

<http://ethnographymatters.net/blog/2013/05/13/big-data-needs-thick-data/>

INFO3315 - HCI

Week 4 - prototypes

Overview

- Design skills++ - Sketch, Prototype, Heuristics
- Activity 1 – Mini-asst design
 - share and compare, review, links to your design for Ass 1
- Activity 2 – Prototyping for Assignment 1
 - Sketching, paper prototyping, broader perspectives, links to Assignment 1, next week's lab homework
- Activity 3 – Design Heuristics
 - Class introduction to Nielsen's 10 design guidelines
 - *Easy to read and hard to use well*
- Week 4 Lab
 - Share and discuss individual homework on personas' goals, tasks, rationale + decide group persona set of these
- Visitors will be helping too

| Rows | Left (leave 4 then use 7) | Mid- Left 3 seats + 4 | Mid-Right Left 3 seats + 4 | Right (leave 4 then use 7) |
|-------------|--|--------------------------------------|---|---|
| 1-3 | 8a | 8b | 10a | 16a |
| 4-6 | 12b | 12a | 10b | 16b |
| 7-9 | 13a | 14a | 14b | 16c |
| 10-12 | 15a | 14d | 14c | 16d |

Please fill front row for your class first – aim to fit in 2 rows
 Use

Overview - Design

- Explore a design space with prototyping
 - paper prototyping
 - POP – Prototyping On Paper
 - What is a prototype?
 - How and why are they useful for HCI?
 - What sorts?
 - From Lo to Hi Fidelity
 - Overview of tools
- Design guidelines
 - Fine grained
 - High level
 - Nielsen's design heuristics

...it has earned its spot as the best innovation book of this year. — *strategy + business*

Sketching User Experiences

getting the design right and the right design



Bill Buxton



What is sketching?

- It involves sets of hand drawn sketches of design ideas for the interface
- One series of these is a storyboard that explores a path through the interface
- Sketching involves rapid drawings that have the essential elements only
- Is a form of brainstorming ... creativity

Benefits of sketching interfaces

- Very low cost
- So you can quickly try many ideas
- They look immature so people are more likely to critique them
- Especially when they can compare several

Everyone can do sketching

It is a very low cost way to explore a
design space

The activity

- Get a sense of how you will be able to use your sketched interfaces
- Then do some sketches
 - Work in ~pairs, so that at least 1 person in the pair has a smart phone or laptop
 - Try to explore many different cases (eg amount of data, exploring glanceable aesthetic displays versus dull graphs, focus on steps, active time, weartime)
- Install POP/Marvel
- Check out a demo that comes with it
- Then try creating a prototype with the sketches provided to your group

Paper sketch prototyping example

Focus: persona believes they are moderately active and keen to check they maintain that

The ActivEnuf interface was designed to help you learn about your physical activity from your the data your phone automatically collects.

- Please use ActivEnuf to tell me how many steps you did each day last week
- Please use ActivEnuf to tell me which days last week you did walked at least 6,000 steps in one hour

Some examples of sketching

- Exploring just a little of the design space in a form to share and reflect
- Freeform then on phone templates
- My Paper prototype for 1 week (not a month) – just one example

ACTIVENUF

① show activity in steps

show activity against recs.

OK

S M T W Th F S

Person with days with no data

will user realise they had some differences, wear different devices?

30 mod mins

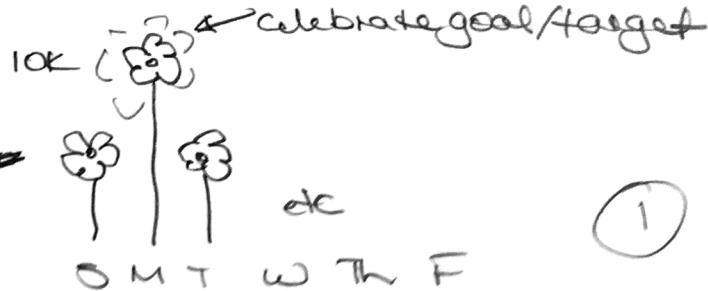
S M T W Th F S

will user realise the difference between steps and moderate minutes?

24 hrs

S M T W Th F S

data available ie 1 step in an hour



①

0000 0000
S S M T W Th F

4 weekends together (CS+Med Students)

circles like Apple etc
Person with regular data

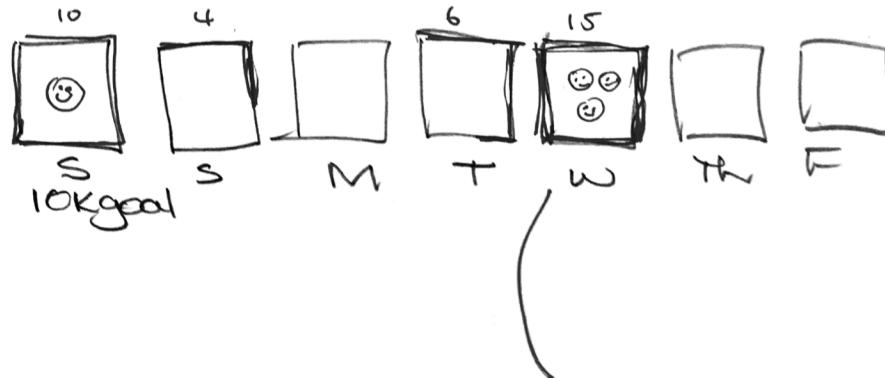
S M etc

2

get concrete

| | User 1 steps (k) | wear hours | hours with 6K steps |
|----|---------------------|---------------|---------------------------|
| S | 10 | 14 | 1 |
| S | 4 | 14 | - |
| M | - | - | - |
| T | 6 | 1 | 1 |
| W | 15 | 14 | 2 |
| Th | - | - | - |
| F | - | - | - |

Squares



Hmm - is this good
enough for
such high steps?

Influences

Anything you have seen

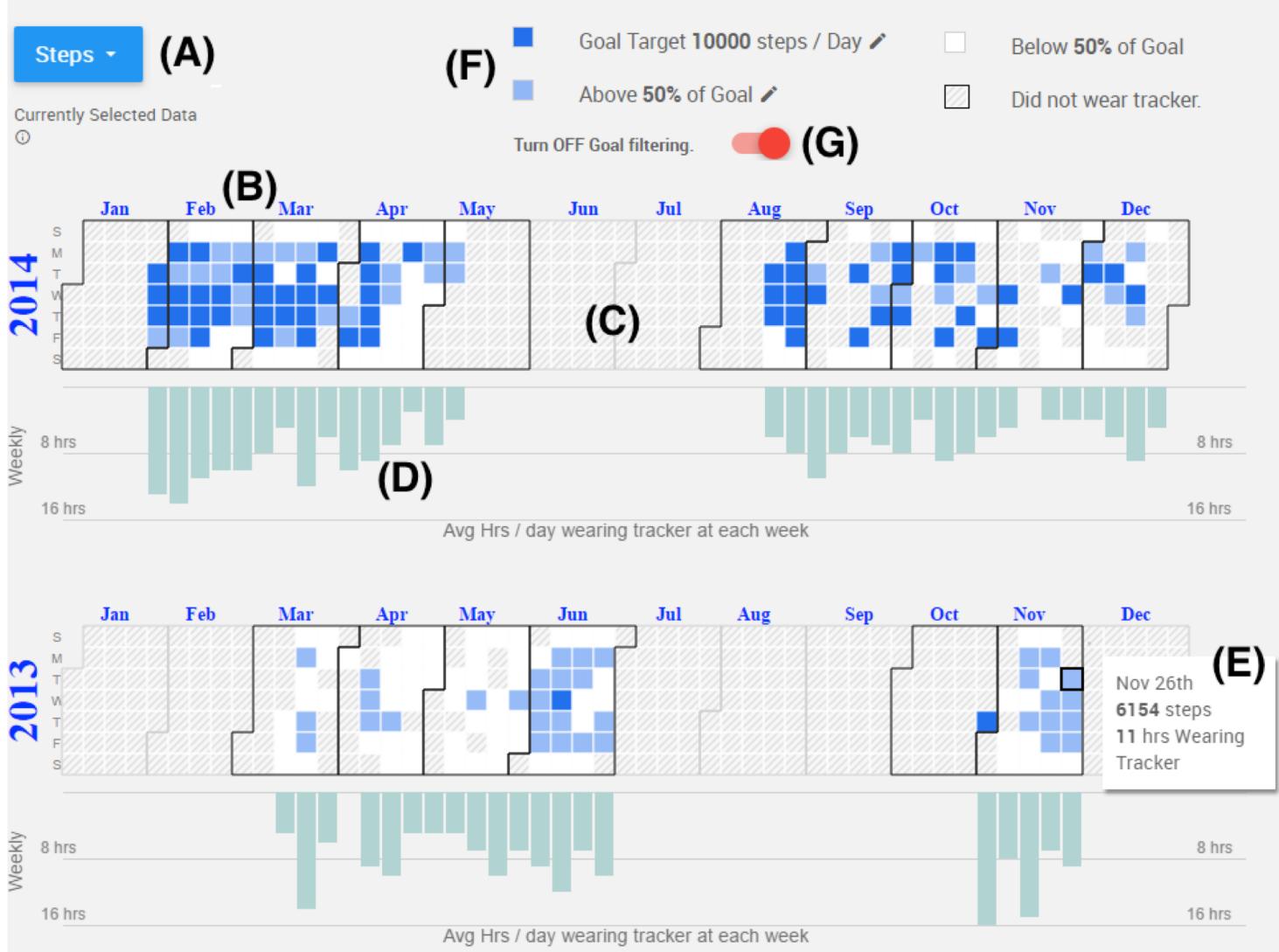
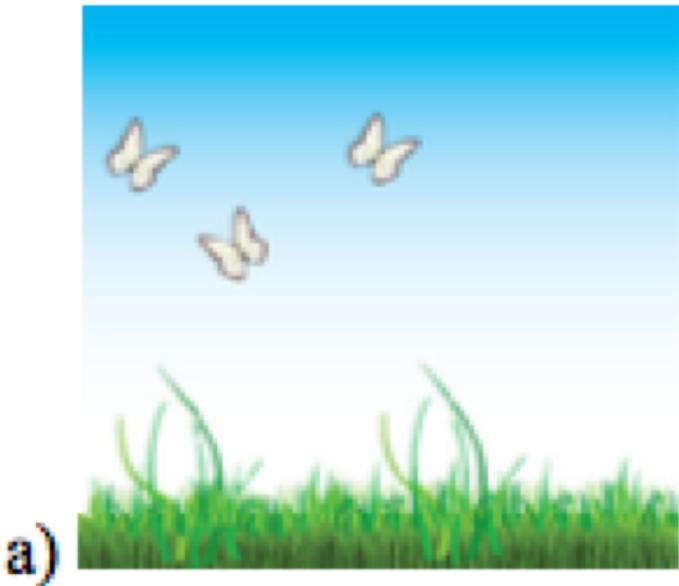


Figure 1. UbiFit Garden's glanceable display.



- a) at the beginning of the week—small butterflies indicate recent goals met; no flowers means no activity this week;
- b) a garden with workout variety;



Consolvo, Sunny, David W. McDonald, Tammy Toscos, Mike Y. Chen, Jon Froehlich, Beverly Harrison, Predrag Klasnja et al. "Activity sensing in the wild: a field trial of ubifit garden." In *Proceedings of the SIGCHI conference on human factors in computing systems*, pp. 1797-1806. ACM, 2008.

<https://www.wearable.com/apple/apple-watch-activity-and-workout-app-explained-875>



Task 1 (for the tute/lecture and required for the group contribution to the assignment)

Your goal in this task is to gain familiarity with the phone data that you will use for Assignment 1 and to start thinking about interface design. This task is limited to the core user goals relating to one month of activity. (Refer to the assignment specification for details.)

Explore the two datasets supplied for the assignment. Some ways to do this are: skim through some of the data to see what you can learn about it; use a spreadsheet to graph just one-month blocks so you can look for interesting periods.

Use the actual data to demonstrate two designs for presenting the information so that the user can achieve the concrete task for Core Goal #1. Each should include the simple mean steps per day as the average.

- Hand in:
- One design for the daily count dataset
- One designs for the hourly count dataset
- Your rationale for the designs.

Create paper prototypes

Use the phone templates

Be creative ... explore many ideas

- Find the app: POP (Prototyping on paper) <https://marvelapp.com>
- Install it for your device and create an account
- (**Note you can watch the video from the Settings**)
- Check out the demo app “Sample-TiltShift Gen 2”
 - Try using it by touching the arrow button at the bottom
 - Touch an area on the post-it, so the active regions become green
 - Try the Album
 - To exit the demo – Press and hold
- Now use the sketches provided
 - Go to the Projects screen (left icon – blue smiley)
 - click + at top to create a new project (**+ is at bottom right on Android**)
 - Type your project name + Select a phone + **Landscape** right + DONE (iphone: takes you to the screen with + and > at the bottom)
 - Select **+**
 - Use Camera to take photos (may need to follow instructions to give permissions)
 - Take first photo, then save with green button, take more photos
 - select the first one by tapping it
 - then add link following instructions then (**IOS: Done button at bottom, Android back arrow to exit link mode**)
 - Then link all 3 buttons on the second page to the third

Now create sketches to explore
ideas for your interface

Focus on your group's primary persona

- Different students consider

What is a prototype?

What is a prototype in HCI?

A prototype is a ***draft version*** of a product that ***allows you to explore your ideas*** and show the ***intention*** behind a feature or the overall design concept to users before investing time and money into development. A prototype can be anything from ***paper drawings (low-fidelity)*** to something that allows click-through of a few pieces of content to a ***fully functioning site (high-fidelity)***.

Prototyping: Low-Fidelity (lo-fi)

Quick to construct

Easy to ***explore many design alternatives***

Have limited or no functionality

Aim to show the general look and feel

Help ***communication*** and exchange of ideas with users

People may be ***more willing to criticise***

But: limits testing possible

Balsamiq

<https://support.balsamiq.com/tutorials/introvideo/>

High Fidelity (Hi-fi) prototypes

Hi-fi prototypes

Actual working system from user perspective

eg can interact but no real backend database

Partial to complete functionality.

Enables users to explore with the system.

cf. lo-fi enables users to follow just a small set of paths

But

More ***costly*** to build

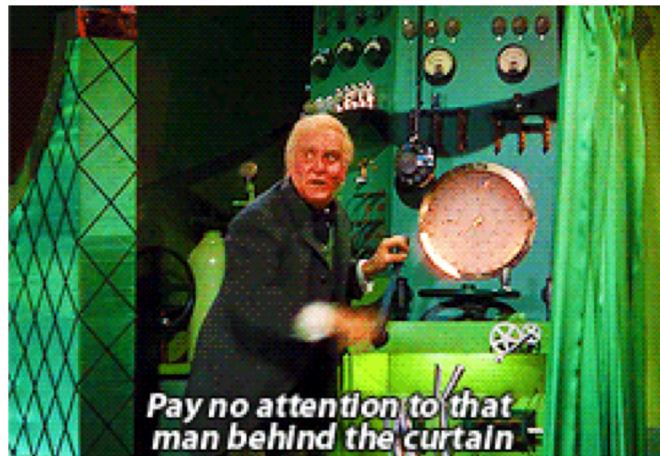
Reluctance to change the design

Users involved in evaluation often focus on superficial finish

Management may think they have a full system

A single bug can lead to a complete halt in evaluation

But there is a person behind the curtain driving the interaction



The user should be able to believe they are interacting with a computer, unaware of the “Wizard”.

When is this appropriate? Early? Late? Other?
Is this easy? Hard?

Tools for prototyping

PowerPoint –

<http://www.boxesandarrows.com/view/interactive> by
Maureen Kelly

Balsamiq

Axure is a popular commercial tool – student use

www.axure.com

Exports html

<https://moqups.com/>

<https://marvelapp.com/manage>

Coarse-grained guidelines

Challenging for less experienced
evaluators

Jakob Nielsen's 10 general principles for interaction design.

1. Visibility of system status.
2. Match between system and real world.
3. User control and freedom.
4. Consistency and standards.
5. Error prevention.
6. Recognition rather than recall.
7. Flexibility and efficiency of use.
8. Aesthetic and minimalist design.
9. Help users recognize, diagnose, recover from errors.
10. Help and documentation.

<http://www.nngroup.com/articles/ten-usability-heuristics/>

Beware:
they have very specific meanings

- **Visibility of system status** The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.
 - eg make visible the delay as a file is being loaded
 - < .1 second instantaneous, < 1 second perceptible, > 1 second let user know they need to wait
- **Match between system and the real world** The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.
 - eg use terms the user will understand
- **User control and freedom** Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. ***Support undo and redo.***
- **Consistency and standards** Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.
 - Challenges of standards
- **Error prevention** Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.

- **Recognition rather than recall** Minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.
- **Flexibility and efficiency of use** Accelerators -- unseen by the novice user -- may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.
- **Aesthetic and minimalist design** Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.
- **Help users recognize, diagnose, and recover from errors** Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.
- **Help and documentation** Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.

Visibility of system status

The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.

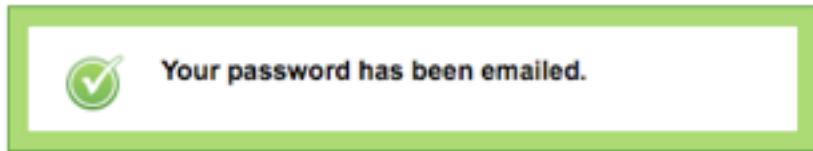
Upload the file or Cancel



1.0 BaseCamp by 37signals

The upload button is enabled, until clicked.

Then it is replaced with a progress indicator until the file has finished uploading



Theresa Neil sign in

1.2 Tick

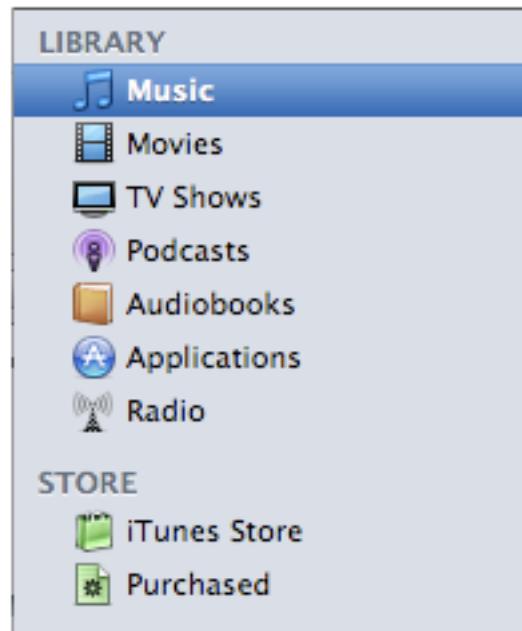
A feedback message is displayed when an action is performed

Match between system and the real world

The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.



Metaphors





Tools

User control and freedom

Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. ***Support undo and redo.***

Consistency and standards

Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.

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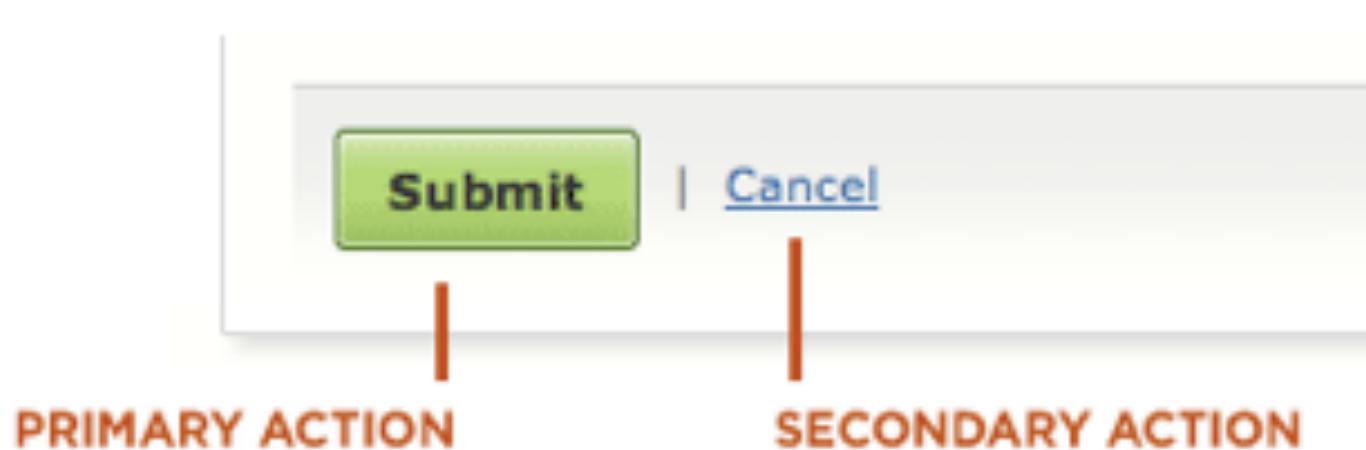
| | | | | | |
|------------------------|--|-------------------------------------|---|--|--|
| Card expires • | <input type="text" value="February"/> ▾ | <input type="text" value="2016"/> ▾ | <ul style="list-style-type: none"> Any change to this reservation (including flight, dates, or cities) is subject to a \$200.00 change fee per passenger. The new itinerary will be priced at the lowest available published fare at the time of change, which may result in a fare increase. Ticket expires one year from original date of issue. Unflown value expires one year from original date of issue. All fares are subject to change until purchased. Read more about all US Airways taxes and fees. You can cancel your reservation for a full refund within 24 hours if you booked 7 days or more prior to scheduled departure. To get a refund, you must call 800-428-4322 or 800-245-2966 (TTY). Checked baggage fees may apply. Air transportation on US Airways is subject to the US Airways Contract of Carriage. View this document in PDF format. Air transportation on a partner airline is subject to that carrier's terms and conditions | | |
| Security code • | <input type="text"/> | | <p>Please us to disclose to government to us in connection with this</p> <p>on are not permitted, except for ates and U.S. territories. d/or complaints.</p> <p>terms and conditions</p> <p>Pay now</p> | | |
| Name on the card • | <input type="text"/> | | | | |
| Country of residence • | <input type="text" value="United States"/> | | | | |
| Billing address • | <input type="text"/> | | | | |
| City • | <input type="text" value="Denver"/> | | | | |
| State • | <input type="text" value="Colorado"/> | | | | |
| Postal code • | <input type="text" value="80210"/> | | | | |

Confirm Action

Your credit card is about to be charged. Are you sure you want to continue?

OK **Cancel**

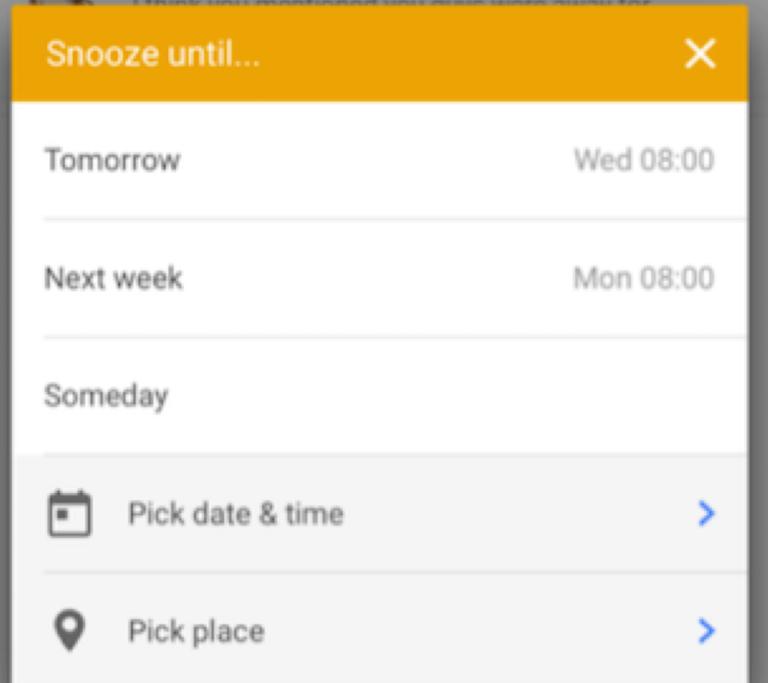
“Web form Design:Filling in the Blanks:
primary action is prominent with a larger click area.
Cancel and secondary actions are just shown as links





This weekend

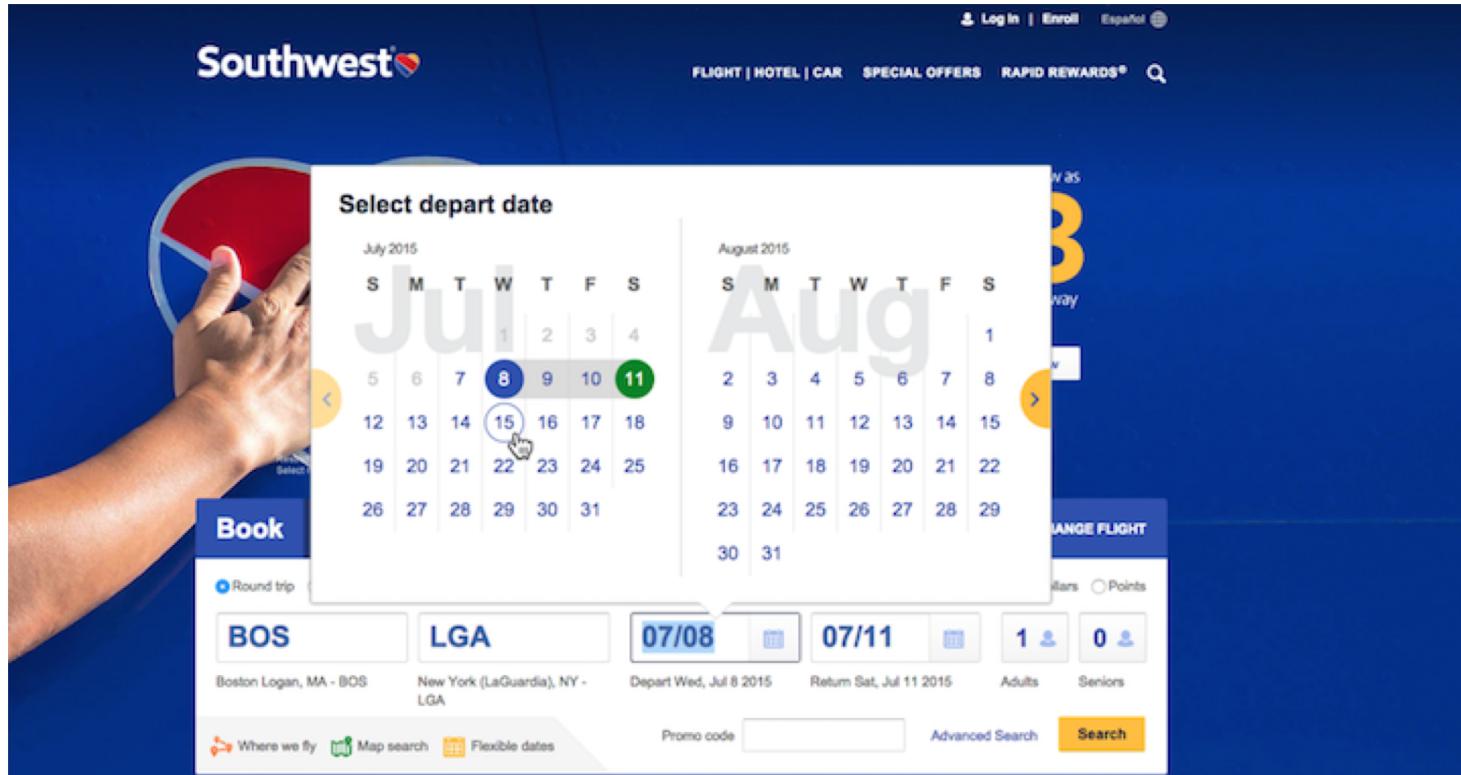
Mike F



*Google's Inbox app for iOS allows you to “snooze” an email until a later time. The **default options are sensible** and prevent typing errors for common choices.*

Recognition rather than recall

... by making objects, actions, and options visible.
The user should not have to remember information
from one part of the dialogue to another.
Instructions for use of the system should be visible
or easily retrievable whenever appropriate.



*Southwest's calendar widget for ... **helpful constraints** ... prevent ... a nonsensical date range. ... subtly uses color ... indicating date about to be changed (here, blue for departure), ... helps users **see** which field they are selecting (instead of having to keep that information in their working memory).*

Flexibility and efficiency of use

Accelerators -- unseen by the novice user -- may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users.
Allow users to tailor frequent actions

OmniFocus accelerators:

List of keyboard shortcuts and accelerators

Common Shortcuts

| | |
|-------------------------|----------|
| Add Action | Return |
| New Window | ⌘N |
| Synchronize with Server | ⌃⌘S |
| Clean Up | ⌘K |
| Planning Mode | ⌘1 |
| Context Mode | ⌘2 |
| Inbox | ⌥⌘1 |
| Quick Entry | ⌃ ⌄Space |

*Quick Entry's shortcut can be
customized in Preferences*

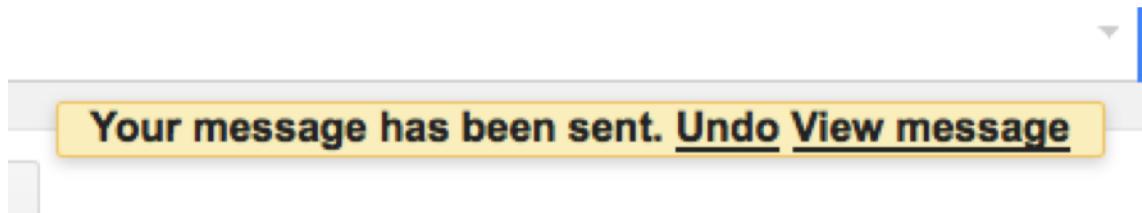
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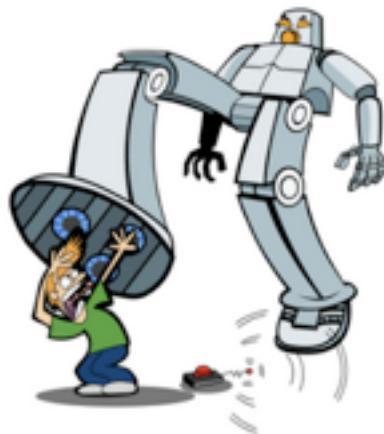
Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution

Gmail two level message abort



Humorous ‘Page Not Found’ Error

gives actual ways to deal with the error



Oh no!

It seems the page you were trying to find on my site isn't around anymore (or at least around here).

[Report it missing using my contact form](#) and I'll see what I can do about it.

Whilst you're here why not check out my [articles listing](#) or [browse my blog](#)? You never know - you may just

Help and documentation

Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.

Videos often really help

Hi I'm Barry.

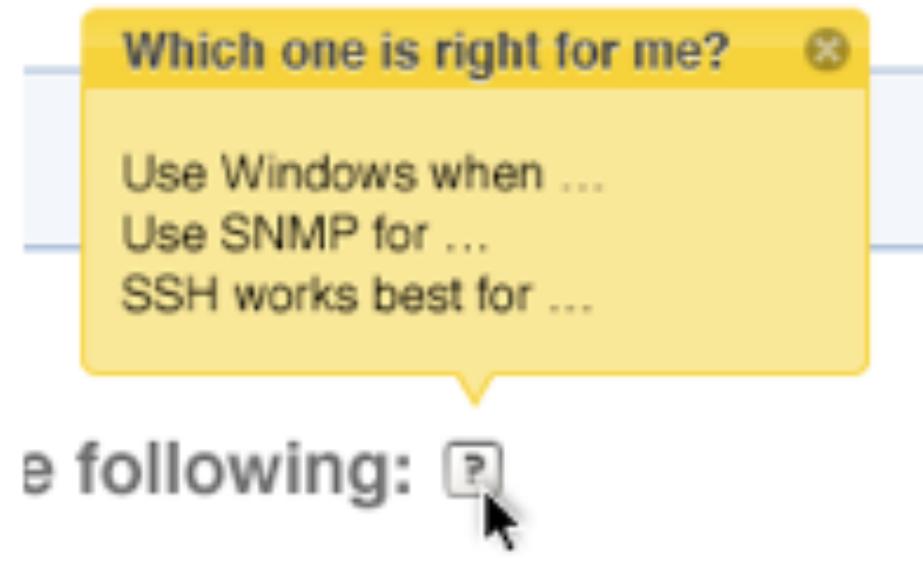
I'm helping 1000s of business owners save time and grow their online business. How?

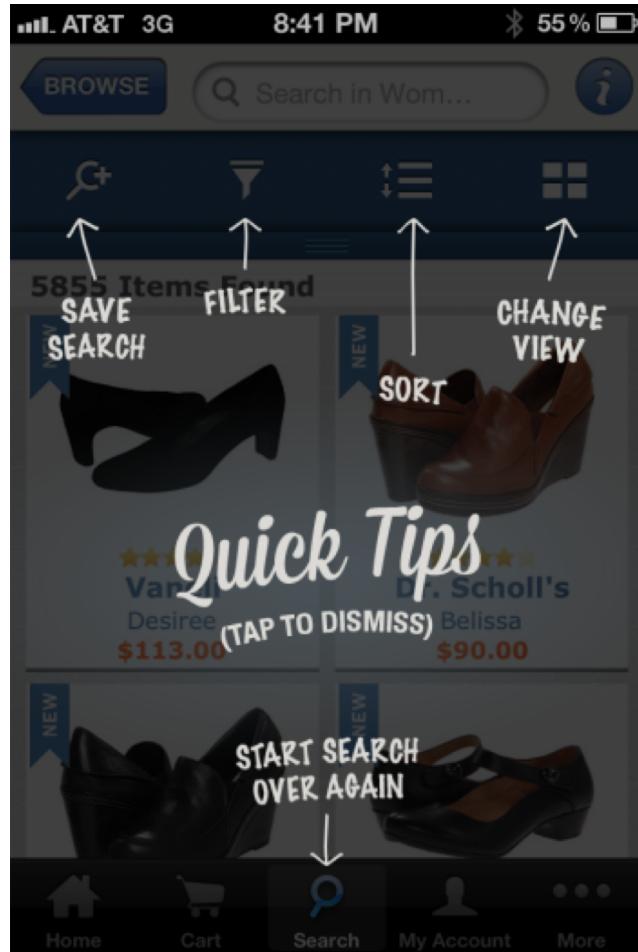
They're using GoodBerry - my integrated system that runs their website, email marketing and online shop while automatically growing their customer database. My customers have one central console with everything they need to run their business. At only \$39/month for the entire package and no contracts, shouldn't you join them?



watch the video

Tooltips





Quiz

password blacksplint

If you finish early, find another person who also did and discuss which of the Nielsen Heuristics are likely to conflict with each other and require trade-offs

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Summary of tute

Design

Sketches ... Mockups ... Prototypes

Neilsen's Design Heuristics

Overview of the lab and next mini-asst

Task 2 mini-asst ... your group's goals/tasks

Introducing Balsamiq mockups

Using this to continue to explore design ideas

Will influence you to think about delivery platform eg
mobile phone, desktop, smart watch....