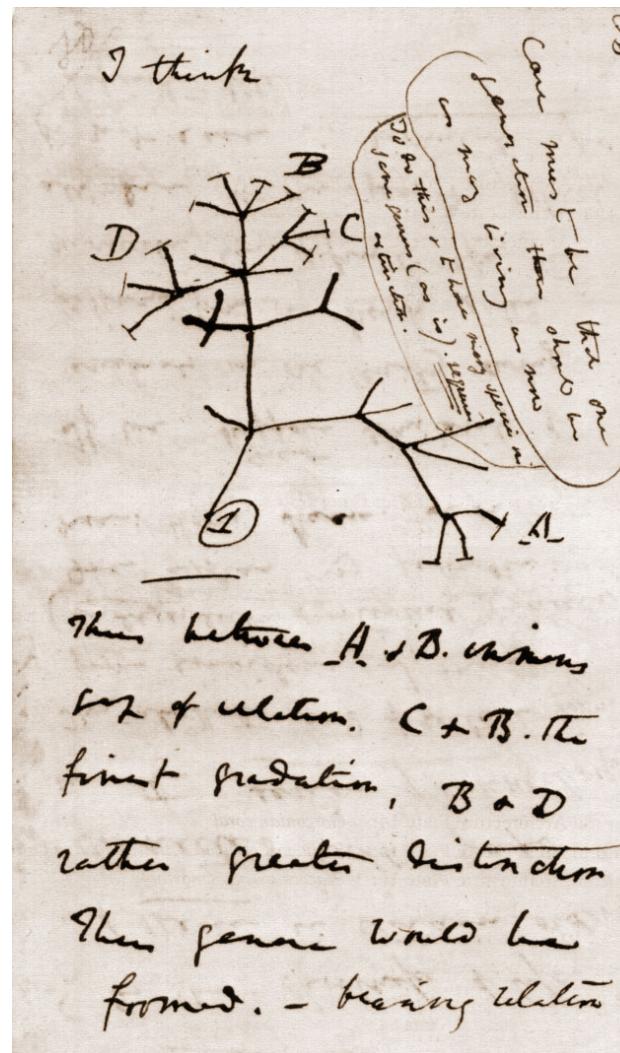
This circuit was actually spoken over and by switching the slope in and out a distinct gain in speech level could be heard and seen on the scope presentation with no noticeable change in power quality. By measurements at a fixed frequency

8 DATE Dec 24 1947
CASE No 38139-7

in it was determined that the power gain was the order of magnitude of 18 or greater. Various people witnessed this test and listened (unpublished) of whom some were the following
R. B. Gibney, H. R. Moore, J. Bardeen, G. H. Pearson, W. Shockley, H. Feltibus, R. Brown. Mrs. N. B. Moore assisted in setting up the circuit and the demonstration occurred in the afternoon of Dec 28 1947

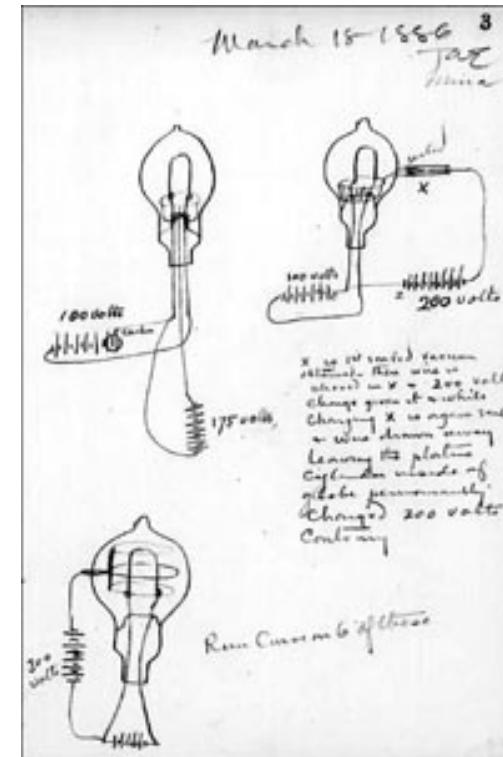
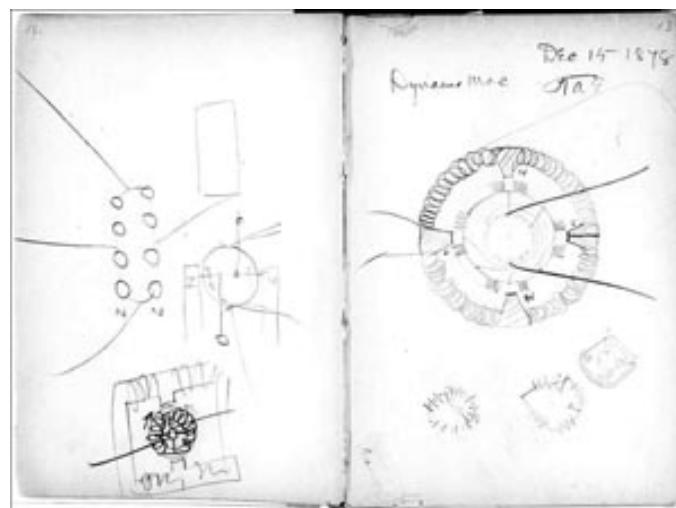
Read & Understood by
G. H. Pearson Dec 24 1947
H. R. Moore Dec 24 1947

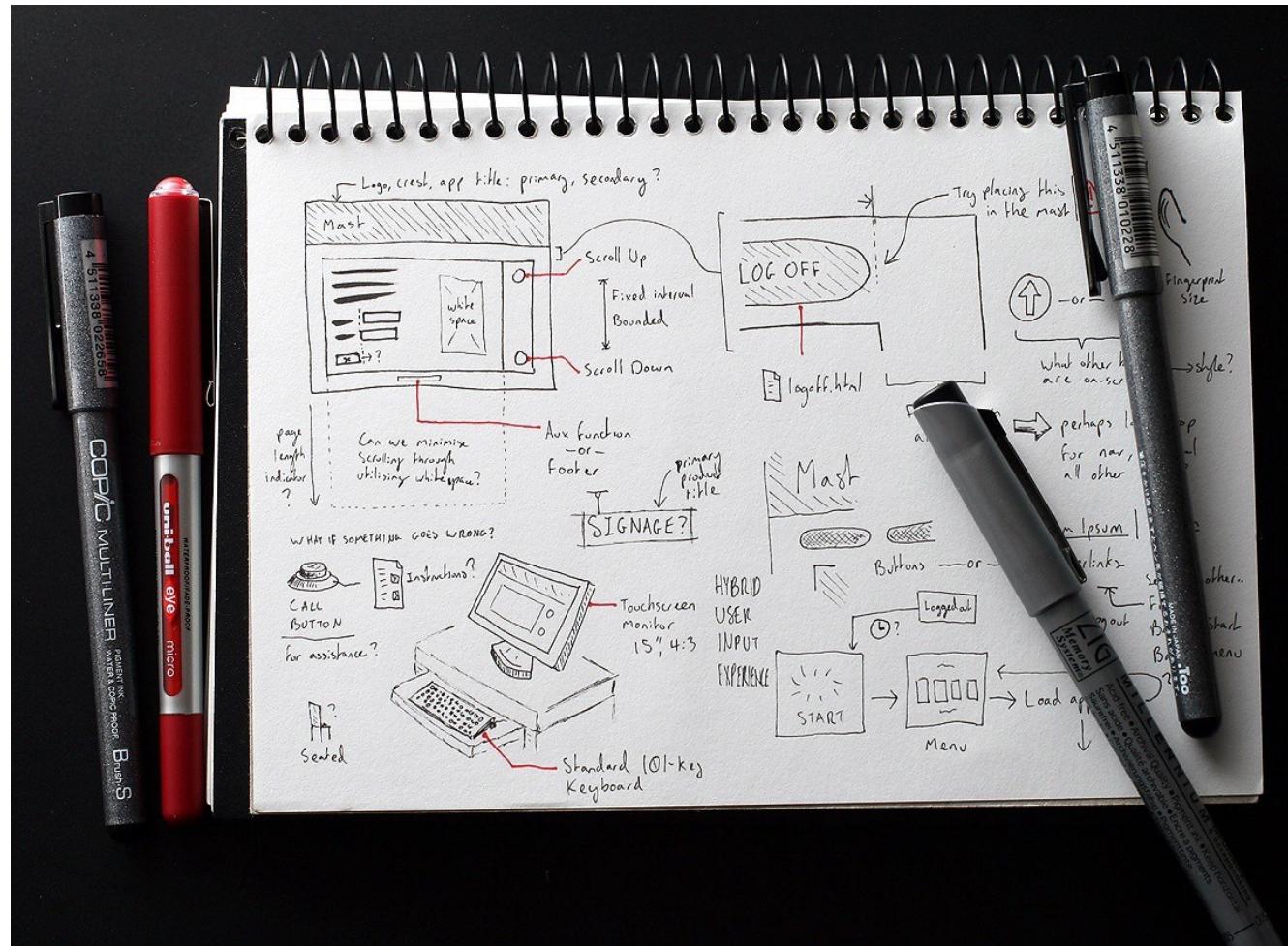
Charles Darwin



Buzan 1993, The Mind Map Book

Thomas Edison

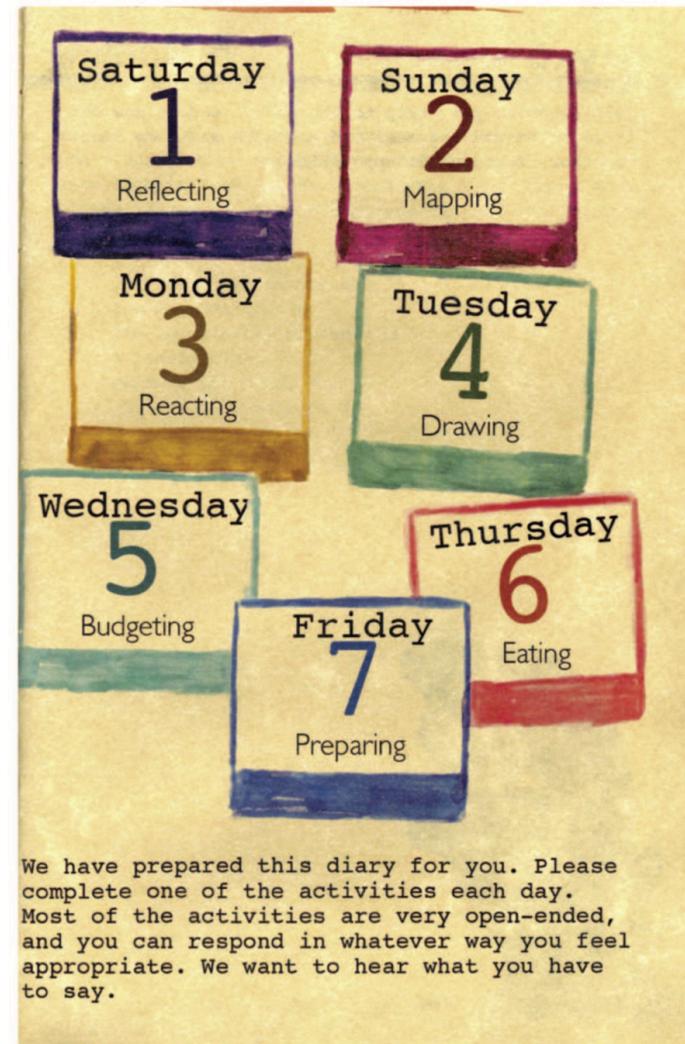




<https://medium.com/level-up-web/a-dummies-guide-to-ux-basics-159378970d60>

Visual Thinking Case Study

- Study explored the potential impact of sustainability and design of a farmers market
- Gave participants a diary to keep with a different prompt and activity for each day
- Asked participants to do sketches, drawings, reflective statements and record observations
- Based on the responses, designers created sketches for a series of design concepts, including an interactive map, and augmented reality “timeoculars” – allowing users to view the market as it was at different times in the past.

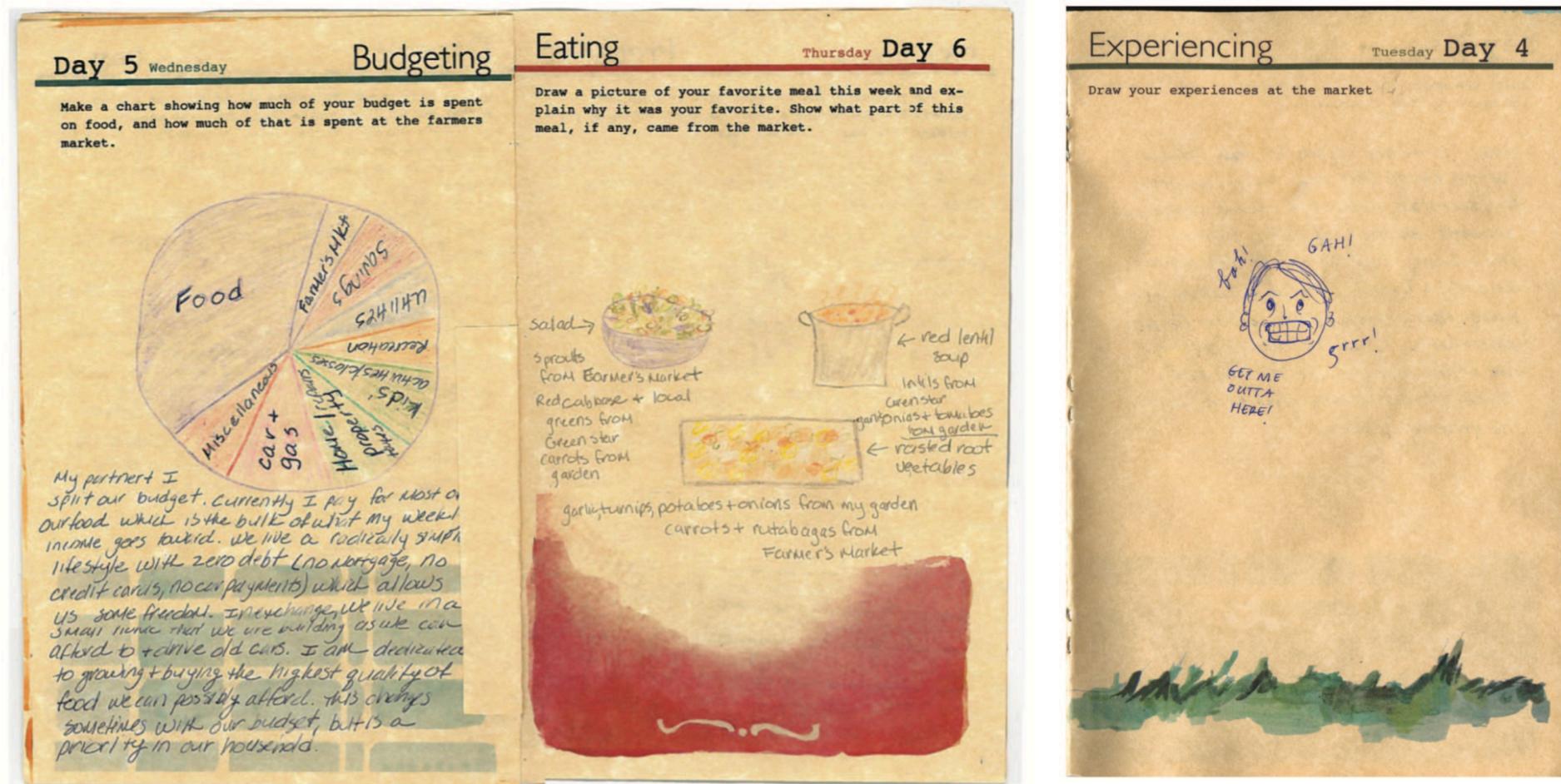


Snyder, J., Baumer, E. P., Voida, S., Adams, P., Halpern, M., Choudhury, T., & Gay, G. (2014). Making things visible: Opportunities and tensions in visual approaches for design research and practice. *Human–Computer Interaction*, 29(5-6), 451-486.

Visual Thinking

- Visual methods played key roles in the work:
 - Images helped give voice to participants experiences and perspectives in unique ways
 - Process of generating design sketches and presenting them back to participants was a form of speculative prototyping
 - Sketches helped to provoke conversations among community members during a phase of the design process that does not always incorporate user perspective and reflections

Visual Thinking Case Study



Snyder, J., Baumer, E. P., Voida, S., Adams, P., Halpern, M., Choudhury, T., & Gay, G. (2014). Making things visible: Opportunities and tensions in visual approaches for design research and practice. *Human–Computer Interaction*, 29(5-6), 451-486.

Creative Thinking

- Coming up with new ideas
- Thinking about alternatives
- Forming new associations
- Breaking down cognitive barriers and mental blocks
- Individually
- Group Activity

Brainstorming

- Ideas without prejudice
- Quick
- No wrong answers
- Cannot criticize
- Encourage all different ideas
- List of words/phrases

Brainstorming Exercise

- Storage

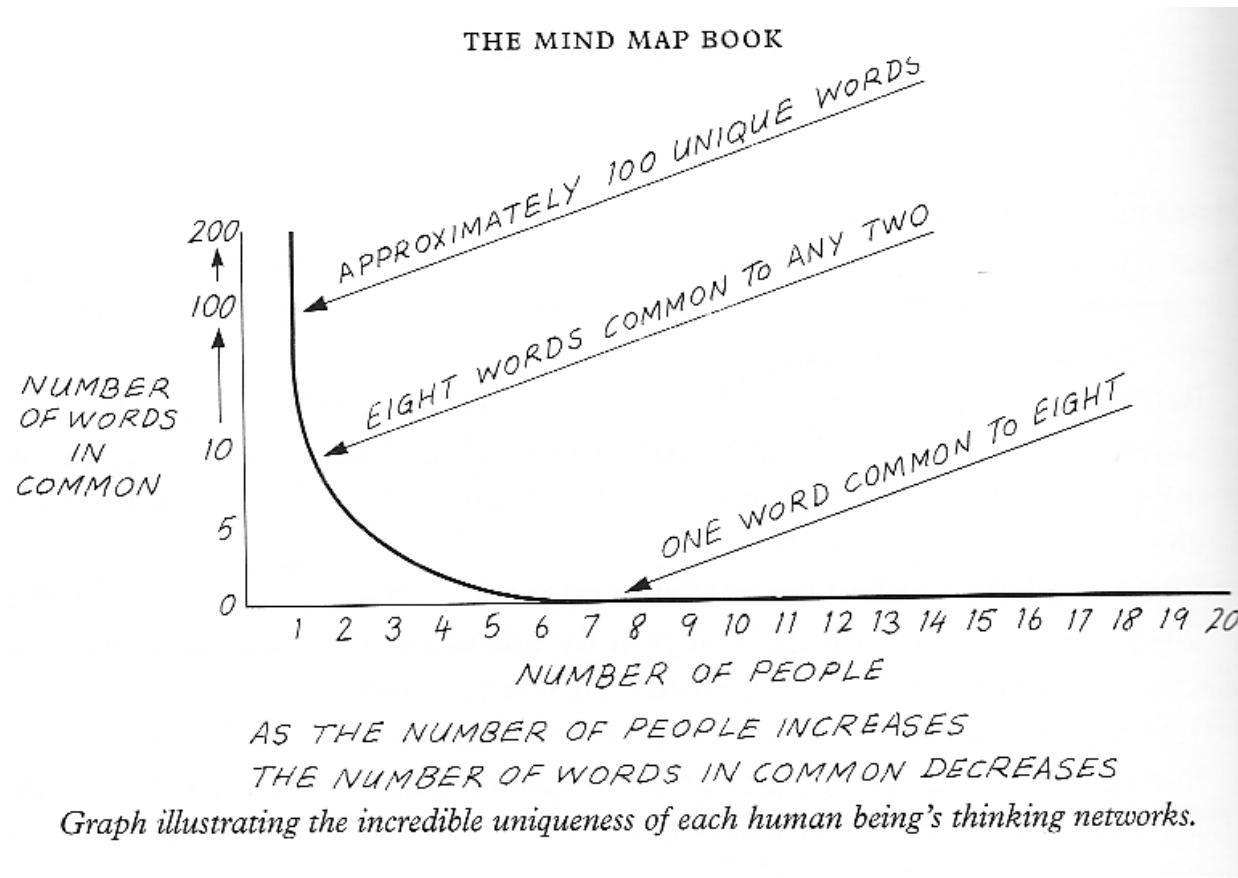
Brainstorming Words

- In your design diary, draw 10 associations that radiate from the concept happiness



Buzan 1993

Common Words



Buzan 1993



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Mind Maps

- Tony Buzan (started around 1970)
- Similar to brainstorming
- Visually motivated, not just words
- Drawings can be used in place of words
- Show associations
- Can be colourful

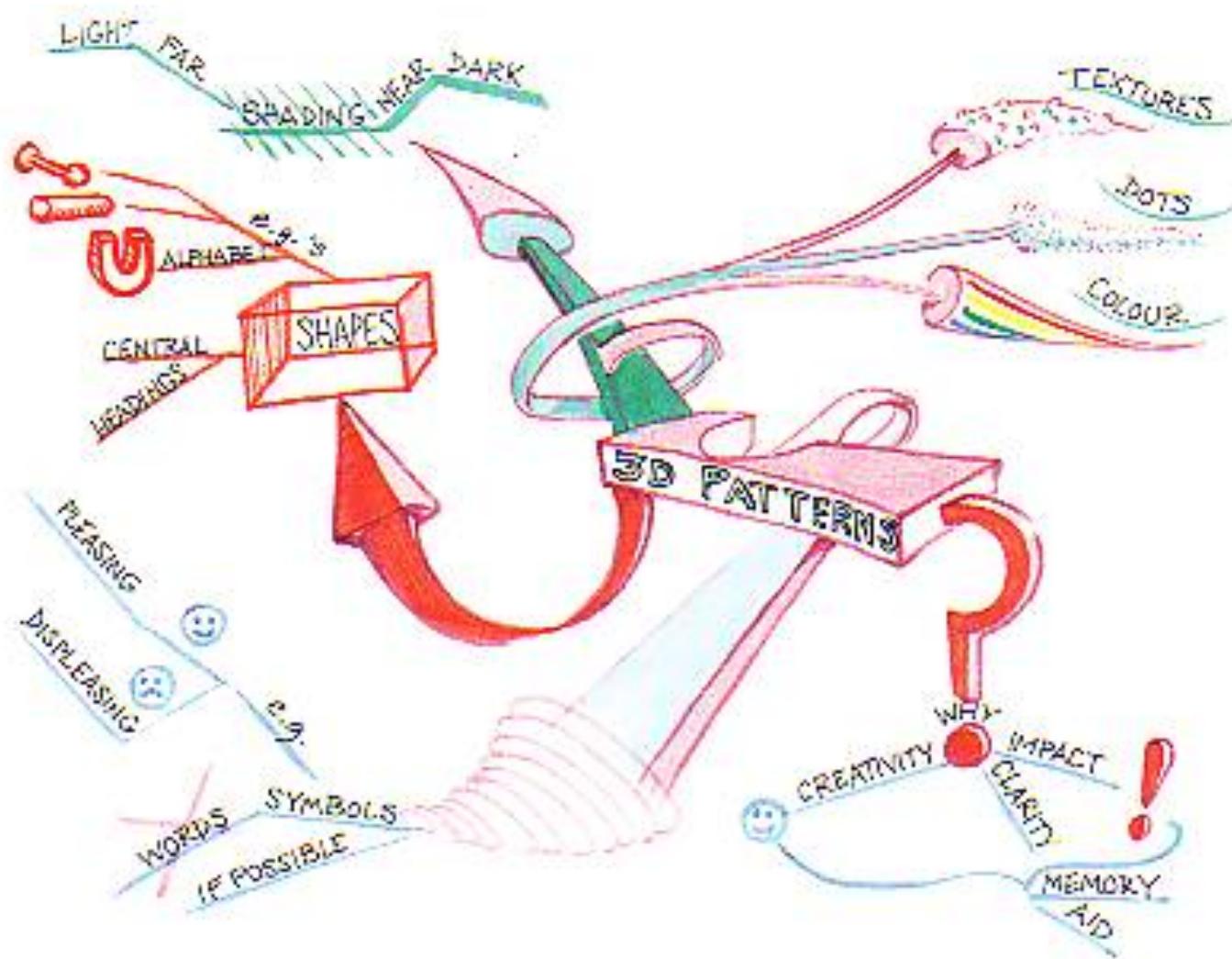


Buzan, 1993

Buzan, 1993



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Buzan, 1993



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Why draw? Why use colour?

- Drawing, spatial awareness, colour, imagination, etc are right hemisphere dominant activities
- Words, logic, numbers, sequence, linearity, analysis, lists are left hemisphere dominant activities
- Exercise your right hemisphere!

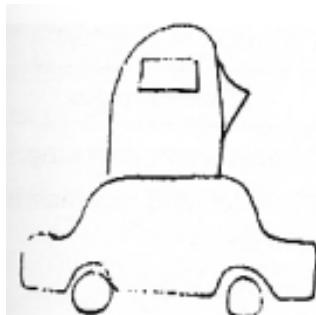
Architect Analogy

- Think about the role an architect has when creating a building
- How is that similar to the role of an interaction designer?

Story Boards

- Commonly used in film production but have a role in user interface design
- Low-fidelity - paper based
- Don't worry about the neatness - it is a sketch!
- Series of sketches that represent a sequence of steps that user and system go through to achieve a task

Visit to the Petrol Station



Drive car to gas pump



Take nozzle from pump...



... and put it into the
car's gas tank



Squeeze trigger on
the nozzle until
tank is full



Replace nozzle
when tank is full

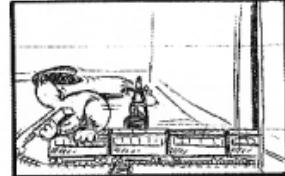


Pay cashier

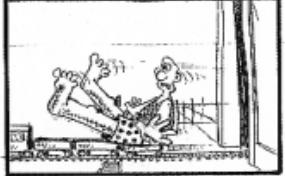


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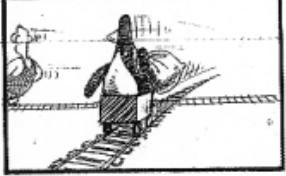
Preece 2002



Sc 65. Shot 3. INT. DINING ROOM, NIGHT.
GRIMM CROSSES PENGUIN'S TRACK,
PENGUIN ABOUT TO COLLIDE WITH TRAIN.



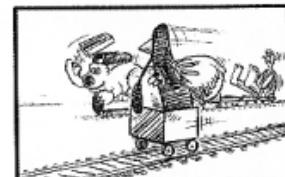
Sc 65. Shot 3 continued,
WALLACE TRIES TO GRAB PENGUIN...



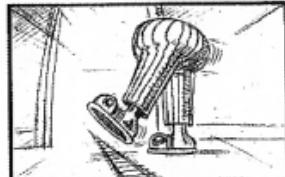
Sc 65. Shot 3 continued,
...BUT PENGUIN TRUNDLES ON ENGINELESS.



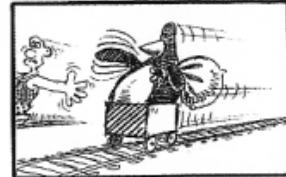
Sc 65. Shot 4. INT. DINING ROOM, NIGHT.
WALLACE HAS GRABBED THE ENGINE
TRACKING SHOT.



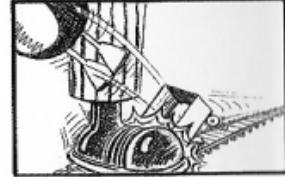
Sc 65. Shot 5. INT. DINING ROOM, NIGHT.
GRIMM'S TRAIN CURVES AROUND TO COME
UP PARALLEL TO PENGUIN'S TRACK..
GRIMM KIMS OUT OF TRAIN AND DISMISSES
THE DOG.
TRACKS WITH PENGUIN.



Sc 65. Shot 6. INT. DINING ROOM, NIGHT.
PENGUIN PON. TROUBLES STEP ON HIS
TRACK. (WERE HEADING FOR KITCHEN)
TRACKING SHOT.



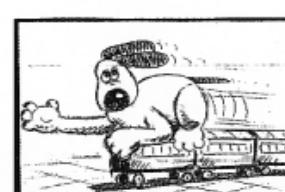
Sc 65. Shot 7. INT. DINING ROOM, NIGHT.
PENGUIN JUMPS TO BOARD AND
WALLACE AND GRIMM OVERHEAR.
TRACKING SHOT.



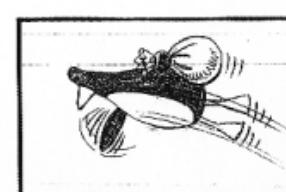
Sc 65. Shot 7. CONTINUED.
TROUBLE'S FOOT COMES DOWN ON THE TRACK.
PENGUIN GOES FLYING.



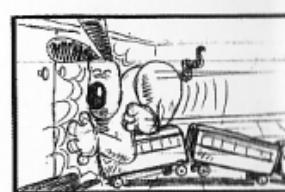
Sc 66. Shot 1. INT. KITCHEN, NIGHT.
WALLACE REACHES UP TO GRAB PENGUIN.
TRACKING SHOT



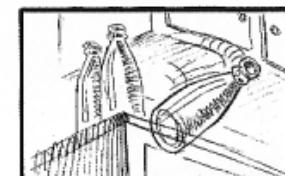
Sc 66. Shot 2. INT. KITCHEN, NIGHT.
GRIMM ANTICIPATES A CATCH.
TRACKING SHOT.



Sc 66. Shot 3. INT. KITCHEN, NIGHT.
PENGUIN SALES THROUGH THE AIR.
TRACKING SHOT.



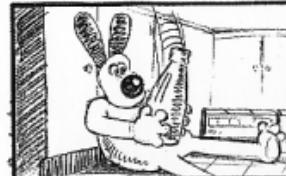
Sc 66. Shot 4. INT. KITCHEN, NIGHT.
GRIMM SMASHES INTO KITCHEN UNIT COUNTER.
TEARS, THEN STOPS.



Sc 66. Shot 5. INT. KITCHEN, NIGHT.
THE CRASH CAUSES A BOTTLE TO TUMBLE
OFF THE COUNTER.



Sc 66. Shot 6. INT. KITCHEN, NIGHT.
PENGUIN DESCENDS TRY TO FLAP ONE
WING.



Sc 66. Shot 7. INT. KITCHEN, NIGHT.
BOTTLE LANDS IN GRIMM LAP...



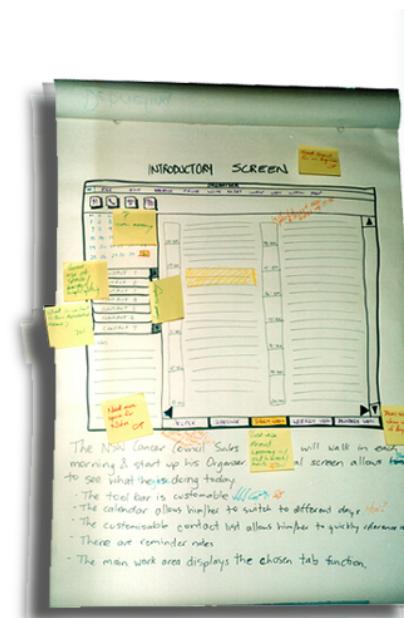
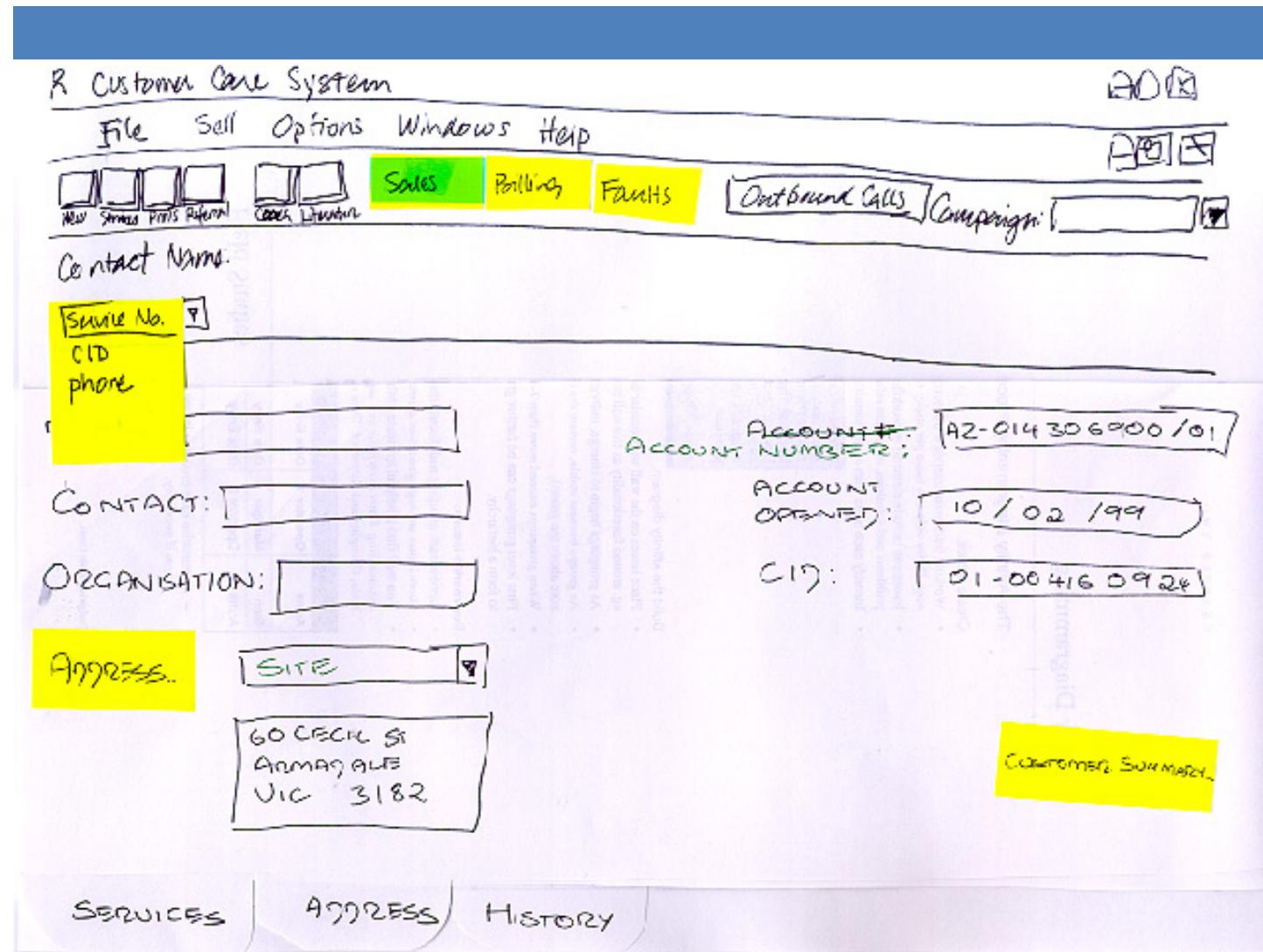
Sc 66. Shot 7. CONTINUED.
.PERFECTLY POSITIONED TO CATCH THE
PENGUIN AND THE DIAMOND.
"ATTABY GRIMM LAD!"

Cracking Animation, Lord and Sibley

Sketching User Interfaces

- How are you going to lay out your interface?
- Where should I arrange buttons, text edit fields, navigation etc.?
- You will create paper mock-ups as part of the design process
- Use your diagrams to discuss the issues with others
- You will use diagrams when you evaluate your interface with users

Low-tech approach



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How to use your design diary

- Record your design thoughts
- Explore the problem space
- Individually brainstorm ideas for the design components of your assignments
- Brainstorm as group
- Try mind mapping to visual solutions/alternatives

How to use your design diary

- Sketch out paper mock ups of user interfaces
- Develop storyboards
- Use it to communicate your ideas with colleagues
- OODLES OF DOODLES!

How to use your design diary

- One book
- Everything in one place
- You can review to understand how you arrived at your current solution - design rationale

Goals of interaction design

- Asked to design interface for organizing, storing and retrieving emails that is fast, efficient and enjoyable to use.
- Do you sketch the interface, try to establish the system architecture, or start coding?
- Or do you look at existing applications, talk to users?
- Interaction design focus on what, how and why you are designing something so the last option.

Goals of interaction design

- Can be huge saving in time and money to get design right from the start, as changing code is an expensive option.
- Understanding users needs and their requirements and what kinds of designs could be appropriate are skills you need to learn, just like writing an essay or some code.
- We aim to teach you those skills in this course.

Understanding the problem space

- What do you want to create?
- What are your assumptions?
- Will it achieve what you hope it will?

www.idbook.com

Careful not to make assumptions?

- Don't take something for granted when it needs further investigation
 - e.g. people will want to watch TV while driving



Be careful what you claim

- Don't state something to be true when it is still open to question
 - e.g. a multimodal style of interaction for controlling GPS — one that involves speaking while driving — is safe

Conceptual Models



Conceptual Models

- A conceptual model is an abstract, possibly simplified idea that a person forms in their own mind about an object or situation
- It is a high level description of how a system is organised and operates
- The conceptual model is based on prior experience and knowledge, and it helps the person understand how something might work and how they might interact with it

Conceptual Models



Conceptual Models

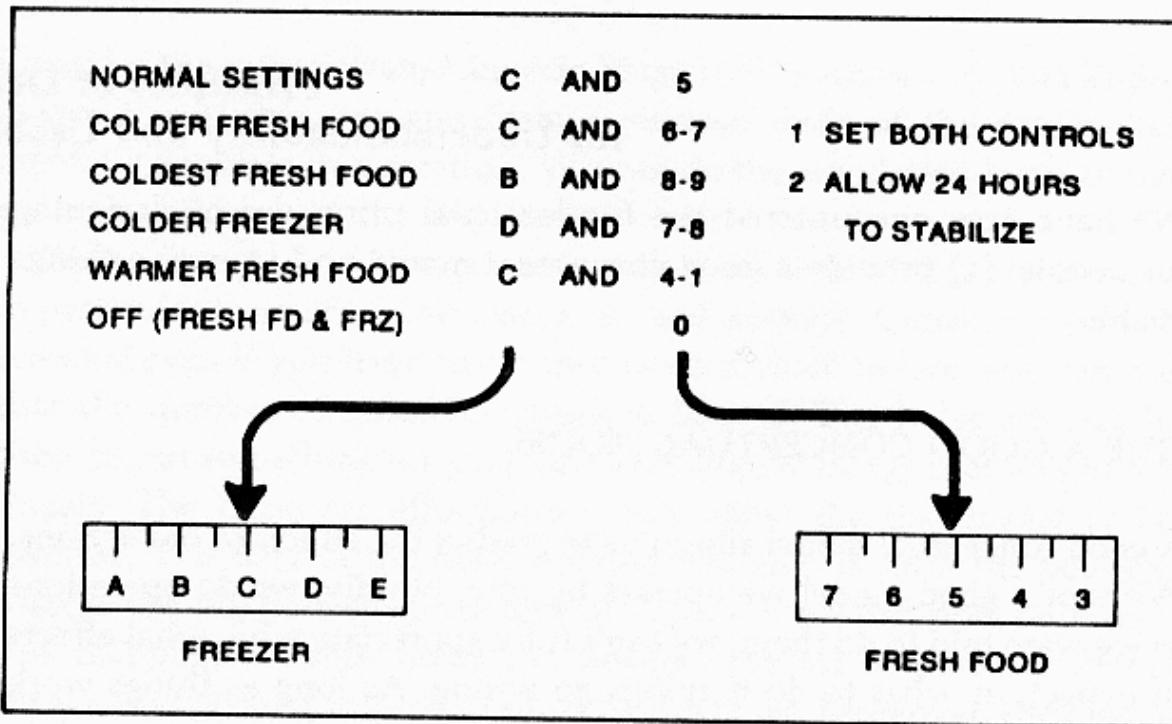


Conceptual Models

- It is internal (we don't see it)
- May or may not reflect the actual way an object works
- We develop conceptual models of the world and objects around us, it is part of the cognitive process and the broader topic of mental models

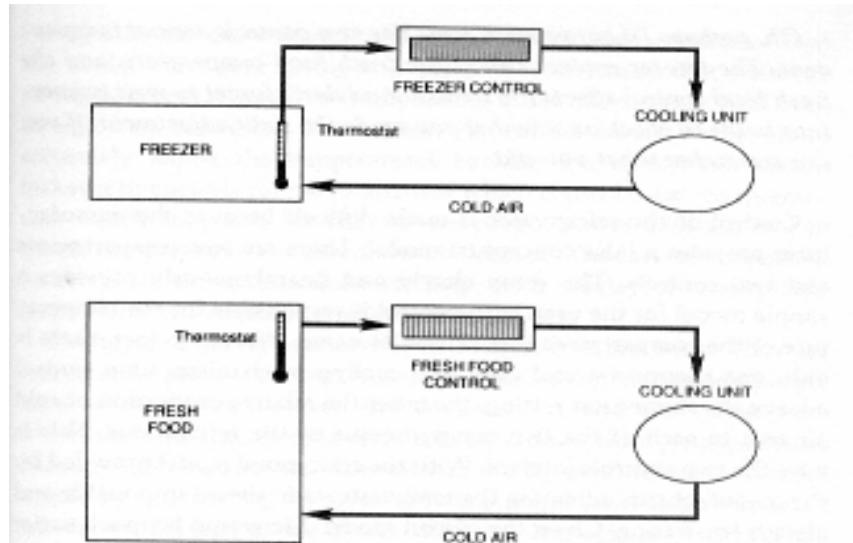
Poor conceptual model

1.8 My Refrigerator. Two compartments—fresh food and freezer—and two controls (in the fresh food unit). The illustration shows the controls and instructions. Your task: Suppose the freezer is too cold, the fresh food section just right. How would you adjust the controls so as to make the freezer warmer and keep the fresh food the same? (From Norman, 1986.)

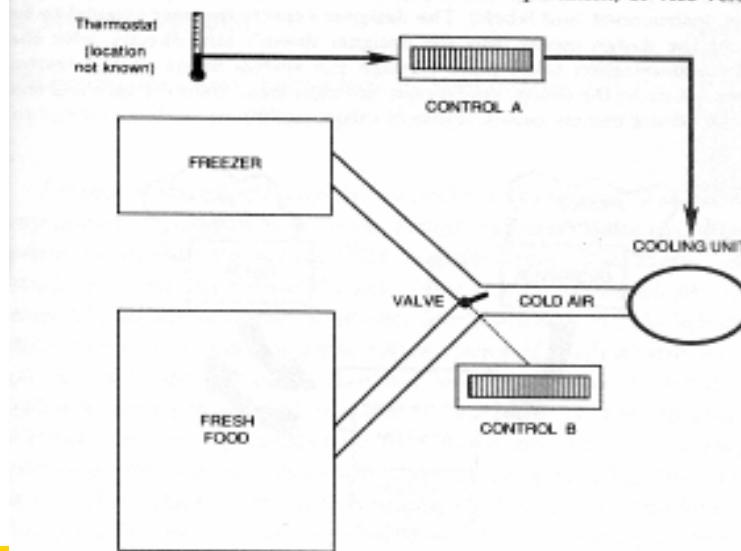


The Design of Everyday Things

Poor conceptual model



1.9 Two Conceptual Models for My Refrigerator. The model *A* (above) is provided by the system image of the refrigerator as gleaned from the controls and instructions; *B* (below) is the correct conceptual model. The problem is that it is impossible to tell in which compartment the thermostat is located and whether the two controls are in the freezer and fresh food compartment, or vice versa.



From Norman, 1988, p14

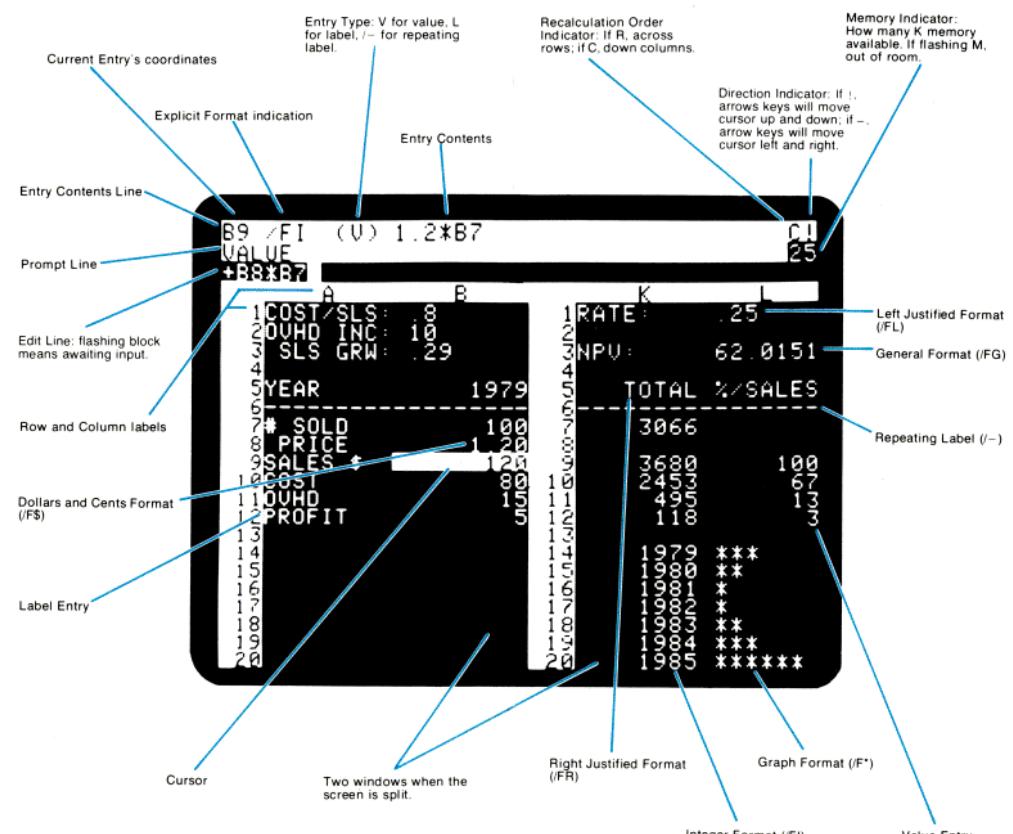
A classic conceptual model: the spreadsheet

- Analogous to ledger sheet
- Interactive and computational
- Easy to understand
- Greatly extending what accountants and others could do

9

A VISICALC™ Screen:

10



See ID section 2.3.2

Why was it so good?

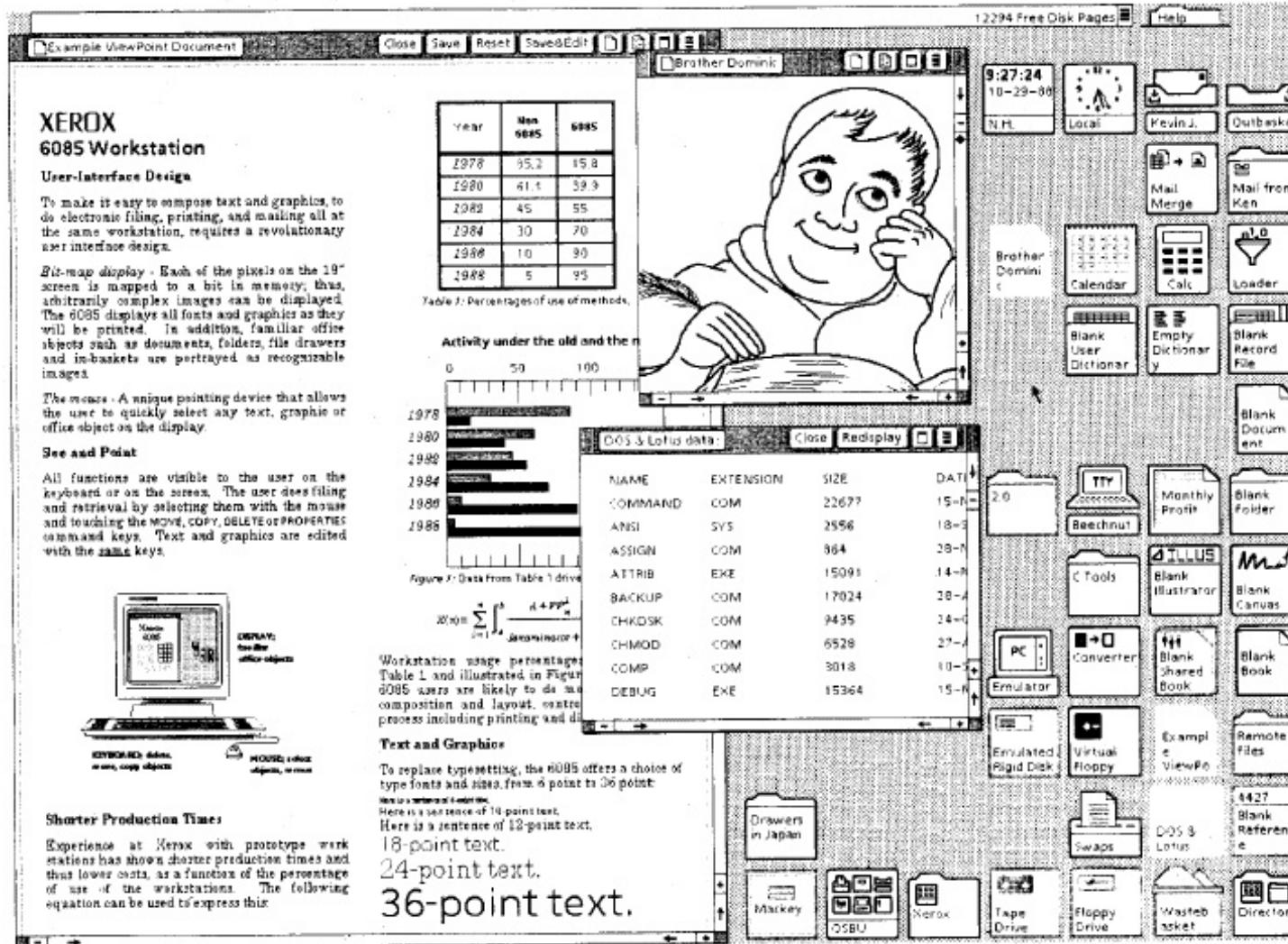
- It was simple, clear, and obvious to the users how to use the application and what it could do
- “it is just a tool to allow others to work out their ideas and reduce the tedium of repeating the same calculations.”
- Capitalized on user’s familiarity with ledger sheets
- Got the computer to perform a range of different calculations and recalculations in response to user input

Another really good conceptual model

- 8010 Star office system targeted at workers not interested in computing *per se*
- Spent several person-years at beginning working out the conceptual model
- Simplified the electronic world, making it seem more familiar, less alien, and easier to learn

Johnson et al (1989)

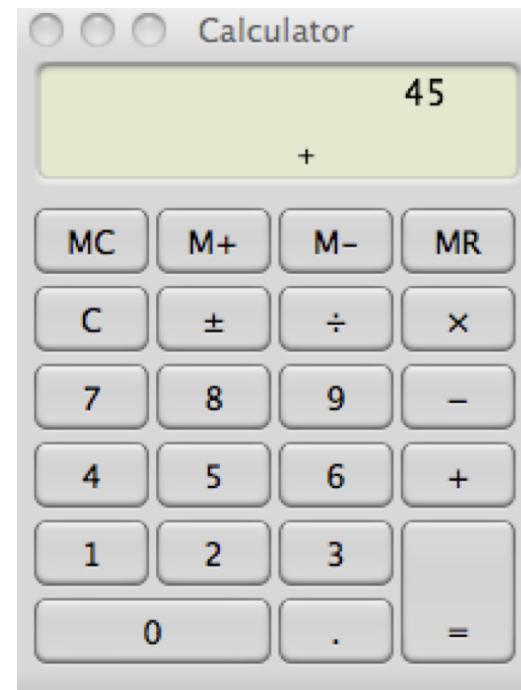
The Star Interface



Interface metaphors

- Exploit user's familiar knowledge, helping them to understand 'the unfamiliar'
- Conjures up the essence of the unfamiliar activity, enabling users to leverage of this to understand more aspects of the unfamiliar functionality

Interface metaphors



Benefits of interface metaphors

- Makes learning new systems easier
- Helps users understand the underlying conceptual model
- Can be very innovative and enable the realm of computers and their applications to be made more accessible to a greater diversity of users

Problems with interface metaphors

- Break conventional and cultural rules
 - e.g. recycle bin placed on desktop
- Can constrain designers in the way they conceptualize a problem space
- Forces users to only understand the system in terms of the metaphor
- Designers can inadvertently use bad existing designs and transfer the bad parts over
- Can limit designers' imagination in coming up with new conceptual models

Conceptual models

- three components
 - designer's mental model
 - the system created by the designer
 - the user's mental model (from interacting/seeing the system)

- A poor design can arise from the differences between the conceptual model that the designer intended, and the conceptual model formed in the user's mind

Conceptual Models

User's Model

Designer's
Model

System Image



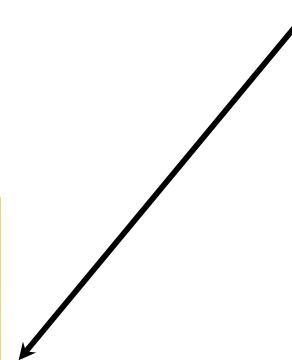
Conceptual Models

- The designer takes a series of abstract ideas and using appropriate process constructs a system that realises those ideas, forming a physical object in the real world
- The designer aims to translate the conceptual model into a system as best they can

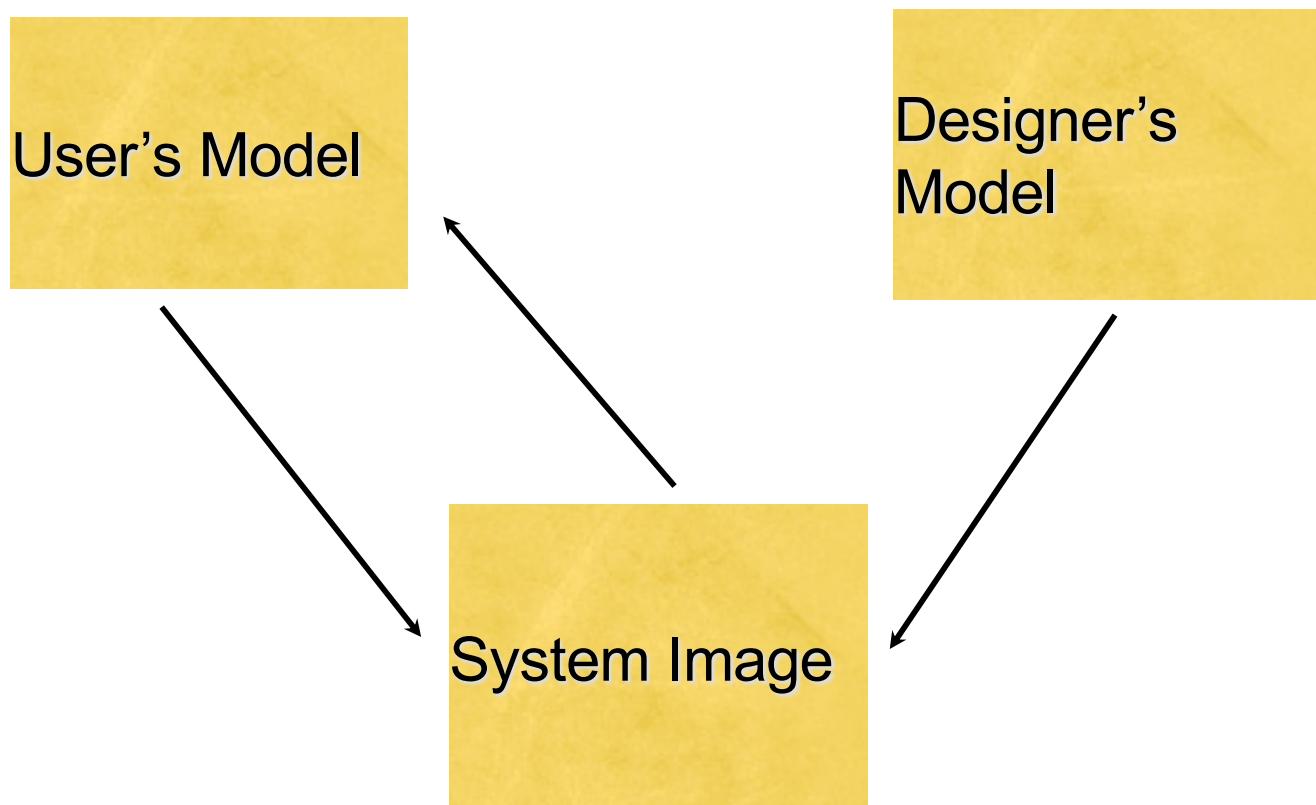
Conceptual Models

System Image

Designer's
Model



Conceptual Models



Conceptual Models

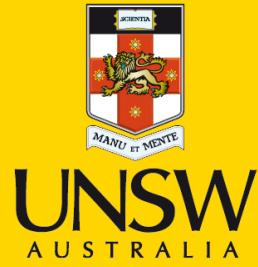
- Does the system convey the conceptual model of the designer to the user?
- A good design will articulate the designer's conceptual model in the system image that enables the user to form the correct conceptual model in their own mind

Overview

- Design Diaries
- Creative thinking
 - Brainstorming, mind maps, story boards
- Conceptualising Design
 - Understanding the problem space
 - Conceptual Models
 - Interface Metaphors

Assignment 1

- Questions?



Designing for Accessibility

Never Stand Still

COMP3511/9511 Human Computer Interaction
Dr Alexandra Vassar (Sasha)

Readings/Reference

- Shneiderman and Plaisant (2005), Designing the User Interface, "Universal Usability" Section 1.5, pp24-39.
- Interaction Design (2015): Box 6.3, p177; Box 10.3, p361; Box 14.1, p483
- <http://www.w3.org/WAI/intro/people-use-web/Overview.html>

Overview

- Universal access
- Personas/Scenarios as design tools
- Assistive Technologies
- Why accessibility is important
- Accessibility Interaction Design Considerations
- Evaluation techniques
 - Automatic validation tools
 - Human review methods
 - Usability testing with disabled users

Universal access

“The power of the web is in its universality.
Access by everyone, regardless of disability, is
an essential part.”

Tim Berners-Lee

Director of the World Wide Web Consortium (W3C)

Universal Access

- **Universal access** refers to the ability of all people to have equal opportunity to access a service or product regardless of their **social class, ethnicity, background or physical disabilities**
- Another **user experience goal**
 - Support universal access for all

Accessibility for all

- Disabilities
 - Visual
 - Auditory
 - Physical
 - Cognitive/learning
 - Literacy

Accessibility for all

- Technology
 - Slow connection
 - No sound card
 - Older browser/technology
 - No plug-ins

Accessibility Support

- Relates to Universal Access and Accessibility for all
- *Accessibility* is making user interfaces perceivable, operable, and understandable for people with a wide range of abilities. This includes temporary conditions such as broken arms, to more permanent visual, physical, speech, and neurological disabilities.
- *Accessibility support* means that technologies, products, or services must be designed in a way that user agents including assistive technologies can access all the information they need to present the content to the user.

Why accessibility is important

- Over 17.7% (4.4 million) Australians have a disability (ABS, 2018)
- Between 10-20% in most countries
- Potential customers of online services
- Disabilities increase with age
- Accessible sites are more usable for all users
- Reputation - good corporate citizen
- Legislation mandating accessibility
- Australian government has made it a priority through the NDIS

see <https://www.ndis.gov.au/providers/assistive-technology>

Australian legislation

- Accessibility for Commonwealth sites
- All Commonwealth departments and agencies are to evaluate their sites for compliance with the W3C accessibility standards from 1 June 2000
- All contracted site work to include accessibility benchmarks from 1 June 2000
- All Commonwealth sites to pass accessibility testing by reference to W3C standards by 1 December 2000

Anti-discrimination laws

- American with Disabilities Act of 1990
 - ‘full and equal enjoyment of goods, services, facilities, privileges, advantages, or accommodations of any place of public accommodation’
- Australian Disability Discrimination Act of 1992
 - currently websites have to be accessible under this act (subject to some exceptions and a test of reasonableness), but action will only be taken if there is a complaint

Government Resources related to Disabilities

- For Australia see

<https://www.ndis.gov.au/providers/assistive-technology-strategy.html>

- For USA see for some examples

https://www.nichd.nih.gov/health/topics/rehabtech/condition_info/device

<https://www.understood.org/en/school-learning/assistive-technology/assistive-technologies-basics/8-examples-of-assistive-technology>

Accessibility in your design

- Incorporate accessibility into your usability design by considering users with disabilities

Personas

- Discussed personas earlier today
 - Capture user characteristics
 - Not real people, but synthesised from real user characteristics
 - Process to develop personas is based on user research
 - Bring them to life with a name, characteristics, goals, personal background
 - Can develop multiple personas
 - Should include a persona with accessibility requirements

Scenarios vs. Personas

- Process to develop personas is based on user research while scenarios are just stories
- Persona describes attributes of a person and aspects of their personality while Scenario describes activities and context of use.

Scenarios

Teenager with deaf-blindness

- Ms. Kaseem uses the Web to find new restaurants to go to with friends and classmates. She has low vision and is deaf. She uses a screen magnifier to enlarge the text on Web sites to a font size that she can read. When screen magnification is not sufficient, she also uses a screen reader to drive a refreshable braille display, which she reads slowly.

<http://www.w3.org/WAI/intro/people-use-web/stories>



- At home, Ms. Kaseem browses local Web sites for new and different restaurants. Within her Web browser, she uses a personal style sheet , which makes all Web pages display according to her preferences. Her preferences include having background patterns turned off so that there is enough contrast for her when she uses screen magnification. This is especially helpful when she reads on-line sample menus of appealing restaurants.

- A multimedia virtual tour of local entertainment options was recently added to the Web site of the city in which Ms. Kaseem lives. The tour is completely captioned and described, which allows her to access it using a combination of screen magnification and braille.

- She also checks the public transportation sites to find subway or bus stops near the restaurants. The subway schedule is easy to use because the frames on that Web site are clearly labeled, and the schedules, which are laid out as long tables, have clearly identified row and column headers that she uses to orient herself even when she has magnified the screen display.

- The Web site for the bus schedule has unlabelled frames and tables without clear column or row headers, and she often gets lost on the site when trying to find the information she needs.

- Ms. Kaseem also uses a mobile phone to access the Web when she is not at home. The phone displays buttons or braille characters on the screen, and uses the vibration function to signal them when she scans over the touch-screen with her fingertips. She uses the GPS on her phone to better orient herself, to find out about what is nearby, or for recording reviews about restaurants in her favorite city guide.

Assistive Technologies

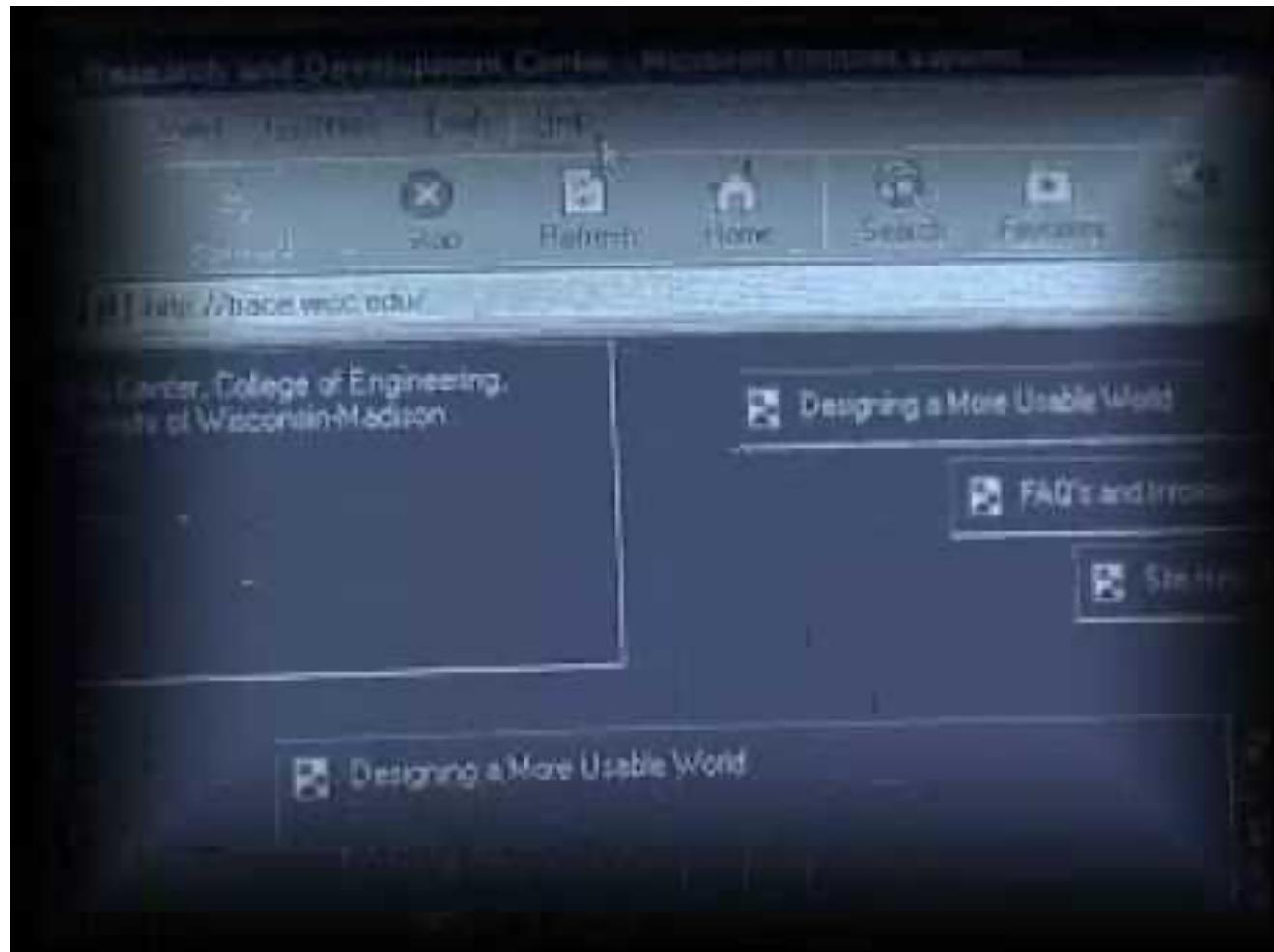
- Aid in creating more access for users of all abilities

Assistive technologies

- Screen readers
- Screen magnification software
- Variety of keyboard/mouse options
- Voice input/voice recognition software
- Head pointers
- Braille displays

Assistive technologies

- Screen readers
 - Software used by individuals who are blind (or who have dyslexia) that interprets what is displayed on a screen and directs it either to speech synthesis for audio output, or to refreshable Braille for tactile output.



<http://www.youtube.com/watch?v=VvWCnFjAGgo>

Assistive Technologies

- Screen magnification software
 - Software used primarily by individuals with low vision that magnifies a portion of the screen for easier viewing. Ranges of 1- to 16-times magnification are common. The greater the magnification the smaller the proportion of the original screen content can be viewed, so users will tend to use the lowest magnification they can manage.

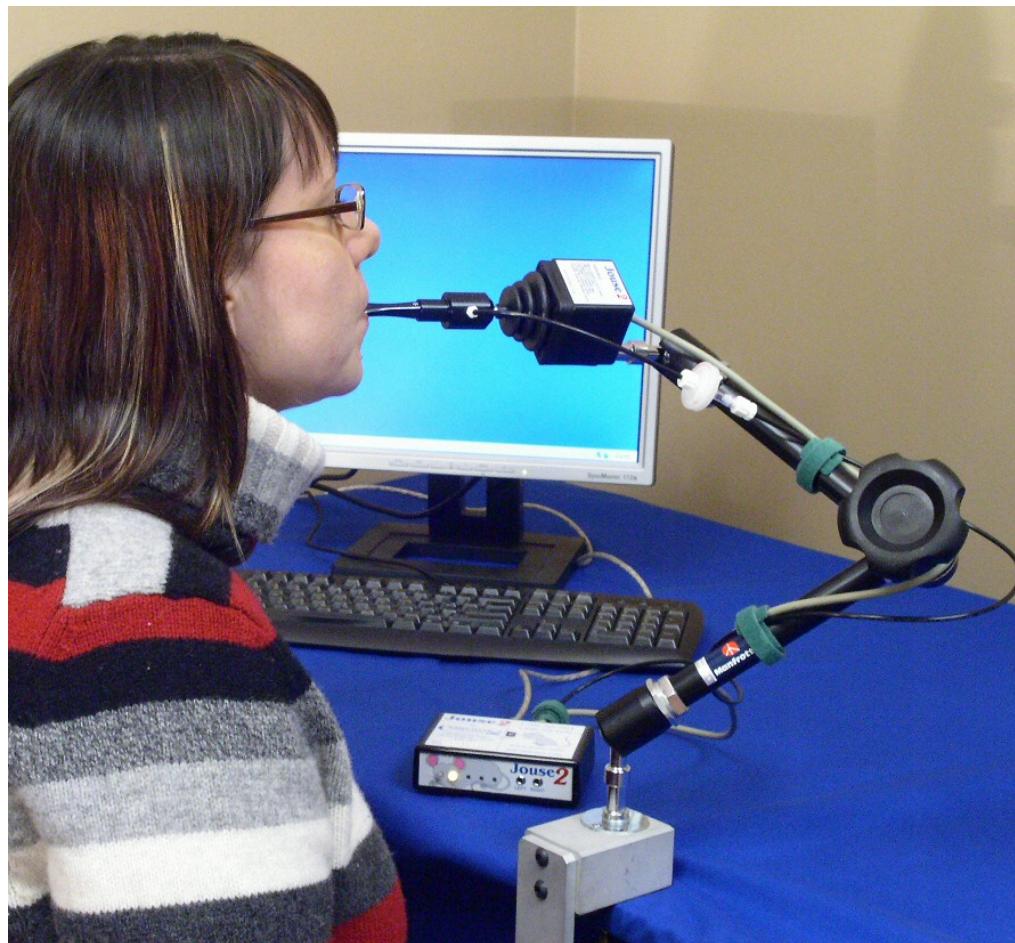
<http://www.w3.org/WAI/EO/Drafts/PWD-Use-Web/#tools>

Assistive Technologies

- *Variety of keyboard/mouse options*
 - Alternate keyboards or switches are hardware or software devices used by people with physical disabilities, that provide an alternate way of creating keystrokes that appear to come from the standard keyboard. Examples include keyboard with extra-small or extra-large key spacing, keyguards that only allow pressing one key at a time, on-screen keyboards, eyegaze keyboards, and sip-and-puff switches.

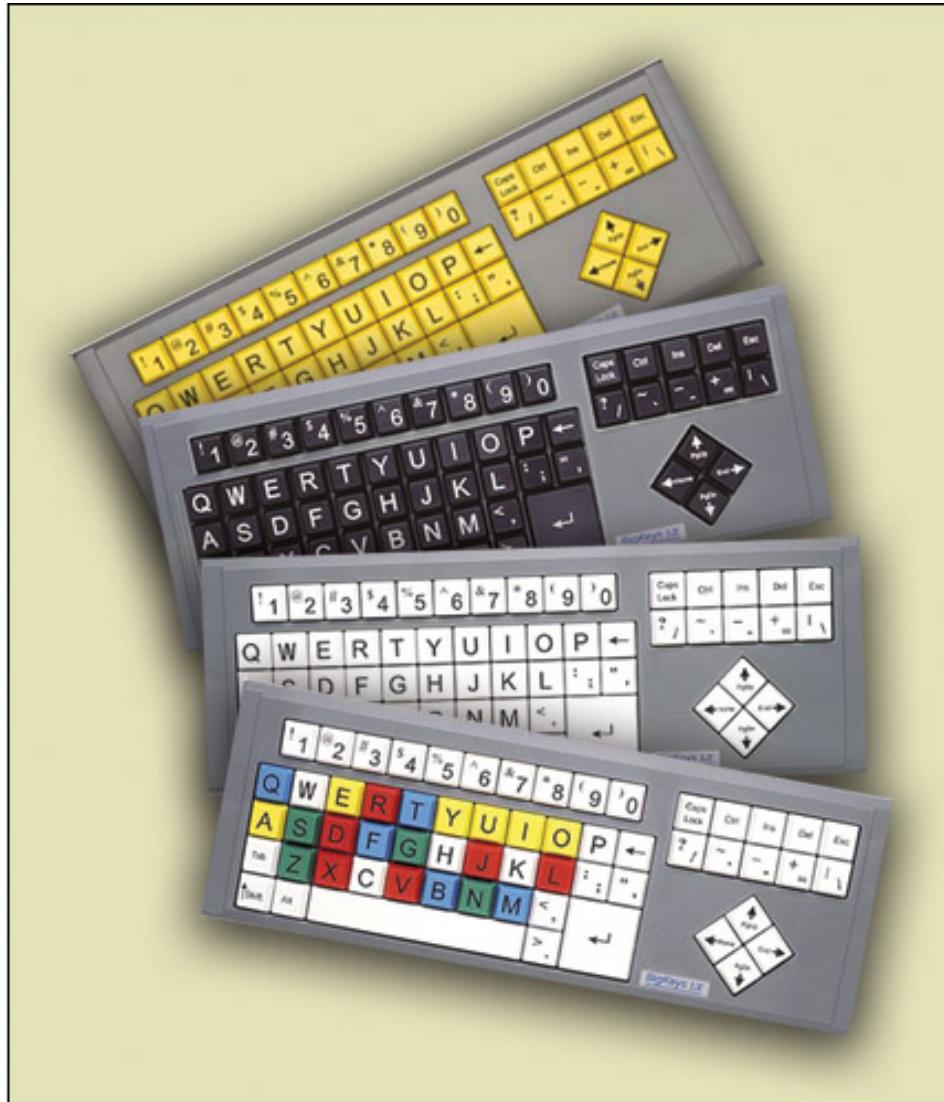
Assistive Technologies

Example of sip-and puff instrument



www.jouse.com/assets/images/jouse2_cyn01_800.JPG

Assistive Technologies



Big Keys
keyboard

<http://www.therapro.com/Browse-Category/Computer-Access-and-Aids/BigKeys-LX-QWERTY-Keyboard.html>

Assistive Technologies

Voice input/voice recognition software

- Speech (or voice) recognition is used by people with some physical disabilities or temporary injuries to hands and forearms as an input method in some voice browsers.
- Speech synthesis or speech output can be generated by screen readers or voice browsers, and involves production of digitized speech from text.

<http://www.w3.org/WAI/EO/Drafts/PWD-Use-Web/#tools>

Voice Over for Mac

- Every Mac is built in with assistive technologies
 - Supporting visual impairments
 - Voice Over is basically a screen reader but it also lets you interact with the screen
 - <https://www.youtube.com/watch?v=NlSb29tpS8>
 - Hover Text lets you instantly magnify a selection of text
 - Display Accomodations support colour blindness and other vision needs

Assistive Technologies

Head pointer



<http://www.frs-solutions.com/>

Assistive Technologies

- Braille displays
 - Braille is a system using six to eight raised dots in various patterns to represent letters and numbers that can be read by the fingertips. Refreshable or dynamic Braille involves the use of a mechanical display where dots (pins) can be raised and lowered dynamically to allow any Braille characters to be displayed.

<http://www.w3.org/WAI/EO/Drafts/PWD-Use-Web/#tools>

Assistive Technologies

Refreshable Braille Display



<http://www.wcbvi.k12.wi.us/assets/Photos/technology/refreshablebrailledevices.jpg>

More Assistive Technologies

Tobii Dynavox EyeMobile Plus

with Communicator 5 and Windows Control software

EyeMobile Plus provides individuals with physical and mobility challenges, such as spinal cord injuries or ALS, all the necessary tools to communicate effectively and empowers them to access hands-free mobile computing. With the EyeMobile Plus and included Windows Control software, users can navigate their computer, control and access apps, internet, music, e-books, social media, games and more using the natural movements of the eyes. When combined with optional Communicator 5 software, the EyeMobile Plus becomes an all-in-one bracket solution that turns Windows tablets into eye gaze-controlled Augmentative and Alternative Communication (AAC) devices.

[Buy here](#)

or learn more



EyeMobile Plus and the Power to be You

An all-in-one solution

The EyeMobile Plus combines the best in eye tracking, high quality speakers, speech recognition, switch access, and infrared (IR) control into one solution. All of those elements are seamlessly integrated in the bracket to adapt the sleek design of the Microsoft Surface Pro tablet.

Be heard clearly with speakers optimized for speech

The EyeMobile Plus features two powerful, outward facing speakers that provide the user with speech-optimized voice output. With this built-in speaker solution, you can engage with confidence knowing you will be heard, even from across the room.

Go further with worry-free battery performance

Say goodbye to battery life anxiety. With the battery configuration of the EyeMobile Plus, you no longer need to worry about unexpectedly losing power, computer access, or your ability to communicate. The EyeMobile Plus bracket can sustain itself with energy for 9+ hours and once exhausted, the bracket will use power from the tablet.

<https://www.tobiidynavox.com/eyemobile-plus/>



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Eye typing videos

- Eye Type Application Tutorial

<https://www.youtube.com/watch?v=6KOoxkY7KBc>

- Eye typing

<https://www.youtube.com/watch?v=WvWdwB6nTkk>

SOCOG case study

- Complaint by an individual about the olympics.com site was that SOCOG should have provided:
 - Access to the results tables on the website during the games
 - ALT text on all images and imagemap links on the site
 - Access from the schedule page to the index of sports

[http://ezinearticles.com/?Bruce-Maguire-Versus-Sydney-Organising-Committee-for-the-Olympic-Games-\(SOCOG\)&id=92115](http://ezinearticles.com/?Bruce-Maguire-Versus-Sydney-Organising-Committee-for-the-Olympic-Games-(SOCOG)&id=92115)

The reality of the site

- The home page and index of sports had no ALT tags (so inaccessible for people using screen readers)
 - SOCOG claimed index was available via a different route (by entering the URL for each sport directly)
- The Human Rights Commission agreed with complaint that having to remember and type a lengthy URL didn't constitute equal treatment
- A simple solution would have been to add ALT tags to each sport on the image map

The upshot of the complaint

- SOCOG was ordered to fix each of the three complaints, but refused
- SOCOG was later ordered to pay the individual making the complaint \$20,000 for this refusal

Some interaction design considerations

- Labels and controls
 - ensure that they are properly placed
 - ensure that place-holding characters explain what is to be entered (e.g., in data entry fields)
- Dynamic content
 - ensure that equivalents for dynamic content are updated when dynamic content changes
- Tables
 - be sure to identify row and column headers
 - don't use tables for layout unless it makes sense when linearised

Some additional design considerations

- Screen flickering
 - Allow users to control flickering, or more importantly don't cause flicker
 - Avoid using blinking text or scrolling text (difficult to understand, and not necessarily readable by screen readers)
- Frames
 - Title each frame to facilitate frame identification and navigation

Information design considerations

- Provide keyboard shortcuts to important links
- Provide mechanism to allow users to skip repetitive navigation links
- Use the clearest and simplest language appropriate for a site's content
- Provide summaries for tables
- Appropriate to use flash, PDFs, javascript, pop-up windows?

Assistive Technologies - Alt Tags

- HTML tag that provides alternative text when non-textual elements, typically images, cannot be displayed.
 - Provide further detail for an image or the destination of a hyperlinked image.
 - enable and enhance access for people with various disabilities.
 - Screen readers can not take in images, however, can read the text associated with alt tags
 - provide much-needed information for people who surf the Web with graphics turned off, and people who surf the Web with text-only browsers.

http://www.marketingterms.com/dictionary/alt_tag/

Presentation considerations

- Text equivalents for every non-text element
- Consider ALT tag* written style
- For multimedia presentations, synchronise equivalent alternatives (e.g., captions)
- A long text description tag is available – longdesc can be used to describe graphics
- Provide auditory descriptions of important information of the visual track of a multimedia presentation
- Provide redundant text links for each active region of an image map

* ALT tag – an HTML tag that provides alternative text when non-textual elements, typically images, cannot be displayed.

Additional presentation considerations

- Provide alternatives to colour coding (e.g., for meaning within the context of the application as well as common things like visited links)
- Clearly identify target of each link (not just ‘click here’)

Evaluation techniques

- Automatic validation tools
 - verifying that the syntax of the pages are correct (as a start to accessibility, but not the complete answer)
- Human review methods
- Usability testing with disabled users

Some automatic validation tools

- W3C validators
 - checks for conformance to W3C HTML standards (<http://validator.w3.org>) and CSS standards (<http://jigsaw.w3.org/css-validator>)

The W3C CSS Validation Service
W3C CSS Validator results for <http://unsw.edu.au> (CSS level 3)

Jump to: Errors (18) Warnings (80) Validated CSS

W3C CSS Validator results for <http://unsw.edu.au> (CSS level 3)

Sorry! We found the following errors (18)

URI	Description
https://www.unsw.edu.au/sites/default/files/css/css_xE-rWrJf-fncB6zTzd2huxqgxu4WO-gwma6Xer30m4.css	Property zoom doesn't exist : 1
https://www.unsw.edu.au/sites/default/files/css_css_GoCcCmGspWzzDVTgkFoFb2eEt4xaByq4GFNcVi8QG4.css	Parse Error Opacity=0)
1 .ui-helper-zfix	Parse Error Opacity=70)
2 .ui-priority-secondary, .ui-widget-content .ui-priority-secondary, .ui-widget-header .ui-priority-secondary	Parse Error Opacity=35)
2 .ui-state-disabled, .ui-widget-content .ui-state-disabled, .ui-widget-header .ui-state-disabled	Parse Error Opacity=30)
2 .ui-widget-overlay	Parse Error Opacity=30)
2 .ui-widget-shadow	Parse Error Opacity=30)
3 .ui-button	Property zoom doesn't exist : 1
5 .ui-dialog .ui-dialog-content	Property zoom doesn't exist : 1
https://www.unsw.edu.au/sites/default/files/css/css_Za7hx350Zaqdsv7vh2AlIPVl4cdB7Siq52q7kvbPc.css	
3 .front .ui-widget-overlay	Parse Error opacity=70)
3 .carousel-banner-wrapper	Parse Error opacity=90)



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Some automatic validation tools

- Automatically checks document for access barriers and identifies problems and suggests advice on potential fixes
- see <http://www.accessibilityoz.com/>
- And <http://www.accessibilityoz.com/ozart/>

AccessibilityOz



Automated, easy, effective accessibility reporting

AccessibilityOz is proud to announce the release of OzART — an innovative accessibility reporting tool that makes it easy to comprehensively report on, and maximise, your site's accessibility.

OzART simplifies the task of making your site accessible according to the Web Content Accessibility Guidelines 2.0 (WCAG2) because it searches and reports defects in categories e.g. images, page titles, content and headings. This makes it easy for your team to work through fixing the defects, logically and systematically.

User-friendly data can also be shared with stakeholders, giving them confidence that you take accessibility seriously.

OzART ensures you meet your legal requirements under WCAG2

By December 2014 all government websites must be Level AA compliant, so there's never been a better time to upgrade your accessibility efforts. With OzART, you can feel confident that your accessibility reporting is comprehensive, and you are meeting your legal requirements under WCAG2.



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Web Accessibility Evaluation Tools List



Web accessibility evaluation tools are software programs or online services that help you determine if web content meets accessibility guidelines. This page provides a list of evaluation tools that you can filter to find ones that match your particular needs. To determine what kind of tool you need and how they are able to assist you, see [Selecting Web Accessibility Evaluation Tools](#).

Information on this page is provided by vendors and others. W3C does not endorse specific products. See [Important Disclaimer](#).

▼ Filters:

▼ Guidelines

- [WCAG 2.0 – W3C Web Content Accessibility Guidelines 2.0](#) (59 tools)
- [WCAG 1.0 – W3C Web Content Accessibility Guidelines 1.0](#) (20 tools)
- [BITV](#), German government standard (2 tools)
- [RGAA](#), French government standard (7 tools)
- [JIS](#), Japanese industry standard (1 tool)
- [AccessiWeb](#) (1 tool)
- [Irish National IT Accessibility Guidelines](#) (1 tool)
- [MAAG 1.0 - Korea government standard](#) (1 tool)
- [Section 508, US federal procurement standard](#) (27 tools)
- [Stanca Act](#), Italian accessibility legislation (4 tools)

► Languages

- [Type of tool](#)
- [Technology](#)
- [Assists by ...](#)

Showing 76 tools

508 Checker by Formstack



With 508checker.com you can quickly check a webpage for 508 compliance and learn more about how to become 508 compliant across your entire organization

<http://www.508checker.com>, Version: 1.4, Released: 2014-Jun-01

► [Detailed Information about "508 Checker"](#)

A-Tester by Evaluera Ltd



A-Tester checks the pre-enhanced version of a web page designed with progressive enhancement against Evaluera's "WCAG 2.0 Level-AA conformance statements for HTML5 foundation markup" making a report that can serve as a broad and easily confirmed WCAG 2.0 Level-AA claim, even for enhanced versions.

<http://www.evaluera.co.uk>, Released: 2014-May-28

► [Detailed Information about "A-Tester"](#)

A11Y Compliance Platform by Bureau of Internet Accessibility



Tools, reports and services to help organizations achieve, maintain and defend the accessibility of their organization's websites. Standards and guidelines used includes Section 508, Web Content Accessibility Guidelines (WCAG) & Americans with Disabilities (ADA)

<http://www.boia.org?wc3>, Version: Version 5 Release 3.4, Released: 2014-Nov-13

► [Detailed Information about "A11Y Compliance Platform"](#)

AATT (Automated Accessibility Testing Tool) by PayPal



AATT provides an accessibility API and custom web application for HTML CodeSniffer. For example, AATT includes HTMLCodeSniffer with Express and PhantomJS, which runs on Node.

<https://github.com/paypal/AATT>, Version: 1.0.0, Released: 2015-Apr-08

See <https://www.w3.org/WAI/ER/tools/>



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Some automatic validation tools

- WAVE
 - visual tool displaying the reading order of a page
 - <http://wave.webaim.org/>

The following apply to the entire page:

h1 

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Neil Balnaves supports UNSW Medicine Indigenous students **Tyron Clayworth**

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- ▶ Postgraduate Research 

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- ▶  ILP & Honours by study area
- ▶  ILP & Honours by Supervisor
- ▶ Post Doctoral Staff
- ▶ Resources & Infrastructure 
- ▶ Research News & Events 

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- ▶ Orientation, Training & Development 

Nine Eureka moments

UNSW has finalists in nine categories of the Australian Museum Eureka Prizes – prestigious national... 

Music from the heart

Some Sydney jazz musicians are giving fresh meaning to improvisation, by using the sound and images... 

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Some automatic validation tools

- Web Accessibility checker
 - “This tool checks single HTML pages for conformance with accessibility standards to ensure the content can be accessed by everyone.”
 - <https://achecker.ca/checker/index.php>

Check Accessibility By:

[Web Page URL](#) [HTML File Upload](#) [Paste HTML Markup](#)Address: [▶ Options](#)[realestate.com.au](#) [www.realestate.com.au](#)

The First Place to Find Your
Next Place. Search for Property
Today.

[AdChoices ▶](#)

Accessibility Review

Accessibility Review (Guidelines: [WCAG 2.0 \(Level AA\)](#))Export Format: [PDF](#) Report to Export: [All](#) [Get File](#)[Known Problems\(25\)](#) [Likely Problems \(0\)](#) [Potential Problems \(319\)](#) [HTML Validation](#) [CSS Validation](#)

1.1 Text Alternatives: Provide text alternatives for any non-text content

Success Criteria 1.1.1 Non-text Content (A)

Check 7: [Image used as anchor is missing valid Alt text.](#)

Repair: Add Alt text that identifies the purpose or function of the image.

✖ Line 81, Column 72:



Engineering

✖ Line 489, Column 174:

<img src="http://www.eng.unsw.edu.au/system/files/imagecache/front-image-thumbnail/gallery20img2001_ ...

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Accessibility Review

Accessibility Review (Guidelines: [WCAG 2.0 \(Level AA\)](#))

Export Format: [PDF](#) Report to Export: [All](#) [Get File](#)

[Known Problems \(37\)](#) [Likely Problems \(0\)](#) [Potential Problems \(491\)](#) [HTML Validation](#) [CSS Validation](#)

1.1 Text Alternatives: Provide text alternatives for any non-text content

Success Criteria 1.1.1 Non-text Content (A)

Check 1: [img element missing alt attribute.](#)

Repair: Add an alt attribute to your img element.

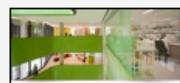
✖ Line 270, Column 72:

```
<img src='http://med.unsw.edu.au/sites/default/files/styles/menu_image/public/menuimage/applying_to. ...'
```



✖ Line 277, Column 45:

```
<img src='http://med.unsw.edu.au/sites/default/files/styles/menu_image/public/menuimage/research.jpg ...'
```



✖ Line 285, Column 45:

```
<img src='http://med.unsw.edu.au/sites/default/files/styles/menu_image/public/menuimage/staff_gatewa ...'
```



✖ Line 292, Column 50:

```
<img src='http://med.unsw.edu.au/sites/default/files/styles/menu_image/public/menuimage/find_out_mor ...'
```



Check 7: [Image used as anchor is missing valid Alt text.](#)

Repair: Add Alt text that identifies the purpose or function of the image.



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W3C

- What is W3C?
 - The World Wide Web Consortium (W3C) develops interoperable technologies (specifications, guidelines, software, and tools) to lead the Web to its full potential.
 - The main standards organisation for the World Wide Web
- <http://www.w3.org/>

W3C

- Before and After Demonstration:
Improving a Web site using Web Content
Accessibility Guidelines (WCAG) 2.0

See <http://www.w3.org/WAI/demos/bad/>

Lecture activity

- Consider again a note taker app for students:
In your Design Diaries
 - Brainstorm some of the functionality that may be needed?
 - Brainstorm types of disabilities you may need to cater for?
- Consider some of the issues you would have if you didn't actually then interview some users?

Human review methods

- Run on different browsers (old and new including text-only browsers such as Lynx), on different hardware and operating systems
- Turn off graphics (reveals ALT tags)
- Turn off sound
- Turn off style sheets (older browser issues)
- Turn off frames, scripts and other programmable objects

More human review methods

- Check colour contrast by viewing in grayscale
- Increase font size to the largest allowed by your browsers
- Try using assistive technologies (such as screen readers or magnification software)
- Try keyboard-only navigation
- Review against WC3 guidelines & checklist (www.w3.org/WAI)

Current w3c guidelines

- <http://www.w3.org/TR/WCAG/>

Cascading style sheets

- Cascading style sheets are used on the web to create a visual appearance (presentation) that is independent of the content
- The web “client” can apply a style sheet to the content to customise the way the user wishes to view the page
- The user may have specific colour preferences (eg. Colour blindness) and text size preferences (eg. Vision impairment)

Cascading style sheets

- “cascading” means that styles can be provided by the content author or by the user, the user style sheet can override the authors original settings

Usability testing

- Consider and involve a range of user types
- Get different types of users involved at different stages
 - for cognitive impairments, it's important to consider their needs earlier
 - for use of assistive technology, often it's necessary to wait until a prototype is built
- *Remember that a more accessible site is more usable for all...*

Usability testing

- Same usability testing principles apply
- You may need to use electronic prototypes to establish the appropriate amount of interactivity
- Eg. Blind user with a screen reader is difficult to conduct a paper based walkthrough unless the mock up is annotated with braille

Solutions in Education

Snap&Read™

- Snap&Read is the Next-Generation reading tool for Google Chrome, iPad and more, that can cover the most diverse reading needs. It reads both accessible and inaccessible text aloud, it levels vocabulary, and it translates, delivering usage data to teachers who then can more easily assess students' reading needs individually.

<https://learningtools.donjohnston.com/product/snap-read/>

Operating System Vendors

- Both Microsoft and Apple provide accessibility infrastructure to support use by disabled and others requiring accessibility solutions
 - <http://www.microsoft.com/en-us/accessibility/>
 - <http://www.apple.com/accessibility/>

Screen Reader

- **JAWS Screen Reader - Hear an Example**
[http://www.youtube.com/watch?v=IK97XMi
bEws](http://www.youtube.com/watch?v=IK97XMi bEws)
- **Using a Computer as a Blind Person -
JAWS Screen Reader**
[http://www.youtube.com/watch?v=a1uYlgL
SKMk](http://www.youtube.com/watch?v=a1uYlgL SKMk)

Universal Access on the iPad

- Assistive touch

<https://www.youtube.com/watch?v=tOAiwpJE25Q>

- Guided Access Feature

<https://www.youtube.com/watch?v=-3U01XmdOSU>

Alternative Uses For Universal Access (MacMost Now 530) video

- http://www.youtube.com/watch?feature=player_embedded&v=CcYyrVa2xbQ - !

Accessibility (Apple)

Example of how Accessibility features may eventually useful for all in new products

Accessibility

Mac iPad iPhone Watch TV HomePod Stories



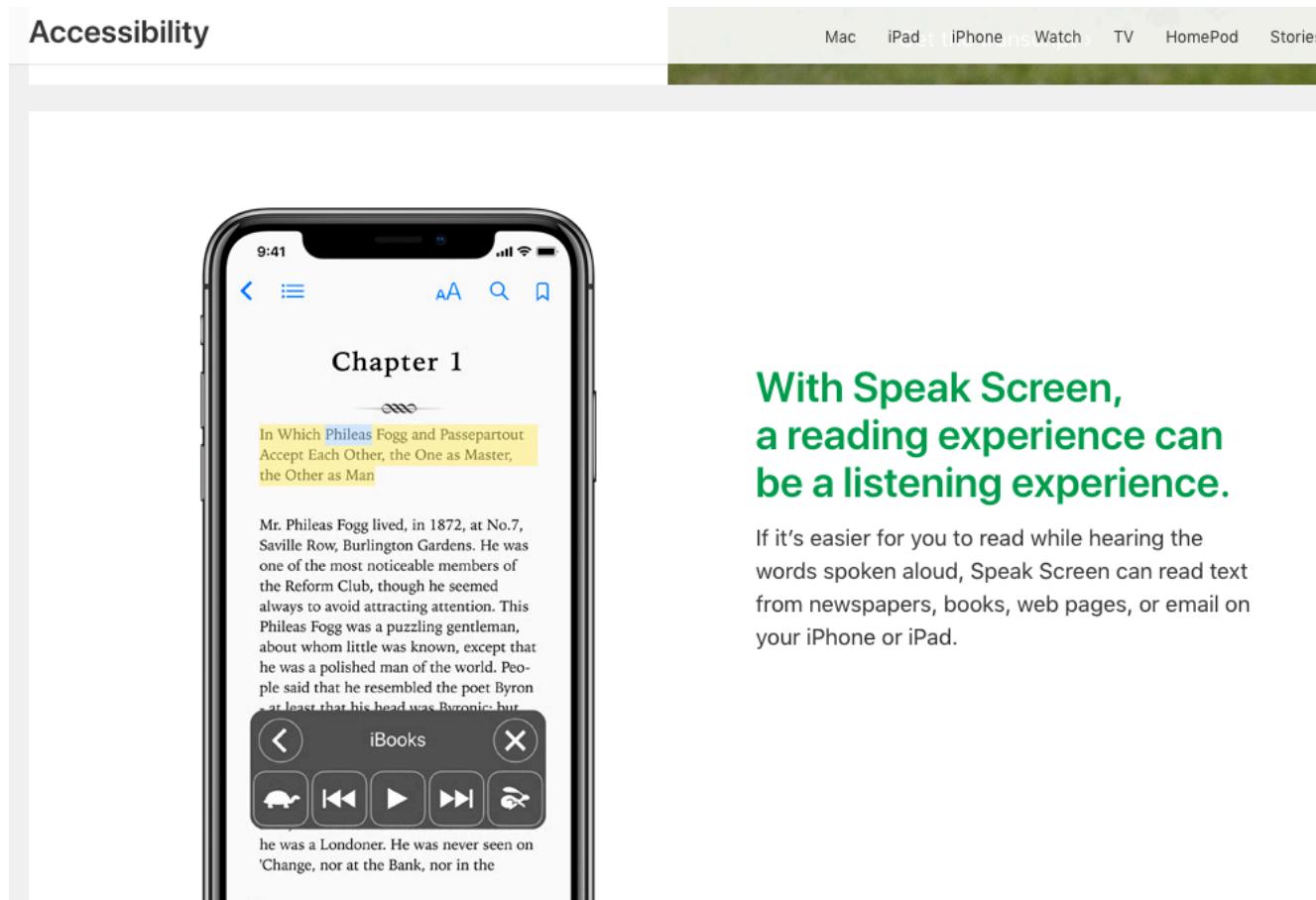
**Hey Siri, make it
warmer downstairs**

**Manage your house
and your music.
With just your voice.**

Turn on the lights, start the coffee, open the blinds, or play the latest hit song just by speaking. The new HomePod is both a Siri-enabled intelligent assistant that works with your HomeKit-enabled accessories and an incredible music speaker.

Accessibility (Apple)

Example of how Accessibility features may eventually useful for all in new products



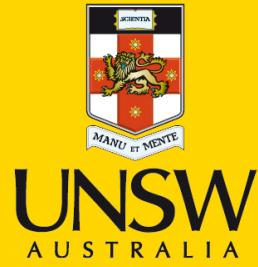
The screenshot shows a mobile device displaying a book chapter titled "Chapter 1". The text on the screen includes a yellow highlighted quote: "In Which Phileas Fogg and Passepartout Accept Each Other, the One as Master, the Other as Man". Below this, there is a paragraph of text about Mr. Phileas Fogg. At the bottom of the screen, there are navigation icons for iBooks, including arrows for page navigation and a magnifying glass icon. The top of the image shows the Apple Accessibility interface with a navigation bar for Mac, iPad, iPhone, Watch, TV, HomePod, and Stories.

**With Speak Screen,
a reading experience can
be a listening experience.**

If it's easier for you to read while hearing the words spoken aloud, Speak Screen can read text from newspapers, books, web pages, or email on your iPhone or iPad.

Summary

- Universal Access
- Related scenarios for disabled users
- Assistive technologies
- Some anti-discrimination legislation
 - SOCOG case study
- Interaction design considerations
- Evaluation techniques
- Demonstrations



Design Process: From Idea to Scenarios

Never Stand Still

Dr Alexandra Vassar (Sasha)

COMP3511/9511 Human Computer Interaction

Assignment 1 Quick Overview

- User Interface Critique
 - Worth: 15%
 - If submission is late, IT WILL BE PENALISED AT 10% for each day or part thereof late
 - Due: Wednesday 15th January by 10pm (Week 2)

Assignment 1 Quick Overview

- Goal: To allow you to familiarise yourself with the terminology and principles that are used to critique an interface.
 - Before you start designing, it is important to know what principles your design should adhere to;
 - Instead of stating that you like something or not, you should be able to provide a critical justification of why something is good, or why something is bad;
 - It is important to consider both the good and the bad aspects;
 - Use the terminology of heuristics, usability goals, principles and user experience goals
 - The point of critiquing is to provide fixes or improvements to the problems encountered, using formal principles and methods.

Assignment 1 Quick Overview

- In your report:
 - Be neat – set out your work in a logical manner
 - Use formal terminology
 - Refer to your issues table within the report!
 - Provide annotated sketches of the issues
 - Stick to the page limits: a total of 9 pages (you can have references in your appendices that will not count towards the page limit, the title page is also not counted towards the limit)

Some sample issues tables

#	Description of Issue	Principle	+/-
1	Slideshow doesn't let you chose what to read	usability, effectiveness	-
2	Buttons on bike mostly unresponsive	usability, feedback	-
3	Relationship between buttons and screen unclear - purpose is undistinguishable	affordance, usability, learnability	-
4	limited responsiveness - power generated can only be: 0.0, 0.1, 1.0 or 500 kilowatts per hour	feedback, effectiveness, visibility of system status	-
5	Screen unresponsive/lags - sometimes will randomly cut out/will not detect input, other times it will freeze	usability, utility, effectiveness	-
6	looks like touch screen - uninteractive slideshow; visible cursor implies that pointer can be moved	affordance, usability, learnability	-
7	large noticeable tap button on bottom of screen implying 'link' to other screen	affordance, feedback	-
8	will randomly go to slideshow halfway through riding	usability, utility	-
9	top left screen lights up based on energy created	feedback	+
10	bottom left resources menu is inconsistent and unclear; should show all or one, or purpose explained	learnability, visibility of system status	-
11	buttons are labelled but explained poorly	learnability, effectiveness	-
12	seat is really uncomfortable and very difficult to ride	safety, effectiveness	-
13	pedals did however clearly afford a bike	affordance, constraints	+



Some sample issues tables

Issues Table

Following conventions are used in the issues tables:

- (H) for Heuristics
- (X) for User Experience Goals
- (D) for Design Principles
- (U) for Usability Goals

Interactive One

Issue #	Description	Type	+/-	Sketch Ref.
1	Use of plain text labels as interactive buttons has poor affordance.	(D) Affordance	-	A-4
2	All options on one page. Difficult to tell which ones have been visited. Simply too crowded.	(U) Memorability	-	A-5
3	Sole use of shades of gray for homepage is not very fun nor aesthetically pleasing.	(X) Aesthetics	-	A-1
4	Idea of a quiz is motivating and depending on the outcome, perhaps rewarding.	(X) Motivating	-	B-5
5	Subtle flashing of the background of the next arrow is a good clue that it should be interacted with.	(D) Affordance	+	B-1
6	Visual artifacts of the home page left on the quiz and other pages.	(X) Aesthetics	-	B-6
7	Brief and to the point doc describing the purpose of the screen.	(H) Help and Docs	+	B-4
8	Overall minimalist design.	(H) Minimalist Design	+	B-2
9	Consistent use of a certain font for back navigation and page title.	(D) Consistency	+	B-3
10	Poor affordance using a pale gray colour and no visual clue that the "BACK" at the top left corner is a navigational tool.	(D) Affordance	-	B2-7
11	More clues about the element are revealed as time passes. This makes it fun and challenging for the user to attempt and answer the quiz as fast as he or she can.	(X) Challenging, Fun	+	B2-5



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Some sample issues tables

d. Table of Issues

Interactive 1 – Your House

U – Usability Principles, UX – User Experience Goals, D – Design Principles, H – Heuristics

Issue Number	Description	Type ⁵	+ \ -	Relevant Sketch
1	Very intuitive feel; having just one main screen makes it easy to learn.	▪ [U] Learnability	+	1A
2	The system gives the user a lot of power to influence the result. There are a lot of things that the user can customize, providing a wide range of functionality.	▪ [U] Utility ▪ [UX] Supportive of Creativity	+	1A
3	Icons are labelled with clear meanings; buttons are visible; handy captions; the interactive has a minimalistic design, evident through the minimal number of screen changes (primarily 3 distinct screens). Users would be able to remember how to use the interactive, yet would not be required to.	▪ [U] Memorability ▪ [H] Recognition rather than Recall ▪ [H] Minimalistic Design	+	1A
4	After a while user's may get tired of customizing their home (as there is a great level of detail); there is no additional motivation to continue for a long period of time.	▪ [UX] Motivating	-	1A
5	The colours yellow and grey are good choices as they are commonly used in the context of construction, just as the interactive requires users to construct their home.	▪ [UX] Aesthetically Pleasing ▪ [H] Aesthetic	+	1A
6	The final screen provides results in the form of a comparison to other average homes, hence it is kind of like a game.	▪ [UX] Fun ▪ [UX] Satisfying	+	1B
7	The interactive first instructs users to tap on the screen, but later requires users to drag toggles without additional instruction.	▪ [UX] Helpful	-	1B
8	Features are all visible on the screen, but due	▪ [D] Visibility	-	1A

⁵ The goals and principles cited in this table are in reference to what is mentioned in:
Sharp, Rogers and Preece. (2002). What is interaction design?. In: Santor, Ken *Interaction Design*. 1st ed. New York: John Wiley & Sons, Inc. 1-30.

Appendix: Issues Table

Issues Table for Interactive 1: Stop The Mega Tip

Issue Number	Description of Issue	Heuristic/Design Principle	Positive/ Negative
1	Colouring of the buttons and use of the question marks made the functionality obvious	Affordance	Positive
2	Immediate feedback on the selection of buttons by changing the colour	Feedback	Positive
3	Overall consistency in element types throughout the entire program	Consistency	Positive
4	Lack of a progress bar or other information when pages change in the program	Visibility of System Status	Negative
5	Some of the scenarios are absurd: "Who will pick up the children from the bus?"	Match between system and real world	Negative
6	The system provided no way to back track to a previous point	User control and freedom	Negative
7	The system provided no way to restart from the beginning	User control and freedom	Negative
8	You cannot tap the screen to skip the small animated sections	Consistency and standards	Negative
9	The animations and drawings and overall artistic style was incredibly dated and looked awful	Aesthetics	Negative
10	Tapping and touching everything else works as expected	Consistency and standards	Positive
11	Very simple options hierarchy at each stage	Aesthetics	Positive
12	No help or feedback if people are confused or touching the wrong parts of the screen	Help and Documentation	Negative

Issues Table for Interactive 2: Bigfoot

Issue Number	Description of Issue	Heuristic/Design Principle	Positive/ Negative
1	The restart button has no confirmation dialog	User Safety/Error checking	Negative
2	Touching the screen during audio does not stop the audio	Consistency/Platform conventions	Negative
3	The audio reminders are oddly phrased and obnoxious	Help and Documentation	Negative
4	Animation between sections is very slow	Indication of System Status	Negative
5	Terms such as 'hectares' do not connect with the audience	Connection between system and real world	Negative
6	Inconsistent screen to choose the amount of hectares for other animals, completely out of place	Connection between system and real world	Negative
7	The system does have a reset and a try again button	User Freedom	Positive
8	When the user is not doing anything and the system wants input, there are audio prompts	Help and Documentation, Indication of System Status	Positive

Assignment 1

Questions?

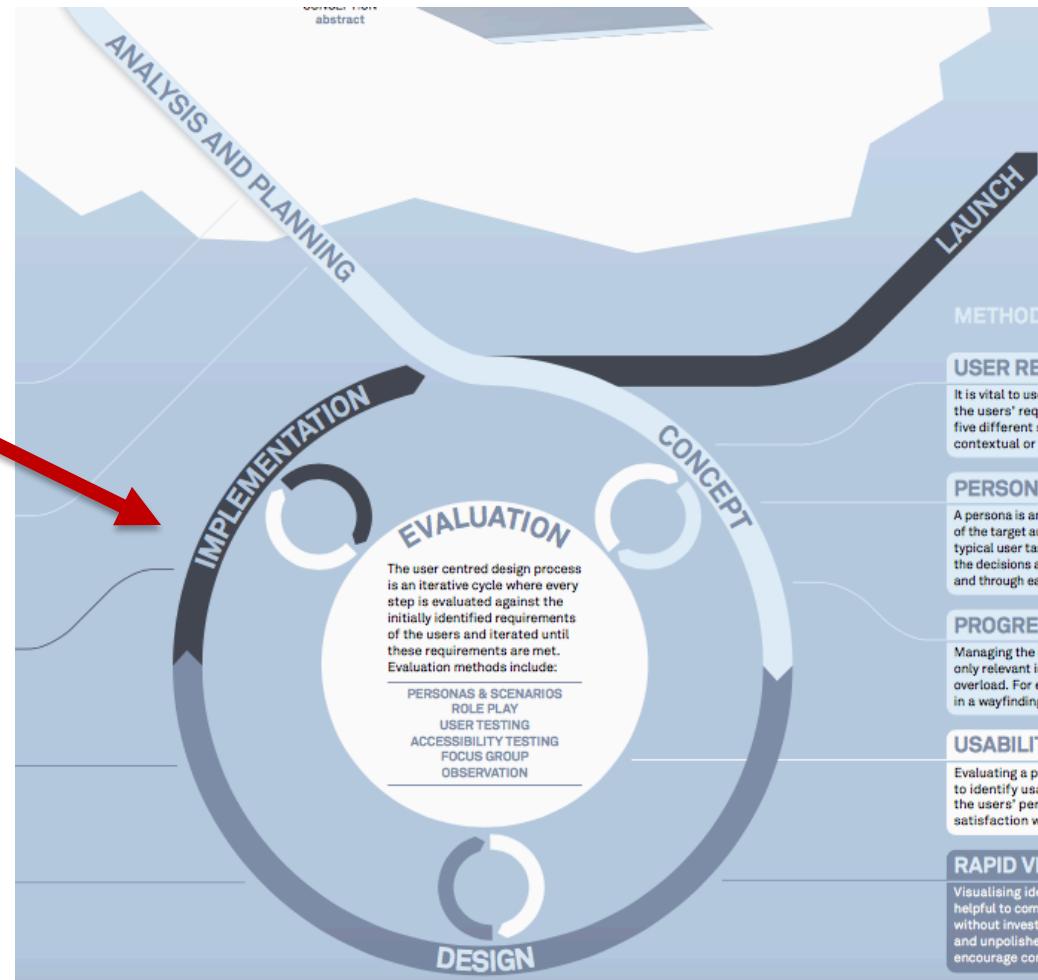
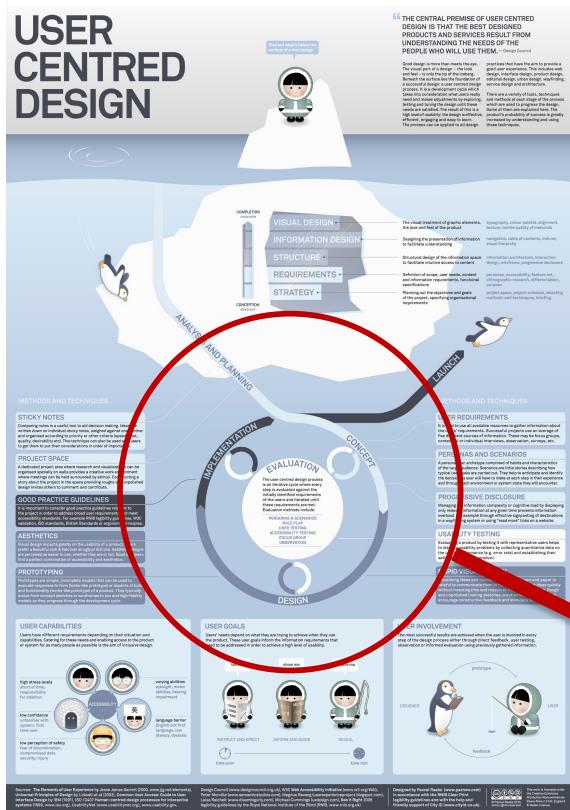
Readings

- Personas: Unger & Chandler (2012) (Moodle link provided)
- Scenarios: Cooper et al, 2007, About Face 3.0, Ch 6 (Moodle link provided)
- Interaction Design (ID), 2019, Ch 11.5.2

User Centred Design process

- Become familiar with the language of usability evaluation and critique
- Conceptual Designs
- Creative thinking
- People involved and personas
- Scenarios
- Product Description Statement
- Techniques to discover information about users experience
 - Questionnaires
 - Interviews
- [Running usability test on existing sites]
- Data gathering for requirements
- Functional and non-functional requirements
- Analysis
- Paper Wire Frames
- Planning and running usability tests
- Compile Issues Table
- Review the design
- Iterate the process

USER CENTRED DESIGN



- <http://paznow.s3.amazonaws.com/User-Centred-Design.pdf>

From ideas to scenario

- Think aloud protocol
- What is the Product Description Statement
- People involved – stakeholders
- Data Gathering
- Personas
- Scenarios
- Diagrammatic Techniques
- Use these techniques in Assignment 2

Aims

- Introduce an observation/evaluation technique
 - think aloud
- Step through the design process starting from an idea through to the step just prior to developing paper prototypes

Idea to Scenarios

Ideas

- Already discussed idea generation and brainstorming
- These techniques are valuable at the beginning of a project to identify and seek out the "problem space" and the possibilities
- At the beginning of a design process there are many possible paths

Ideas

- As the project evolves, the team moves from the creative side to the business of building a specific product/service
- Various creative techniques will be employed throughout the design process

Target in course is the Prototype

- Our first objective is to come up with a set of paper prototypes that represent the screens that will be presented to the user
- There are several steps before we reach this stage

Paper Prototyping

- A cheaper way of answering design questions regarding whether a design will succeed or fail
- The design team may not know the answers to all the questions - build a prototype and assess the outcome
- It isn't the final system so it may not perform exactly like the final product

Prototype

- In a movie, a storyboard is a form of prototype of the final movie
- There are various forms of prototyping used in pre-production to understand what is possible

Nintendo paper prototype



<http://chiefdisruptionofficer.com/helpful-rapid-prototyping-methods-and-tools-to-bring-digital-ideas-to-life-fast/>

Principles

“design is a practical and creative activity...
the ultimate intent is to develop a product
that helps users achieve their goals”

Interaction Design



chaos to order

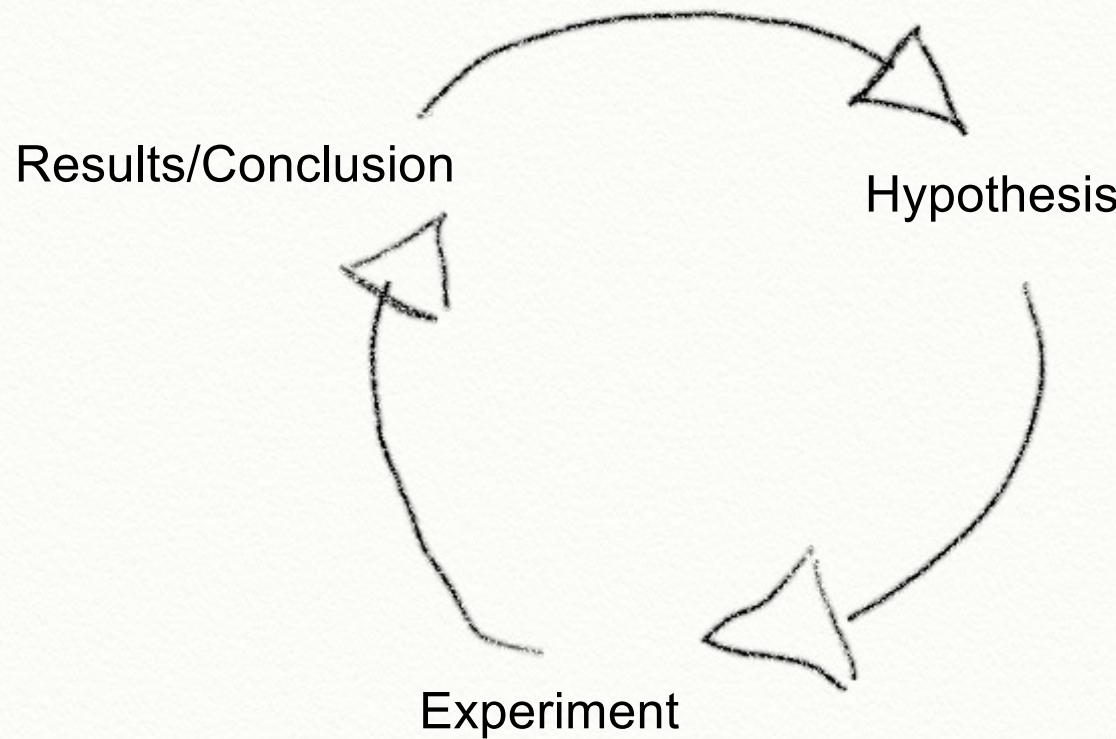
idea to product

user centred

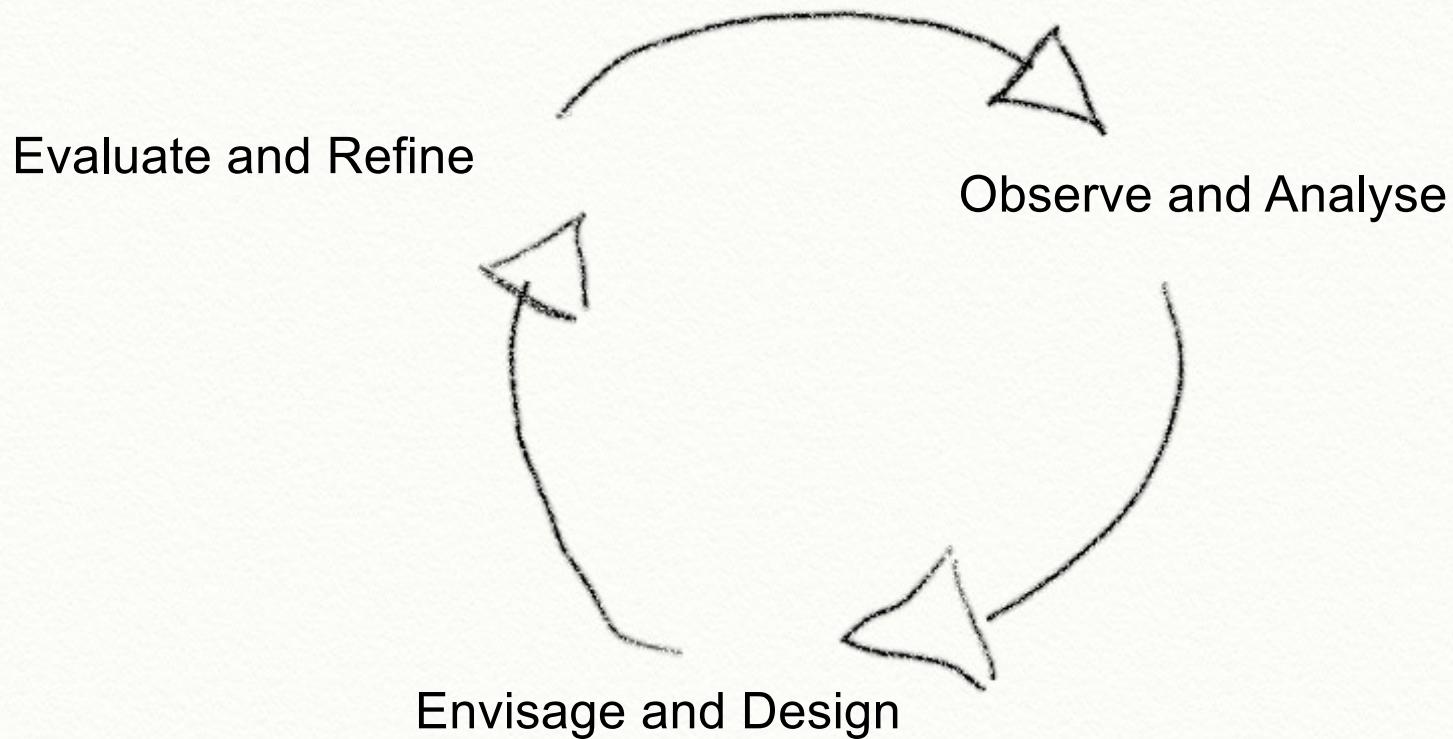
questionnaire,
interviews,
interpret

iterative

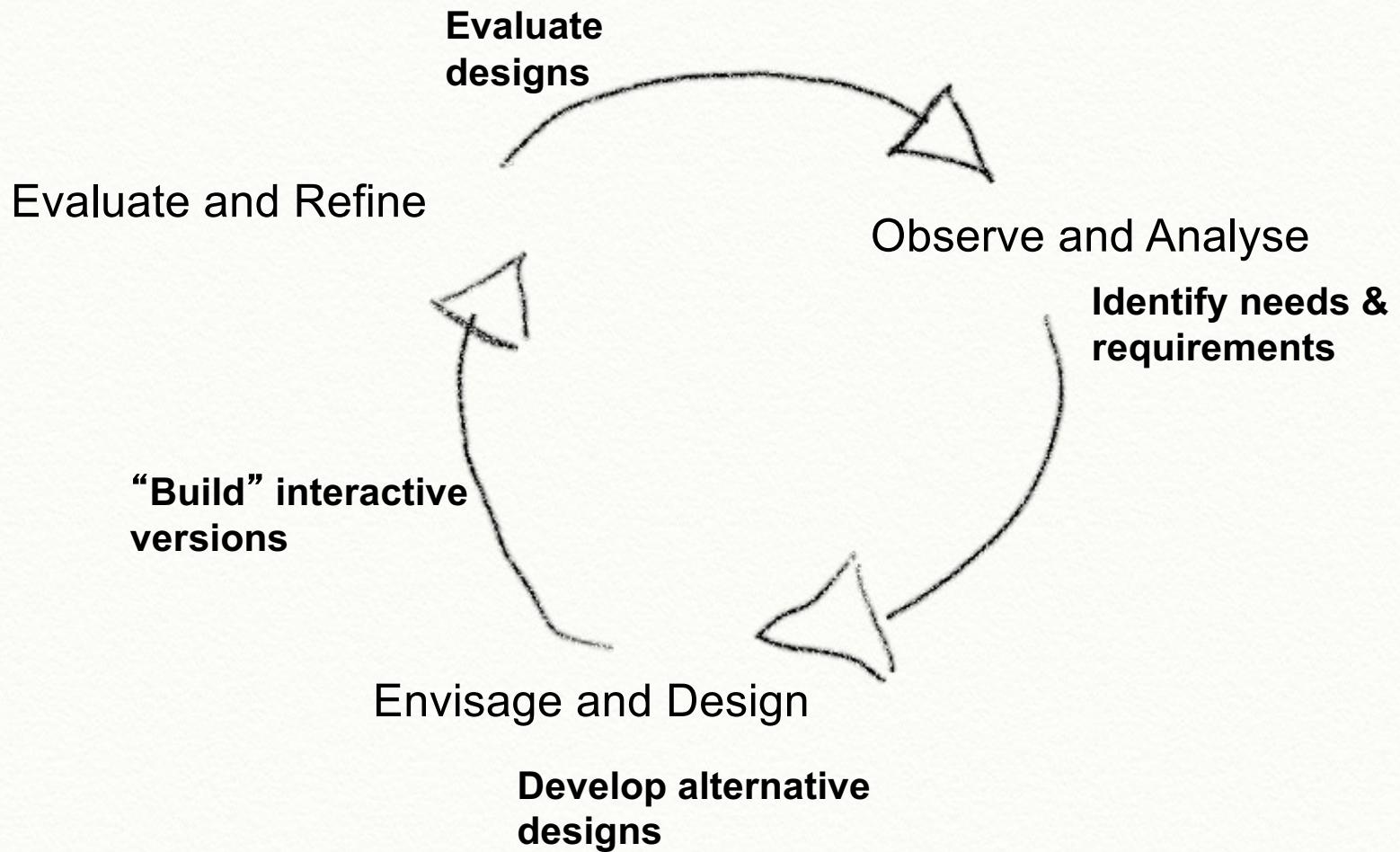
Scientific Method



Design Method



Design Method



“the best way to get a good idea is to get lots of ideas”

Linus Pauling, Preece 2007

Brainstorming Activity

- Interactive app for students to take notes during lectures
- How do you currently take notes?
- What are the current activities you engage in?
- It would be cool if....

Product Description Statement

- 30 words or less
- Describe what the product will do to meet the user goals

Product description statement for a
note taker app

People

- Who is involved in the project?

People

- Direct Users (primary)
- Indirect Users (secondary)
- Other Stakeholders (Tertiary)

Don't need to include Facilitating stakeholders
(us)

Indirect Users

- those who manage direct users
- those who receive output from the product
- those who make purchasing decisions

Other Stakeholders

- Library
- Lecturers
- Executives
- IT support
- Support/ maintenance/ training staff
- Professional Services
- Community

Goodwin 2009



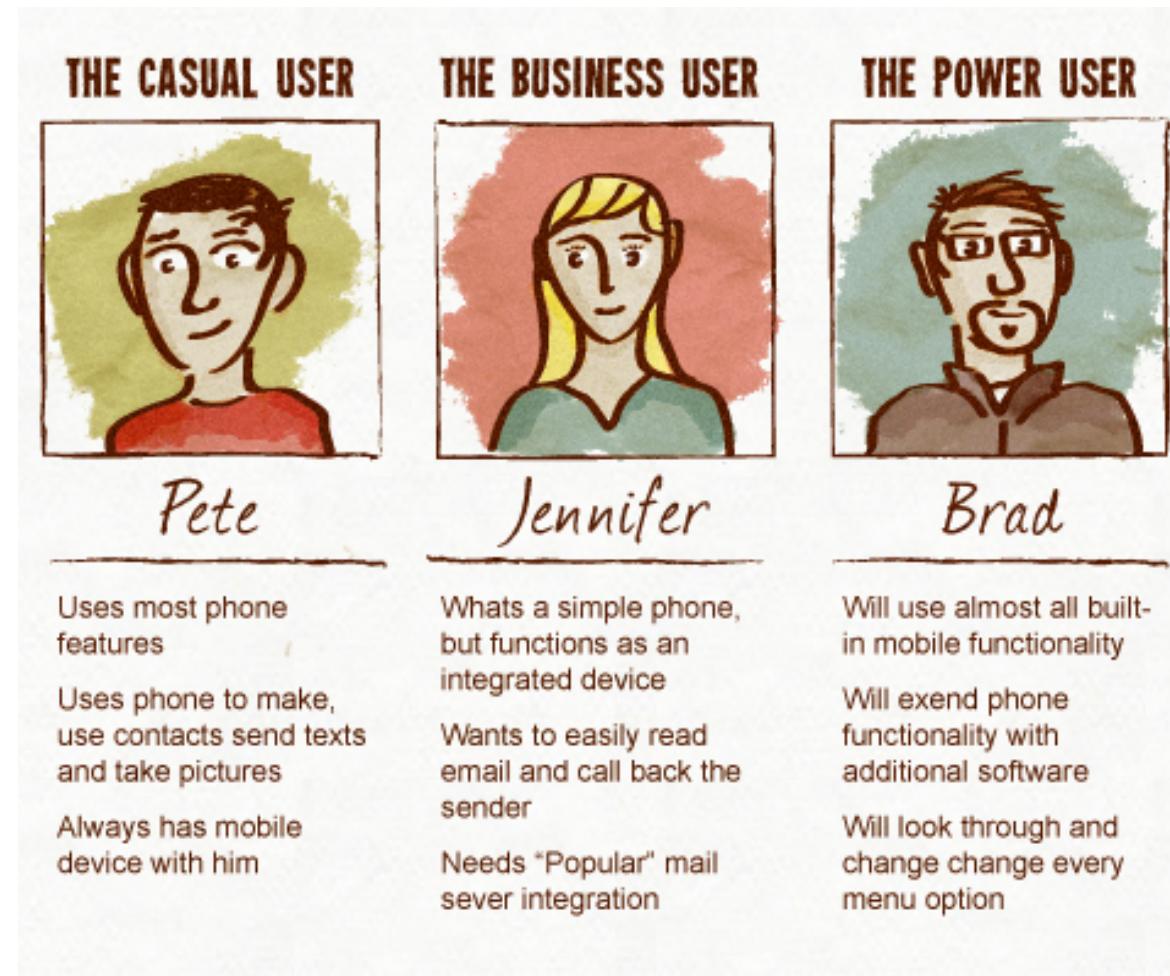
Design Team - facilitating

- Interaction Designer
 - Generates, then synthesizes ideas
- Visual Designer
- Industrial Designer
- Team Lead

Goodwin 2009

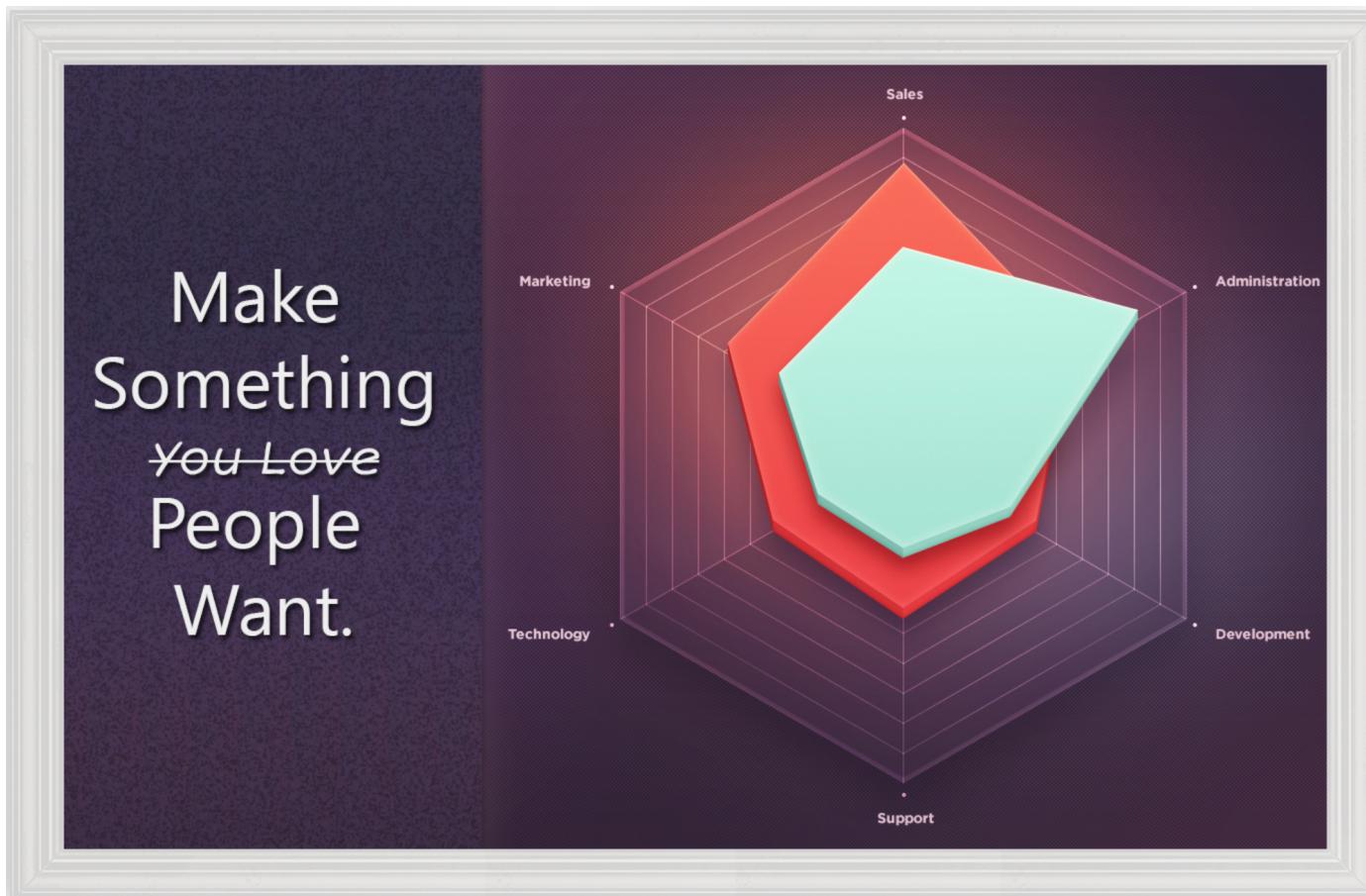


Understand Users



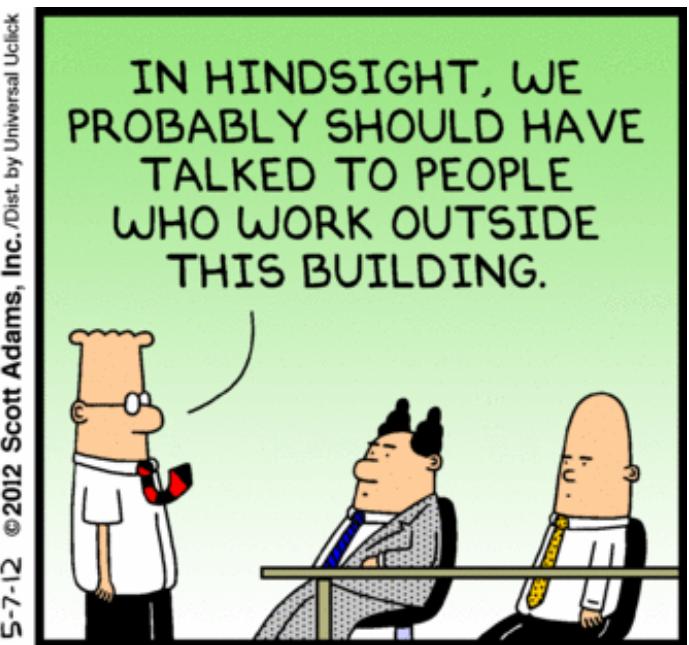
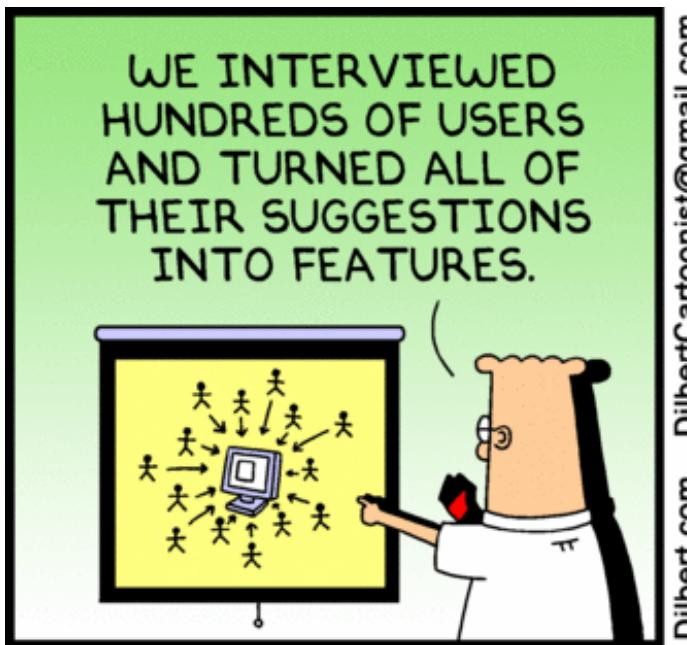
<https://www.woodst.com/mobile-solutions/13-more-marketing-musts-for-2013/>

Not guess work!



<https://www.linkedin.com/pulse/3-versatile-reasons-invest-ux-research-design-vinay-k-m>

Research user needs



Data Gathering

Method

- The approach you take to understand user needs will depend on whether you are creating a new product, enhancing an existing one, rethinking a existing one
- You may have obvious access to the target audience and stakeholder, but in some cases you may not

Data Gathering Ch 8 (ID, 2019)

- Questionnaires
- Interviews
- Focus Groups and Workshops
- Naturalistic Observation
- Studying Documentation

Data Gathering

- Talking to people
 - Interview (ID 8.4)
 - Structured / unstructured
 - Focus group (ID 8.4.4)

Interview Process

- There are ways to run the interview process (covered later)
- Being prepared beforehand is very important
- Remember that you are capturing data so you need methods to record the data

Questionnaire

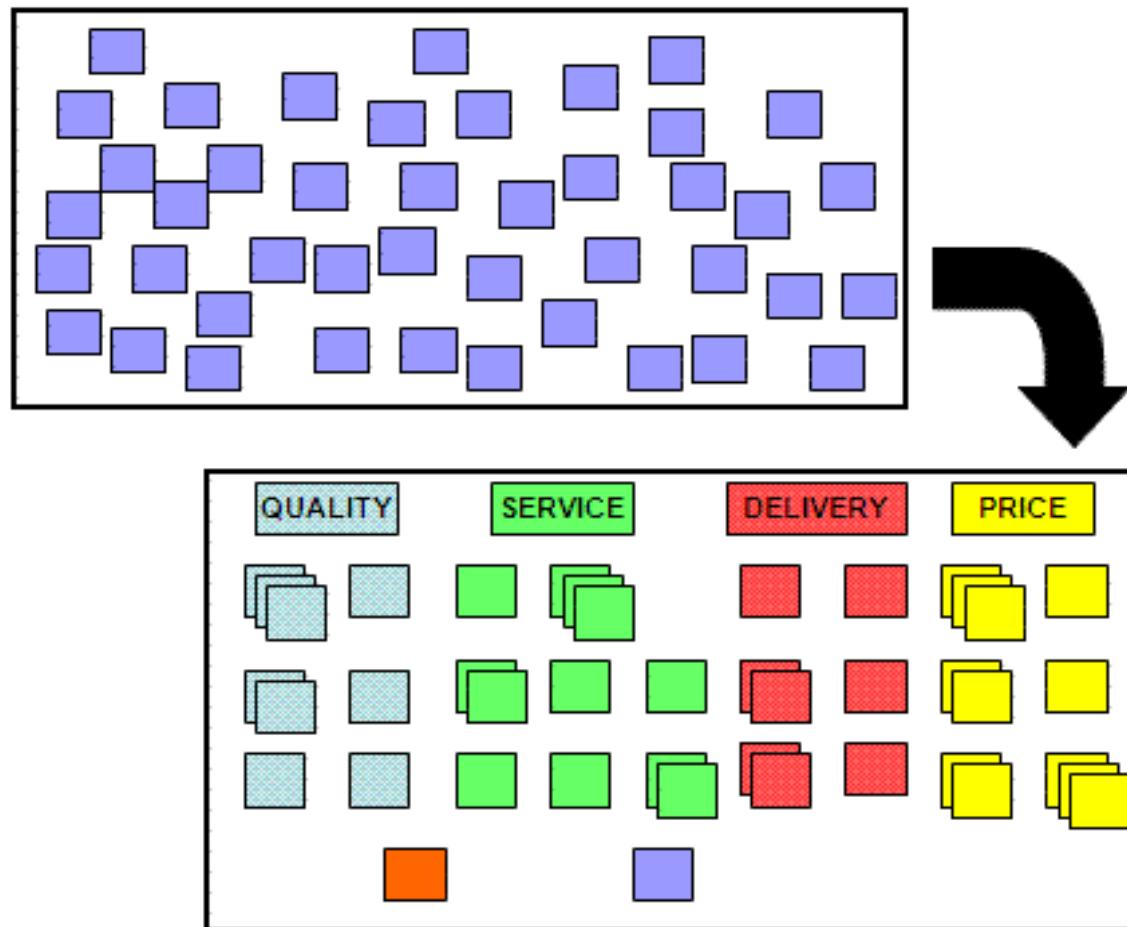
- Developing a set of questions to ask users and stakeholders
- How many people will you talk to?
- Is there a need to analyse the data? Should the questions be quantitative?
- See ID 8.5 for next week

Analysis

- You will gather both qualitative and quantitative data from the interview process
- Find patterns and use methods to group the data (consider affinity diagramming)
- Look for trends, consider statistics (if there are enough responses)



Affinity Diagram



Affinity Diagramming – in summary

- The affinity diagram organizes a large number of ideas into their natural relationships - looking for common themes and patterns
- Use after a brainstorming exercise
- Or when analyzing verbal data, such as survey results
- Often used as a group technique using post-it notes

What do you do with this
data:
Personas

Personas

see Unger & Chandler (2012), Ch 8

- First you need to develop personas
- This requires research
- There are two type
 - Marketing-targeted personas that model purchase motivations
 - Interactive personas that are modeled toward usage behaviors

Persona Information

- Demographic / Age
- Gender
- First Name
- Age
- Photo (stock photo)
- Describe their goals, what are they aiming to achieve
- Describe their feelings
- Online activity

How many personas?

- How many features in interface?
- How many stakeholders?
- You need at least three

Personas create empathy to guide design but disappear when not believable

Jared Spool¹:

That value comes when the team visits and observes their target audience, absorbs and discusses their observations, and reduces the chaos into patterns, which then become the personas.

What's in the team's head, as they are designing, is what will make a difference in the final design.

The persona descriptions are just there to remind everyone what happened.

¹User Interface Engineering (www.uie.com)

Persona example

Nicolle - 34 Year Old Certified Hand Therapist from West Chicago, IL



"My downtime is precious; I make every spare moment count!"

Personal Background

Nicolle has been an Occupational Therapist for nearly a decade. She travels from her home in West Chicago to the city of Chicago via train daily for her job. She is married (Russ) and has two daughters ages 5 (Sydney) and 10 months (Avery) who occupy most of her time when she is not working.

Since downtime is truly a luxury for Nicolle, she likes to take advantage of her daily commute to keep up with the television series that she has purchased season passes for on iTunes. Her iPhone is her constant companion—she uses it to keep in touch with friends and family via email and text messages, but also uses it to keep up with her patient workload. In addition, she has her high-energy playlist ready to go for her lunchtime workouts at the gym in her building.

Nicolle enjoys the all-in-one aspect of her iPhone but does not like to be encumbered by the wires of her earbuds that seem to always get tangled in her pocket. She thinks that the small, single-ear Bluetooth headsets make people look self-important to the point of being ridiculous, so she is hesitant to even consider a Bluetooth option. She is looking for headphones to make her commuting lifestyle easier. As long as the right headset doesn't make her look silly and can function as headphones and a microphone for speaking into during phone calls, she could be persuaded to give them a try.

More About Nicolle

Motivators

Nicolle's standard iPhones ear buds cord continually gets tangled when stored in her pocket or caught up in her clothes and jacket when she's working out or walking to and from her office to the train station. It's a minor annoyance, but removing the annoyance would be very welcome.

ACMEblue Bluetooth Headset Trigger Point

Nicolle saw the ACMEblue on display at the Apple Store on Michigan Avenue in Chicago and decided to try them on. She liked them, but went online to Apple.com and Amazon.com to check-out the reviews online to further influence her decision.

Engagement & Activities

Personal Computer: High / Fluent; comfortable with common apps

Internet Usage: Medium / Fluent; not adventuresome, but has a personal blog, Flickr, YouTube for friends and family.

Mobile: High / Fluent; seeks new tools to help her day-to-day. Uses text messaging frequently, but not high volume.

Social Networking: Facebook & LinkedIn, no MySpace; she likes to stay in touch and aware of how her friends and professionals contacts are doing.

Television Shows: Biggest Loser, Scrubs, How I Met Your Mother, American Idol, Iron Chef and Ace of Cakes

Magazines: Stays current with Celebrity and Parenting periodicals.

Scenarios

Developing Scenarios

- From your analysis so far you might see trends
- From these "groupings" you can start to write narrative (context scenarios) based on the findings of the interviews
- Cooper (About Face) calls these archetype people used in design "personas" - they are based on research not guess work
- Cooper also uses the term goal-directed scenarios

The narrative

- Personas are the main characters in the narrative
- You create the story around these.

UCD Process

Then UCD is an iterative, repeatable, and testable process:

- Create scenarios that imagine ideal user interactions,
- Scenarios then define requirements,
- Using requirements to define the interaction wireframe
- Filling in this framework with design detail

History of Scenarios

- Scenarios developed in 1990's
- Looked at user accomplish tasks
- Look at the setting, actors or agents
- This missed looking at goals of the user
- Also users were very abstracted concept

Scenarios as used now

see Cooper et al, 2007, About Face 3.0, Ch 7

- There are three types:
 - Context or Activity scenarios
 - Key path or task scenario
 - Validation scenario

Context Scenarios

- A day in the life of a user
- Narrative form, story
- Explains goals and needs
- Not technology specific
 - Don't talk about actions or using a specific technology
 - No system behaviour

Context Scenario

- High level description of the tasks that they are currently performing
 - Don't be specific about interface details – not 'they press the button labelled ...'
- "Sequence of information exchange, actions and results" (Goodwin)
- User focused not system focused

Context Scenario

"Context scenarios should be compelling: they need to engage the imagination and help people see the possibilities, not bog them down in detail"

Goodwin p318

Let's see an example

Sasha is flying to Melbourne and needs to catch a taxi to her hotel on her arrival. She decided to withdraw some money from the ATM. When she gets to the ATM, she withdraws one hundred dollars. She decides that she wants this money in \$20 notes, so that it is easier to pay for things without needing as much change. She doesn't want a printed receipt, as the random pieces of paper just usually collect at the bottom of her bag.

Scenarios – another example of context

Sasha has just realised that she has no ingredients to make dinner tonight. She grabs her keys, and some bags and runs out to her car to get to the shops before they close. Once she gets to the shops, she parks her car, and grabs a trolley. She wanders through the shop picking up items that she may need for dinner. However, she realises that she has forgotten her shopping list at home, so she quickly calls her partner to look up the list and tell her what she needs to purchase. She hastily gets to the checkout and realises that she has also forgotten her rewards card for the supermarket. The line at the checkout is huge and she has to wait a long time. She wishes that she could pay as she goes for her shopping, so she wouldn't constantly have to be waiting at the checkout. She finally gets to the front of the line and pays for her groceries.

- What points can we pick from here that may allow some context, issues?

Why use context scenarios?

- Provides a snapshot of the critical points of user interaction
- Keeps context in which the tasks are carried out
 - by including other elements such as phone calls, forms, interruptions...
- Helps to get into the ‘user’s shoes’
- Provides a means to envisage workflow

Scenarios in the design process

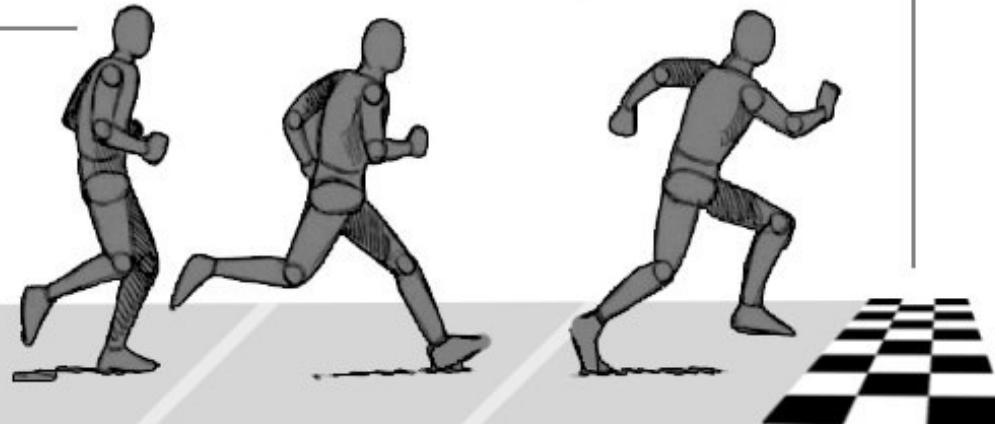
- Analysis
 - envisage a series of activities based on knowledge of user environment, user requirements, common practices & workflow
- Design
 - provide context for brainstorming leading to mock-ups and prototypes
- Evaluation
 - baseline against which to compare results

1. Persona

Defines who the story is about. This main character has attitudes, motivations, goals, and pain points, etc.

3. Goal

Defines what the persona wants or needs to fulfill. The goal is the motivation of why the persona is taking action. When that goal is reached, the scenario ends.



2. Scenario

Defines when, where, and how the story of the persona takes place. The scenario is the narrative that describes how the persona behaves as a sequence of events.

Templates

- Aspects of narrative to consider:
 - Persona – who
 - Action (user) – what
 - Sequence – when
 - User goals – why
 - Context – where

Activity

Create a context scenario for your note taker app,
using yourself as the persona

Diagrammatic Techniques to Model Tasks

Tasks and Workflow

- People perform tasks that are made up of subtasks
- People make decisions as part of the workflow
- Some workflows are followed others not, depending on certain factors

Existing Processes

It will be easier to model/document existing processes using these techniques since the structures will be inherent in the activities

Task Analysis

- Task descriptions are often used to envision new systems or devices
- Task analysis is used mainly to investigate an existing situation
- Try to understand purpose of what people currently doing

Task Analysis

- It is important not to focus on superficial activities
 - What are people trying to achieve?
 - Why are they trying to achieve it?
 - How are they going about it?
- Many techniques, the most popular is Hierarchical Task Analysis (HTA)

Hierarchical Task Analysis (HTA)

- Involves breaking a task down into subtasks, then sub-sub-tasks and so on. These are grouped as plans which specify how the tasks might be performed in practice
- HTA focuses on physical and observable actions, and includes looking at actions not related to software or an interaction device

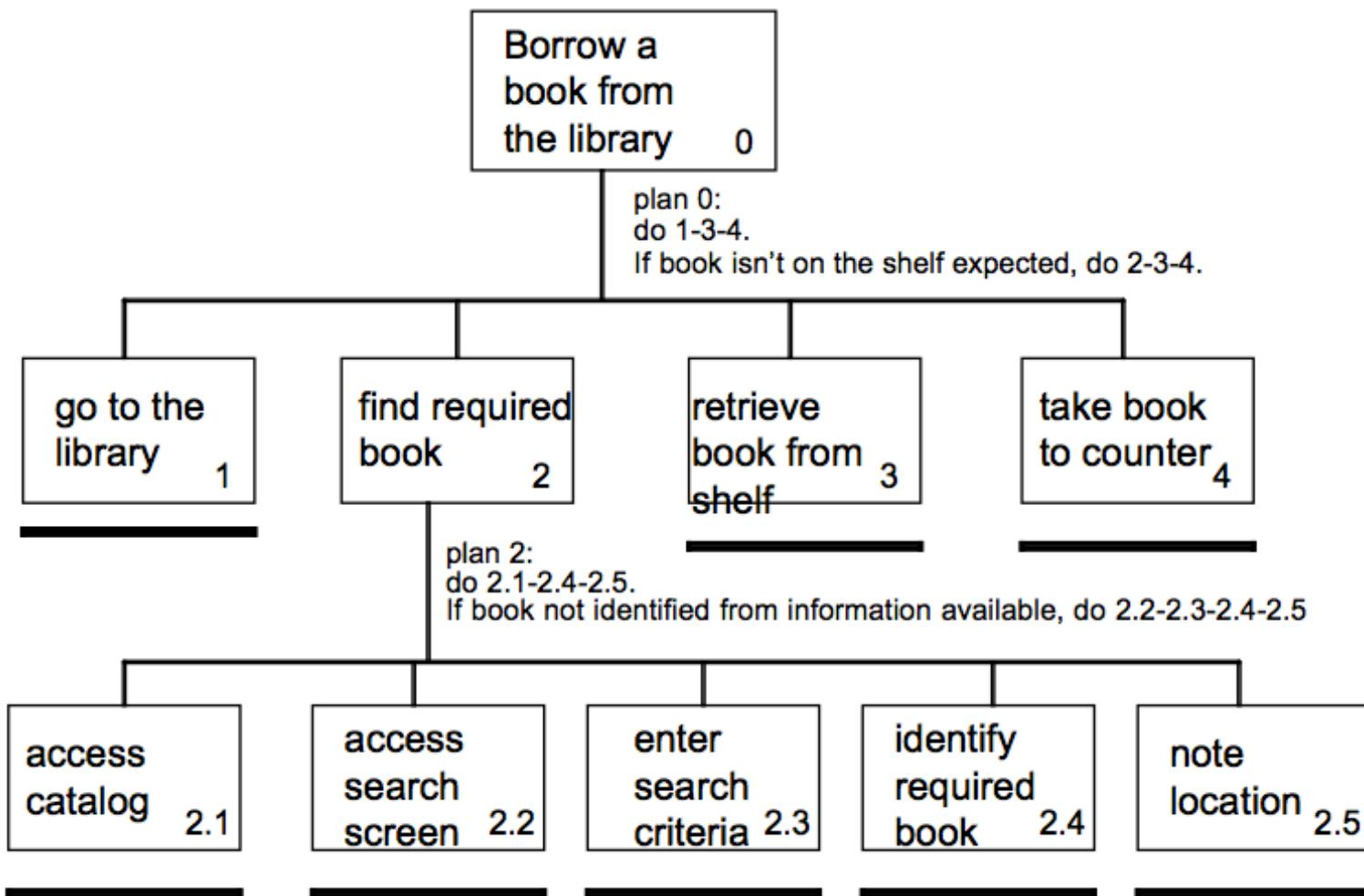
Hierarchical Task Analysis

- Start with a user goal which is examined and the main tasks for achieving it are identified
- Tasks are sub-divided into sub-tasks

Borrow a Book

In order to borrow a book from the library

1. go to the library
2. find the required book
 - o 2.1 access library catalogue
 - o 2.2 access the search screen
 - o 2.3 enter search criteria
 - o 2.4 identify required book
 - o 2.5 note location
3. go to correct shelf and retrieve book
4. take book to checkout counter



HTA Plans

- plan 0: do 1-3-4. If book isn't on the expected shelf, do 2-3-4.
- plan 2: do 2.1-2.4-2.5. If book not identified do 2.2-2.3-2.4.

HTA limitations

- Doesn't scale well to really complex tasks
- Can't model parallel or overlapping tasks
- Can't model task interruptions

Flow charts can be used to
model process through
interface

Summary

From ideas to scenario:

- Think aloud protocol
- People involved – stakeholders
- Personas/ Scenarios
- Data Gathering
- Diagrammatic Techniques

Critique existing products:

- Use these techniques