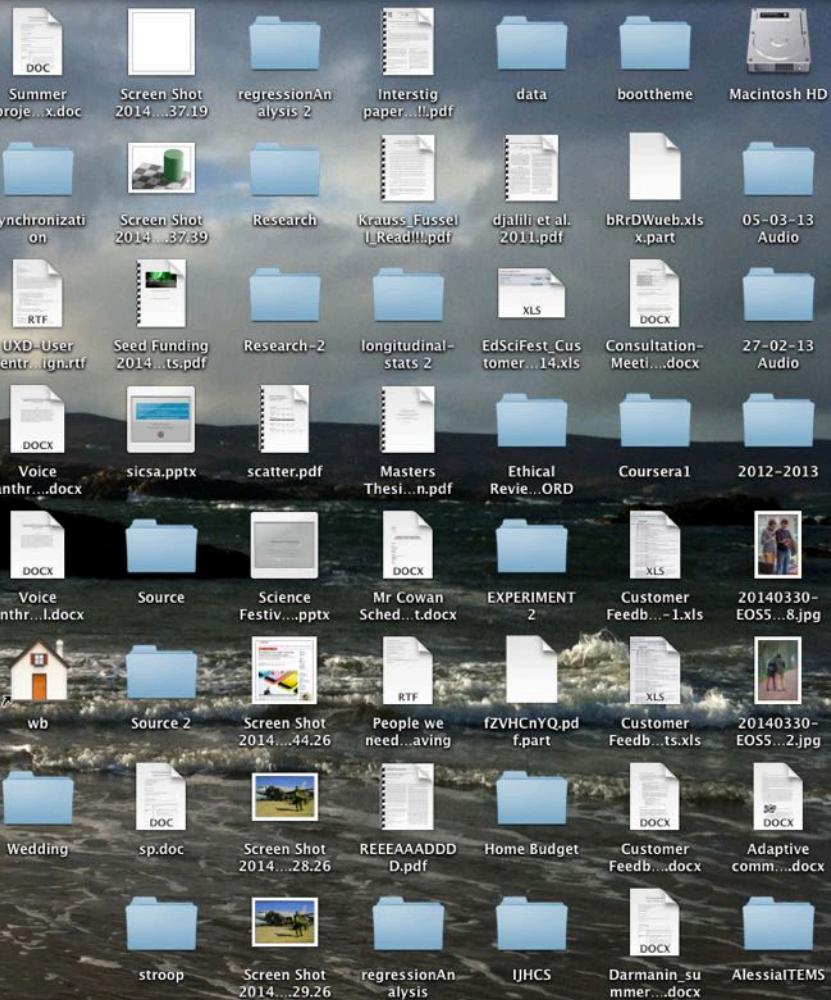


# More than just “computer” interactions

Lecture 4  
Adam Girard



# Start

Justin  
Harrison 





All-New  
**kindle fire HD**  
The perfect family tablet  
from £119 [Shop now](#)

**kindle**

Now save £10

Only £59 £69 [Shop now](#)

UP TO  
**50% OFF FASHION**  
[See More](#)



£10  
with Amazon  
= £2 for apps  
[Learn more](#)



Advertisement



30% Off Your  
First Purchase

[Learn more](#)

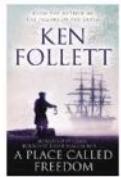
\*Terms and conditions apply



Game of Thrones  
Seasons 1-4

[Buy now on](#)

## What Other Customers Are Looking At Right Now

Panasonic TX-39A400B  
39-inch...Kindle Fire HD 7", HD Display,  
Wi-Fi...1800 Colourful Loom Bands &  
75 Clips!Kindle Fire HDX 7", HDX  
Display...A Place Called Freedom  
Ken FollettKindle, 6" E Ink Display, Wi-Fi,  
BlackGame of Thrones: Season 4  
Amazon Instant Video

# Nearby



Prentiss Brown Thea...  
★★★★★ 0.44mi



Banana Republic  
★★★★★ 0.02mi



Old Town  
★★★★★ 0.04mi



Posh Bagel  
★★★★★ 0.02mi



Steamer's Grill Hous...  
★★★★★ 0.04mi

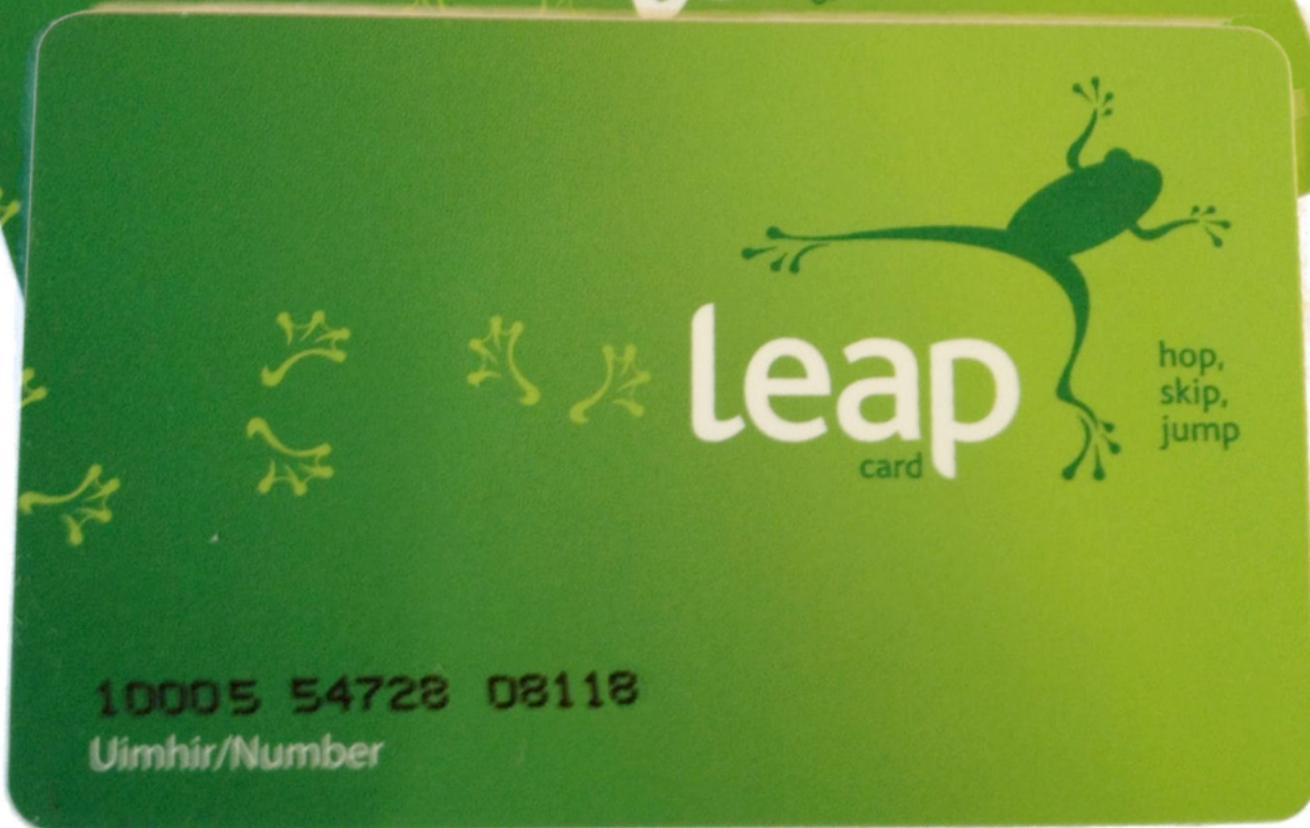


GapBody  
★★★★★ 0.04mi



Wine Cellar  
★★★★★ 0.05mi







<http://improveeverywhere.com/2008/02/25/mobile-desktop/>

In the 90's Interaction designers concentrated on this

# They were interested in....

How to structure menus

Designing easily recognised icons

Developing logical dialog boxes

Well...a lot has happened since the 90's

# Developments

Graphical interfaces

The Internet

Social Media

Mobile Phones

Wireless networking

Touch interfaces

Speech recognition

Handwriting recognition

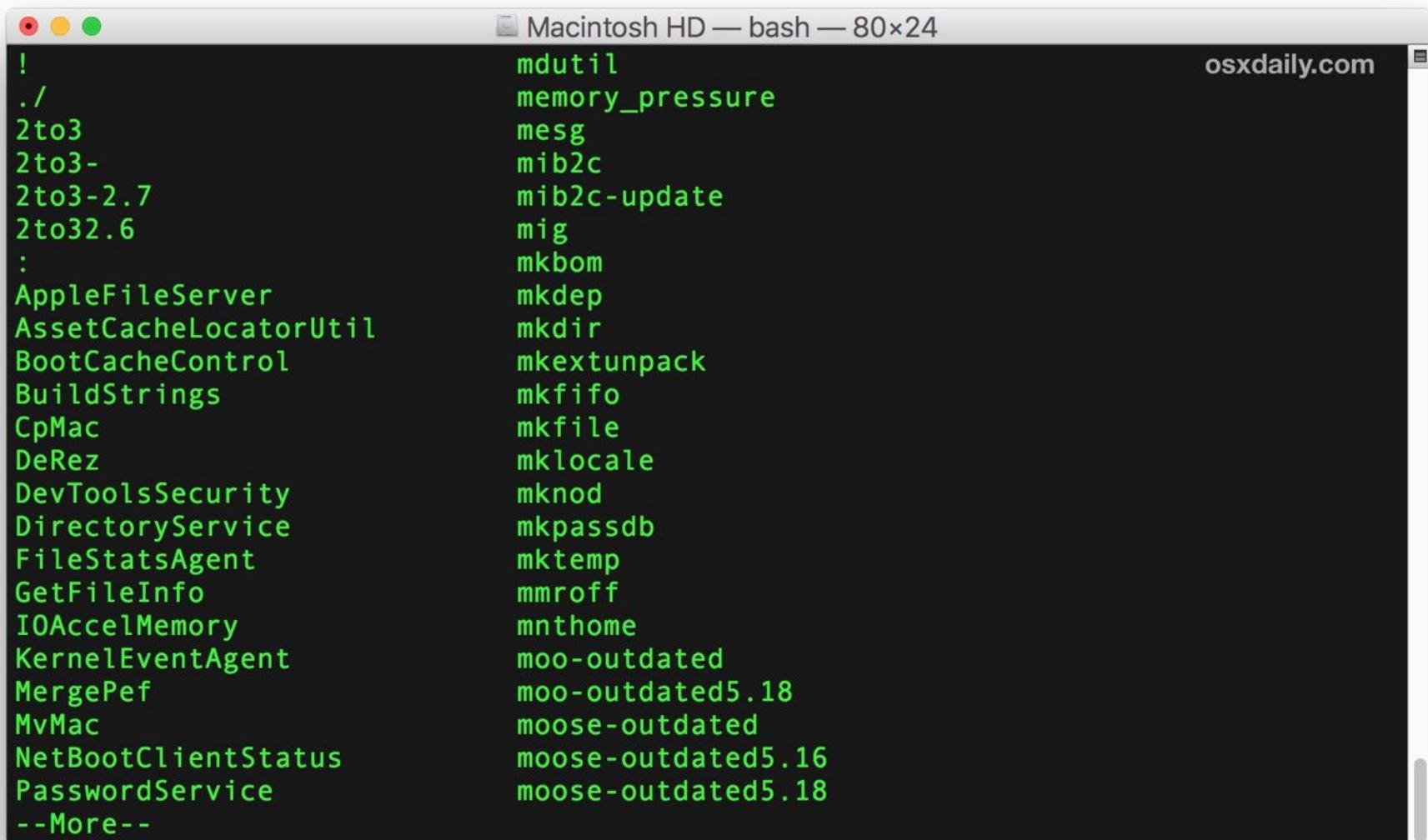
# Today's lecture

Focus on different types of interface

Different types of modalities

Considerations in each

# Command Based Interfaces



A screenshot of a Mac OS X terminal window titled "Macintosh HD — bash — 80x24". The window contains a list of command names, some of which are color-coded in green. The commands listed are:

```
!
./
2to3
2to3-
2to3-2.7
2to32.6
:
AppleFileServer
AssetCacheLocatorUtil
BootCacheControl
BuildStrings
CpMac
DeRez
DevToolsSecurity
DirectoryService
FileStatsAgent
GetFileInfo
IOAccelMemory
KernelEventAgent
MergePef
MvMac
NetBootClientStatus
PasswordService
--More--
```

The green-colored commands include: memory\_pressure, mesg, mib2c, mib2c-update, mig, mkbom, mkdep, mkdir, mkextunpack, mkfifo, mkfile, mklocale, mknod, mkpassdb, mktemp, mmroff, mnthome, moo-outdated, moo-outdated5.18, moose-outdated, moose-outdated5.16, and moose-outdated5.18.

The URL "osxdaily.com" is visible in the top right corner of the terminal window.

# Command Based Interfaces

Type commands at prompt

Abbreviations (e.g ls for list)

Key combinations (Ctrl+Alt+Del)

Fixed function keys (Delete, Shift, Enter)

Keys can be programmed by user (F keys)

# Command Based Interfaces

Superseded by GUI

Advantageous for ppl used to them

- Speed & ease of use for experts
- Precise interaction (AutoCAD)
- Good for batch operations

Loved by programmers

Used to help visually impaired interact

# Command Based Interfaces

Research focused on:

- Names of commands
- Syntax
- Organization/hierarchy
- Memorability of commands

Consistency = paramount

Naming conventions & name consistent

Example ViewPoint Document

Close Save Reset Save&amp;Edit

# XEROX 6085 Workstation

## User-Interface Design

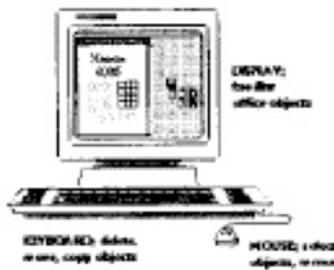
To make it easy to compose text and graphics, to do electronic filing, printing, and masking all at the same workstation, requires a revolutionary user interface design.

**Bit-map display** - Each of the pixels on the 19" screen is mapped to a bit in memory; thus, arbitrarily complex images can be displayed. The 6085 displays all fonts and graphics as they will be printed. In addition, familiar office objects such as documents, folders, file drawers and in-baskets are portrayed as recognizable images.

**The mouse** - A unique pointing device that allows the user to quickly select any text, graphic or office object on the display.

## See and Point

All functions are visible to the user on the keyboard or on the screen. The user sees filing and retrieval by selecting them with the mouse and touching the MOVE, COPY, DELETE or PROPERTIES command keys. Text and graphics are edited with the same keys.



## Shorter Production Times

Experience at Xerox with prototype workstations has shown shorter production times and thus lower costs, as a function of the percentage of use of the workstations. The following equation can be used to express this:

Year	Max	Min
1978	35.2	15.8
1980	61.1	39.9
1982	45	55
1984	30	70
1986	10	90
1988	5	95

Table 1: Percentages of use of methods.

Activity under the old and the new

0      50      100



Figure 1: Data from Table 1 drive

$$\sum_{i=1}^{10} \frac{1}{i} = 2.28$$

Workstation usage percentages Table 1 and illustrated in Figure 1. DOS 6085 users are likely to do the composition and layout, centre process including printing and di-

## Text and Graphics

To replace typesetting, the 6085 offers a choice of type fonts and sizes, from 6 point to 36 point:

Here is a sentence of 6-point text.

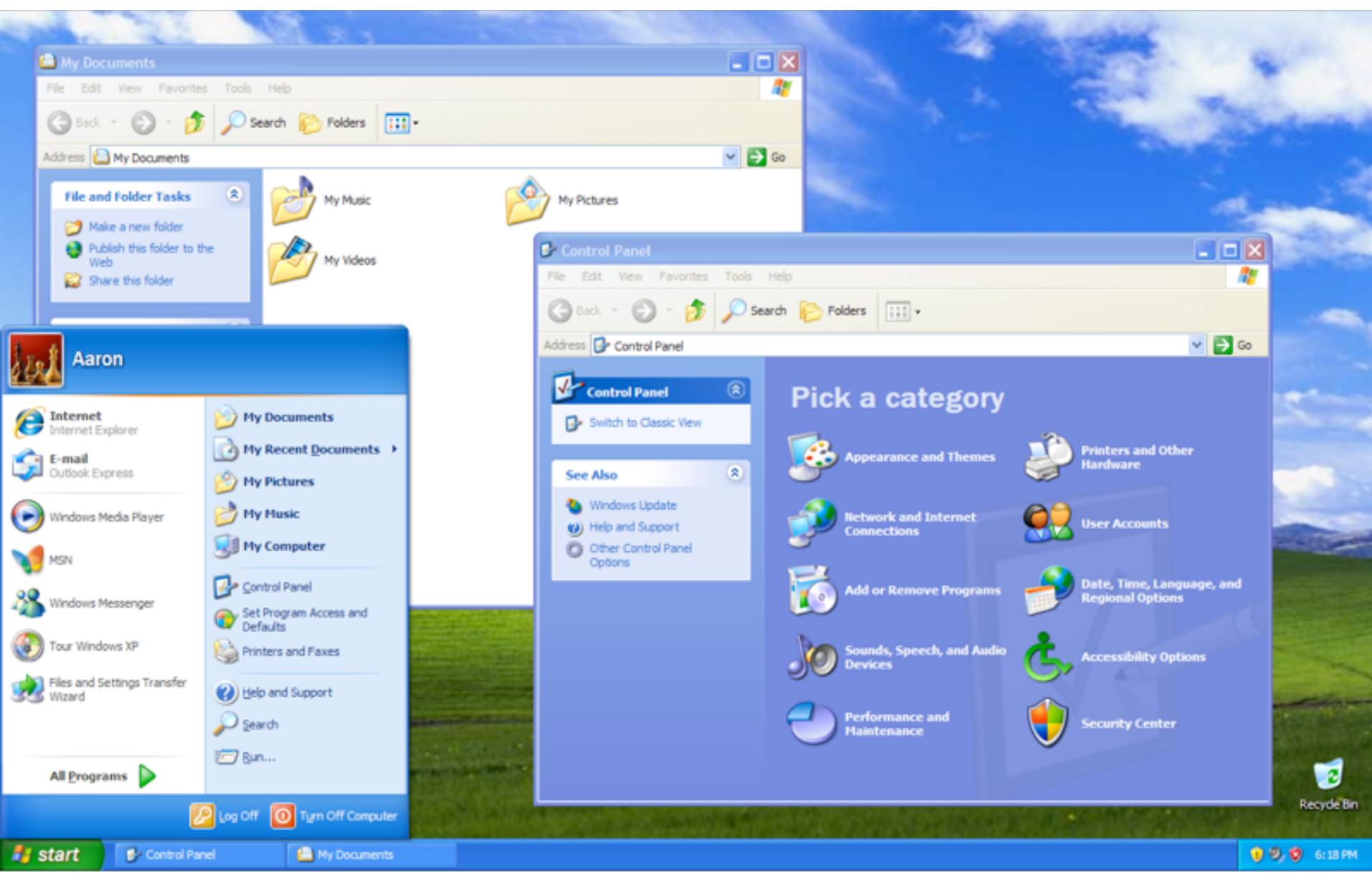
Here is a sentence of 10-point text.

Here is a sentence of 12-point text.

18-point text.

24-point text.

36-point text.



# WIMP

## Windows

- Scrollable, stretchable, openable, closeable, overlappable

## Icons

- Images representing applications, objects, commands etc; opened when clicked

## Menus

- List of options

## Pointing Device

- Mouse controlling cursor used for interaction

# WIMP & GUI

WIMP Interface basis for modern GUI

Grown from WIMP to include:

- Docks & Toolbars
- Rollovers
- 3D icons, audio icons

# Window Design

Enable multiple screens in one

Scrollbars = more info viewed

Scrollbars allow vertical or horizontal movement

# Multiple Window Problem

The image shows a Mac desktop with several windows open simultaneously, illustrating the 'Multiple Window Problem' where multiple applications compete for screen real estate.

- Word Processor:** A window titled "Voice anthropomorphism\_Final-1.DOCX" is visible on the left. It contains text about "Voice anthropomorphism, interlocutor model alignment effects on syntactic choices in human computer dialogue".
- Presentation Editor:** A "PowerPoint" window titled "Multiple Wi..." is in the center. It has a slide with the title "Multiple Wi..." and bullet points: "• Click to add text" and "• Click to add notes".
- Social Media Client:** A "Twitter" window titled "Home" is on the right. It displays a stream of tweets from users like Arts Emergency, Elizabeth Churchill, Andrew Middleton, and Guardian Science, along with their profile pictures and tweet content.
- Music Library:** A "iTunes" window titled "Songs" is at the bottom left. It lists songs such as "A La Folie", "The Hives", "Paul Weller", and "Bob Dylan".

The windows are arranged in a way that makes it difficult to focus on any one task without interacting with others, which is the core issue of the 'Multiple Window Problem'.

Solutions?

Top Sites

Engadget

Computerworld

## Top Sites

The screenshot displays the 'Top Sites' feature in the Safari browser. It shows a grid of 12 preview cards, each representing a different website. The websites visible are:

- Macworld
- Engadget
- Computerworld
- IGN
- IGN Direct
- IGN News
- IGN Video
- IGN TV
- IGN Photos
- IGN Games
- IGN Studios
- IGN Business

Each card includes a small preview of the site's content and a blue star icon in the top right corner. At the bottom of the screen, there is a banner for Macworld with the text "Apple, Mac, iPod and iPhone News, Reviews, Help and Tips | Macworld" and the URL "http://www.macworld.com/". There are also "Edit" and "Search History" buttons.

# Dialog Box

Used for:

- Confirmation
- Error messages
- Checklists
- Form filling

Less is more

- Cluttered dialog box= confusing & difficult to read

# Online Forms

## Applicant Data

\* First name:

Maiden/middle name:

\* Last name:

\* Street address 1:

Street address 2:

\* City:

\* State:

\* Zip code or postal code:

\* Country:

\* Home phone number:   
Format: # #-# #-# #-# #-#

Mobile phone number:   
Format: # #-# #-# #-# #-#

Work phone number:   
Format: # #-# #-# #-# #-#

<http://lethalsheethal.wordpress.com/2009/06/21/usability-in-online-forms/>

Where did you first learn of this opportunity and/or see this position advertised?

# Menu Design

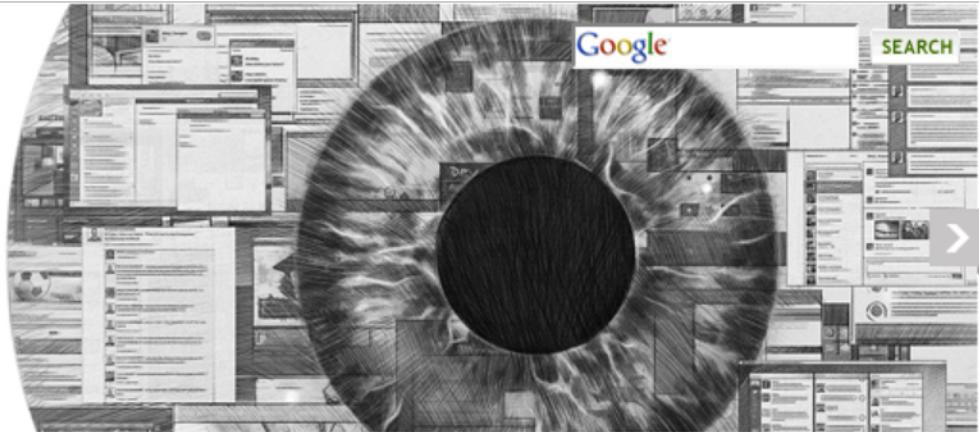
Categorize based on function

Screen size important

- Mobile lends to nested options
- Trade off as interaction takes time
- Need clear exit strategy

Present or invisible

Number of functions important



- › Prospective Students
- › International Students
- › Current Students
- › Alumni & Friends
- › Visitors
- › Staff
- 
- › President's Office
- › Colleges & Schools
- › Institutes & Centres
- › Academic Affairs
- › Research
- › Innovation
- › Sport & Societies
- › Library & Archives
- › Administration
- › Job Vacancies
- 
- › Campus Development
- › IT Services
- 
- › A - Z Directory

## Surveillance of society: the protection of people's personal data

### Study at UCD

- › Undergraduate Courses
- › Graduate Studies

### Life at UCD

- › UCD Connections - Alumni Magazine
- › Campus Development

### Expertise at UCD

- › Research Showcase
- › UCD Innovators

UCD CONNECT LOGIN:

Username

\*\*\*\*\*

LOG IN



### NEWS HEADLINES

[More News](#)



[Bloomsday honours for champions of justice and UCD Ulysses Medal for former President of Ireland, Mary McAleese](#)

Bloomsday, synonymous with James Joyce and his novel Ulysses, is the most important honours day at UCD, the alma mater of this great 20th century author. This year, UCD honours five outstanding people whose work in the area of justice has made an extraordinary contribution...



[Liu Yunshan attends laying of foundation stone for Confucius Institute at University College Dublin](#)

He Liu Yunshan, a member of the Central Politburo Standing Committee

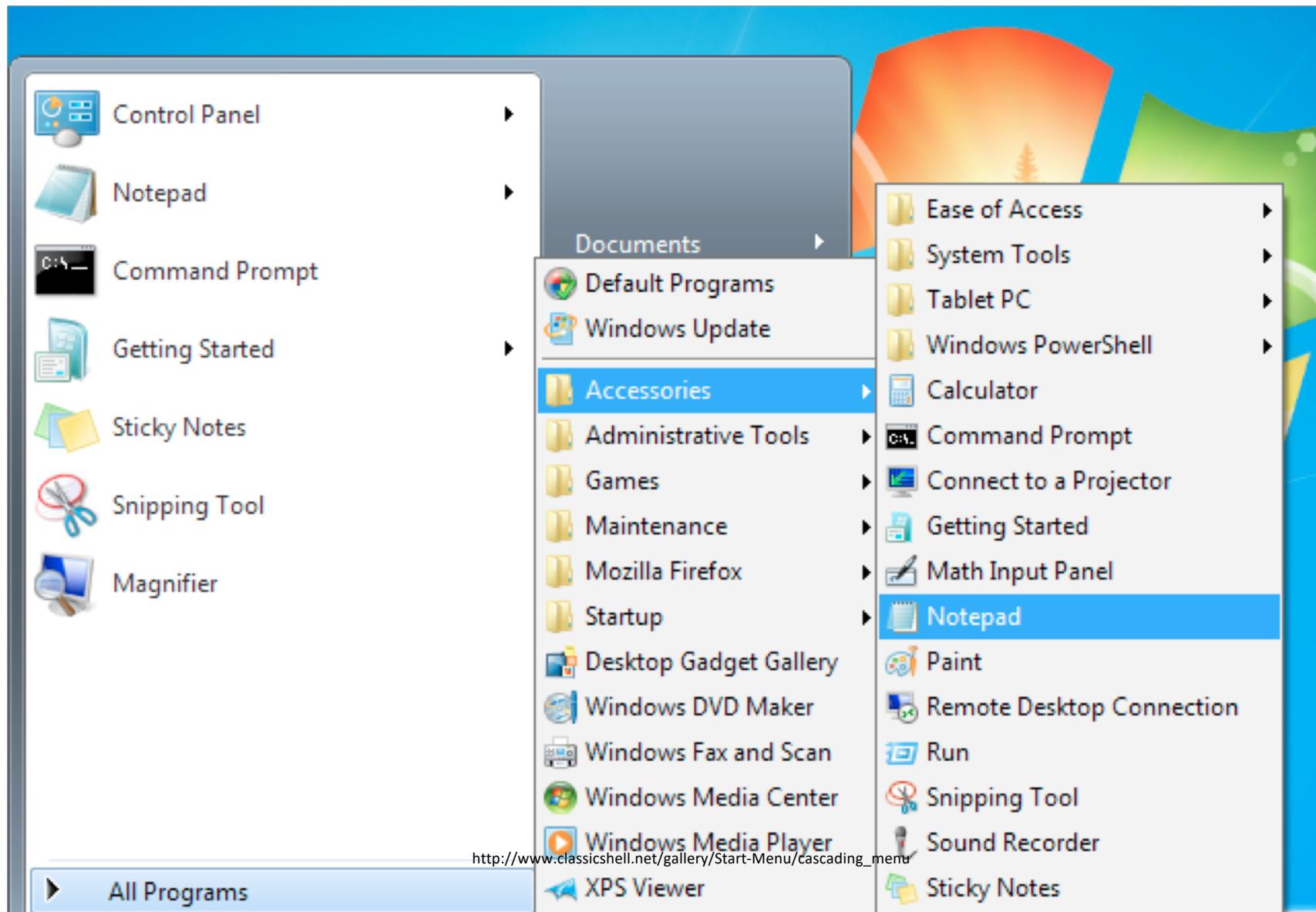
**UCD ONLINE**



**UCD Videowall:  
CAO 2014**

SOURCE

# Cascading Menus



# Contextual Menu

The screenshot shows the iTunes application window. On the left is the 'LIBRARY' sidebar with categories like Music, Movies, TV Shows, Podcasts, Books, Apps, STORE, iTunes Store, Purchased, GENIUS, and PLAYLISTS. The main area displays a list of songs in 'Songs' view, with columns for Name, Time, Artist, Album, and Genre. A contextual menu is open over a song in the list, showing options such as Play "Above The Clouds", Play Next, Add to Up Next, Get Info, Rating, Show in Finder, Show in iTunes Store, Get Album Artwork, Clear Downloaded Artwork, Get Track Names, Convert ID3 Tags..., Reset Plays, Create AAC Version, Consolidate Files..., New Playlist from Selection, Add to Playlist, and Copy.

	Name	Time	Artist	Album	Genre
173	...À La Folie	2:32	Le Nombre	Le Nombre	Rock
	A.k.a I-D-I-O-T	2:13	The Hives	Your New Favourit...	
	Above Th	Play "Above The Clouds"	Paul Weller	Days Of Speed	Rock
	Above Th	Play Next	Paul Weller	Live Wood	Indie Rock
	abra cada	Add to Up Next	The Hives	Tyrannosaurus Hives	Punk Rock
	Absolutel	Get Info	Bob Dylan	Blonde On Blonde	Rock
	Acapulco	Rating	Bantana	Hot Tamales (1969...)	Rock
	Actually It	Show in Finder	Clewild	100 Broken Windows	Alternative
	Adagio Fr	Show in iTunes Store	Cazzart	Inspector Morse, V...	Soundtrack
	Adam lay	Get Album Artwork	Choir of King's Coll...	Carols from King's...	Classical
	"Adieu, N	Clear Downloaded Artwork	Massenet	Inspector Morse, V...	Soundtrack
	Adult Edu	Get Track Names	Maryl Hall & John...	The Very Best of D...	Pop/Rock
	Ae Fond I	Convert ID3 Tags...	Various Artists	Peace, Enjoyment,...	Contempo...
	African Pi	Reset Plays	Nightmares On Wax	In A Space Outta S...	Electronic...
	After The	Create AAC Version	Saint Young	Decade [Disc 1]	Rock
	After the	Consolidate Files...	Saint Young	After the Goldrush	Rock
		New Playlist from Selection	umford & Sons	Sigh No More	Alternative
		Add to Playlist	nariwen	Aman Iman: Water...	World
		Copy			

# Menu Functions

Need to be:

- Short
- Informative enough
- Distinguishable
- Devised to reduce accidents
  - E.g. save and quit far apart

# Icon Design

Represent objects or operations

Mapping can be:

- Similar (picture of file)
- Arbitrary (x for delete)
- Analogical (scissors for cut)

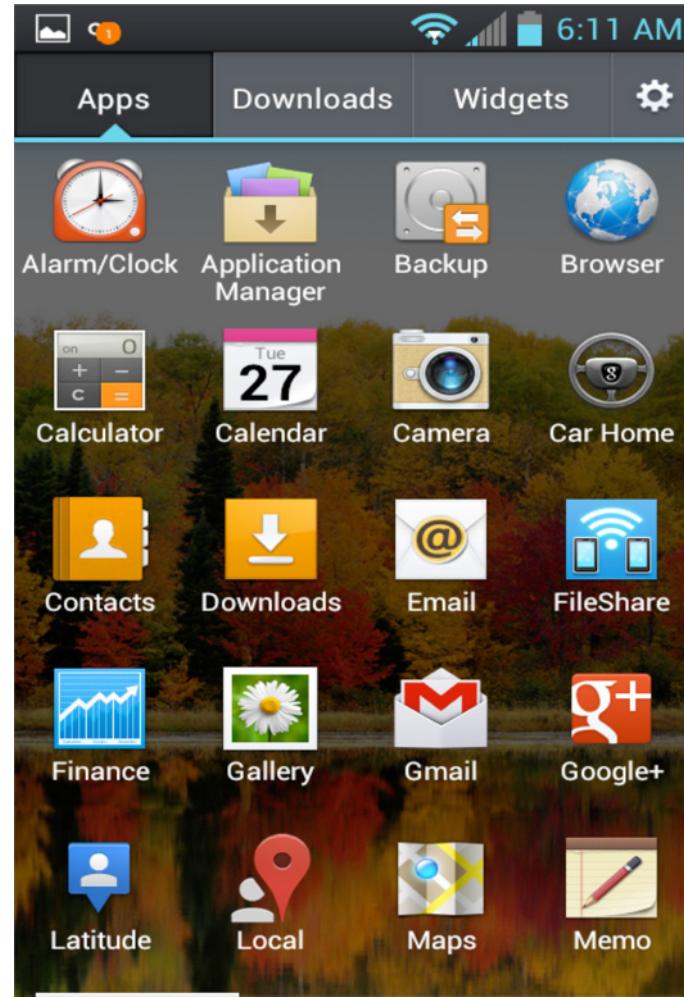


<http://en.wikipedia.org/wiki/File:Notepad.png>

# Icon Design

Consider:

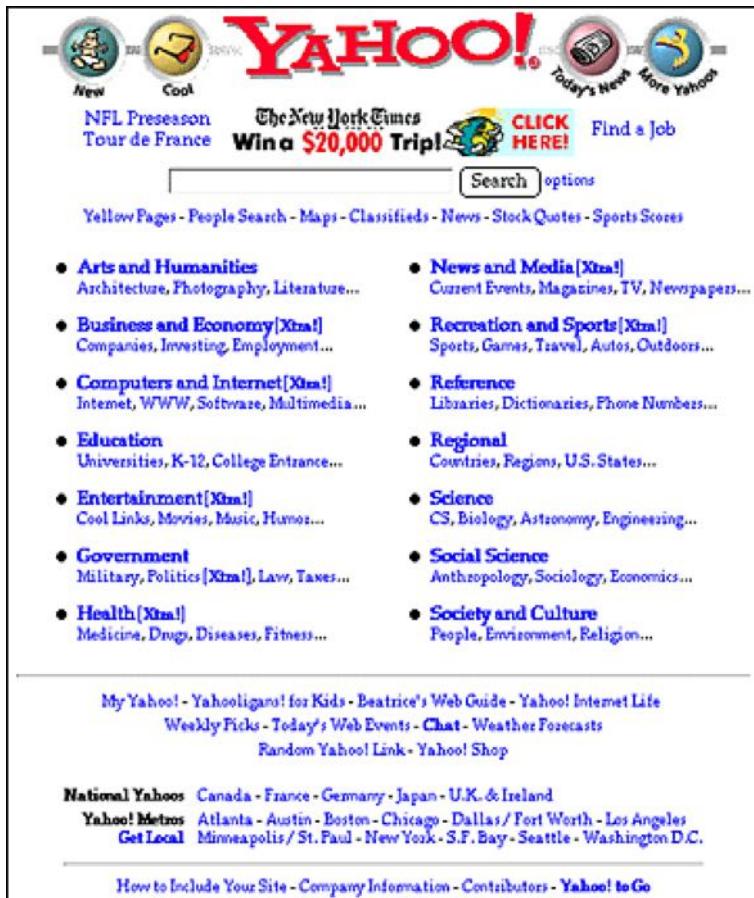
- Screen estate
- Functional mapping
- Recognition
- Distinction
- For bad icons see
  - [http://turbomilk.com/blog/cookbook/icon\\_design/10\\_mistakes\\_in\\_icon\\_design/](http://turbomilk.com/blog/cookbook/icon_design/10_mistakes_in_icon_design/)



# Websites

Early sites:

- Text heavy
- Hyperlink heavy
- Focus on navigation & info architecture
- Key usability goals:
  - Simplicity
  - Feedback
  - Speed
  - Legibility
  - Ease of use



# Websites

Since 90's

- Focus on aesthetics, usability & maintenance
- Graphical design
- Pleasurable visuals

The screenshot shows the Lifehacker homepage. At the top, there is a navigation bar with categories: IDEO, SKILLET, TWO CENTS, VITALS, OFFSPRING, and THE. Below the navigation bar, there is a large image of a bowl of soup garnished with herbs and red pepper flakes. A black banner across the image contains the text "Let's Dish About Soups and Stews". To the left of the main image, there is a smaller thumbnail image of a computer monitor displaying a video player interface. Below the main image, there is a section titled "Shared from Deals" featuring a deal for "Save 35% On The Soylent Flavor Of Your". The deal is attributed to "Shep McAllister · Yesterday 7:45pm". Below this, there is another image of a Soylent meal with a small green cube icon next to it, and the caption "Grabbing breakfast to break up the day in your own indec".

# Krug (2005)

Designer views site as:

- Piece of art
- Users will appreciate text, font, colours, icons
- Contemplate content

Users actually:

- Glance at pages
- Scan parts
- Click on first relevant link
- Ignore most of it

# Web Usability

Where am I?

- Common to arrive from search engine
- Top of page should provide that info

Where can I go?

- Navigation menu should let users see this
- Tends to be on left or in top bar

What's here?

- Content of page

# Web Usability

Many different guidelines exist

- Nielsen's web usability guidelines popular

Krug (2005)

- Break up pages into areas
- Be clear on what's interactive
- Clear visual hierarchy
- Use conventions

# Web Content Accessibility Guidelines (2008)

Designing websites for:

- Blind, deaf, immobile users or users who may not be able to process types of info easily
- Users with difficulty reading & understanding text
- Users who don't have or can't use mouse/keyboard
- Users who have small or text only screen with poor connection

# Web Content Accessibility Guidelines (2008)

Content designed for:

- Users who can't speak or understand language of content
- Users in settings where eyes, ears or hands are busy
- Users with early browser versions

# Oculus Rift – 10 reasons why all eyes are back on virtual reality

Following Facebook's \$2bn purchase of gaming firm Oculus VR, virtual worlds are becoming a reality again



# Virtual Reality

Computer generated simulation

Interacting with artificial environment  
that feels real

Images shown stereoscopically to user

Objects in VE can be interacted with

# Virtual Environment

Can create new experiences

- Eg. Can experience multiple perspectives in same situation
- Can control situation experienced e.g. fear treatments

Leads to immersion & high engagement

Sense of presence can make interaction convincing

Higher fidelity than just multimedia



[http://en.wikipedia.org/wiki/Flight\\_simulator](http://en.wikipedia.org/wiki/Flight_simulator)

# Virtual Reality

Decisions needed:

- How to reduce nausea?
- Most effective tools/ways to navigate?
- First person or third person?
- Use of body?
- How do people interact with info/objects?
- How can they communicate with others?

# Interaction Modalities

# Mobile

Not just calls.....

Email, texting, browsing, watching You Tube videos, listening to music, editing documents, getting bus times, buying goods, catching up on last night's TV, navigating a city, playing games.....

The list is endless!!!!

# Mobile



[http://en.wikipedia.org/wiki/Feature\\_phone](http://en.wikipedia.org/wiki/Feature_phone)



<http://en.wikipedia.org/wiki/File:Wikipedia-on-iphone-horiz.jpg>

# Mobile



[http://commons.wikimedia.org/wiki/File:Wikipedia\\_1st\\_gen\\_iPad\\_%26\\_iPad\\_Mini\\_03\\_2013\\_6246.jpg](http://commons.wikimedia.org/wiki/File:Wikipedia_1st_gen_iPad_%26_iPad_Mini_03_2013_6246.jpg)

# Mobile

The screenshot shows the BBC Sport app interface on an Android device. At the top, there's a yellow header bar with the word 'FOOTBALL' in white. Below it, a navigation bar has links for 'Live Scores', 'Results', 'Fixtures', and 'Tables'. A large image of Michael Owen is displayed, with a small 'iD' logo in the top left corner of the image frame. Below the image, the headline reads 'Michael Owen on a 'frustrating' season'. The date '17 February 2013 Updated 14:29' is shown. The main text discusses his first season at Stoke City. At the bottom of the screen, there are three navigation icons: a back arrow, a home icon, and a square icon.

Michael Owen on a 'frustrating' season

17 February 2013 Updated 14:29

Stoke forward Michael Owen talks about his "frustrating" first season at the Britannia, which has yielded only six Premier League substitute appearances and just one goal.

The 2001 Ballon d'Or winner speculates that being "thrust into every game for club and country" early in his career might have contributed to his injury-hit later years.

The screenshot shows the BBC Sport website's mobile view. The top navigation bar includes links for 'Sign in', 'News', 'Sport', 'Weather', 'iPlayer', 'TV', 'Radio', 'More...', and a search bar. Below the navigation, a yellow banner says 'SPORT FOOTBALL'. The main article features a large image of Luis Suarez in a white Liverpool jersey. The headline reads 'Luis Suarez: Barcelona talks productive, say Liverpool'. Below the headline, it says 'By Ben Smith BBC Sport'. The text discusses Liverpool's talks with Barcelona over Suarez's transfer. To the right, there's a sidebar titled 'Related to this story' with links to Suarez's ban and World Cup coverage. Another sidebar titled 'Featured in this story' lists various football-related BBC stories. At the bottom, there's a section for 'Best of World Cup features' with images of Lionel Messi and Neymar.

BBC | Sign in | News | Sport | Weather | iPlayer | TV | Radio | More... | Search

SPORT FOOTBALL

Home | Football | Formula 1 | Cricket | Rugby U | Rugby L | Tennis | Golf | Athletics | World Cup | Glasgow 2014 | All Sport

Liverpool > Results | Fixtures | Live Scores | All Teams | Leagues & Cups

Related to this story

Suarez handed four-month ban for bite | 01 Jul 2014 | WORLD CUP 2014

Suarez's World Cup in pictures | 28 Jun 2014 | URUGUAY

Suarez 'lost balance' in bite incident | 28 Jun 2014 | WORLD CUP 2014

Featured in this story

BBC Liverpool sport | Liverpool

BBC Sport Premier League | Barcelona

2014 World Cup groups & schedule | Fifa World Cup

2014 World Cup - BBC Features & Video

Best of World Cup features

# Mobile

- Size & Portability
  - Consider this in design
- Always on
- Interruptability
- Real time information updating/access
- Types of interaction
  - Physical buttons
  - Touchscreen

# Mobile

- What to “hard wire”
- Where to place them
- Navigation= restricted
- Text input =slow & error prone
- Trade off between visibility & clutter

# Mobile devices can sense

Accelerometer

- Speed, movement & orientation

Camera

Gyroscope

- Measures angular rotation across 3 axes

Magnetometer

- Identifies magnetic North for navigation

Ambient light sensor

Proximity sensor

# The cutting edge...

Humidity & Temperature Sensors

M7 Tracking chip

- Improved motion sensing
- Allows device tell difference between driving & walking

Gesture sensors

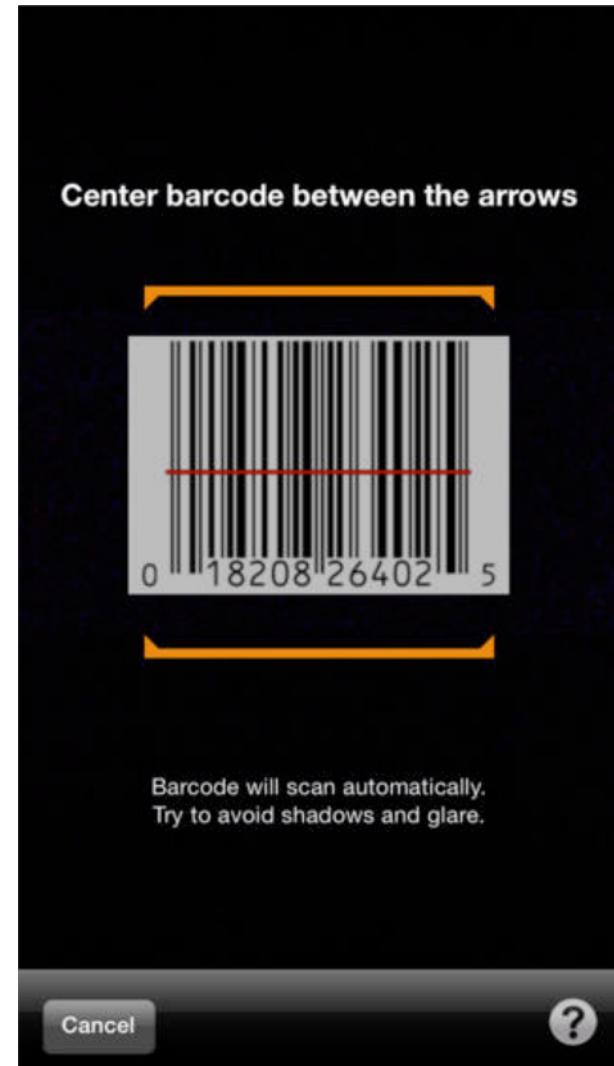
Eye Trackers

NFC

# Ways mobiles can be used



[http://en.wikipedia.org/wiki/QR\\_code](http://en.wikipedia.org/wiki/QR_code)



<https://itunes.apple.com/us/app/price-check-by-amazon/id398434750?mt=8>

# Speech

Using dialogue to conduct task with computer

Commonly used for:

- Service lines, automated telephone systems (ATS)
- Call routing

Useful for disabled users

It's not always that easy.....



# Design considerations

## Conversational dynamics

- Turn taking & Barge in capability
- System led
  - System asks questions that user answers
- User led
  - User can state naturally their instructions
  - More chance of error & expectation issues
- Error recovery
  - Clarification sought- when to do this?
- Ambient noise potential

# Pen-based devices

- Allow for writing, drawing, selecting
- Uses lightpen or stylus
- Can convert from free hand to typed
- Natural to use but awkward
- Quick & easy for annotation

# Touch

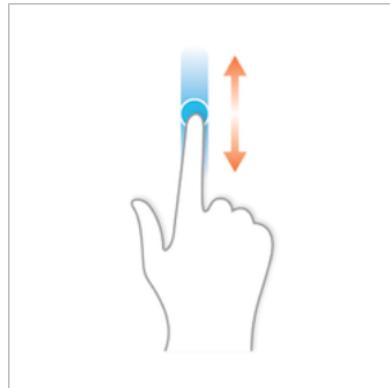


[http://en.wikipedia.org/wiki/Self\\_checkout](http://en.wikipedia.org/wiki/Self_checkout)

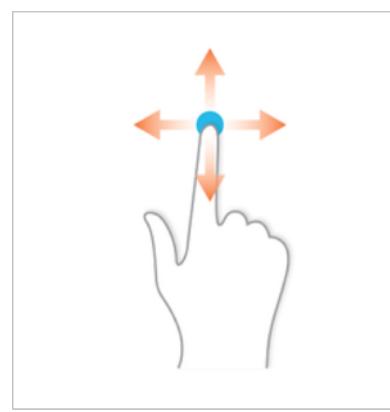


<http://en.wikipedia.org/wiki/Multi-touch>

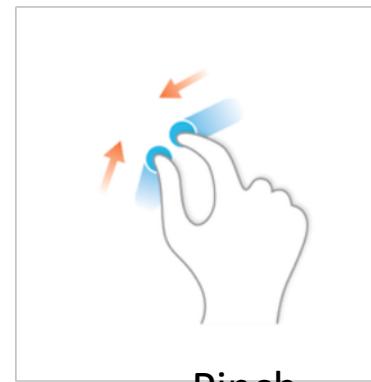
# Multi-touch Gestures



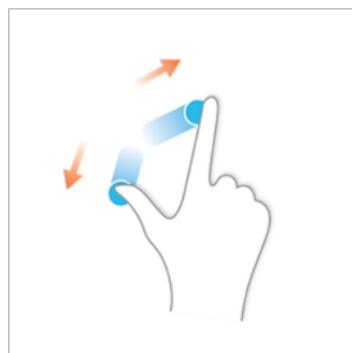
Scroll



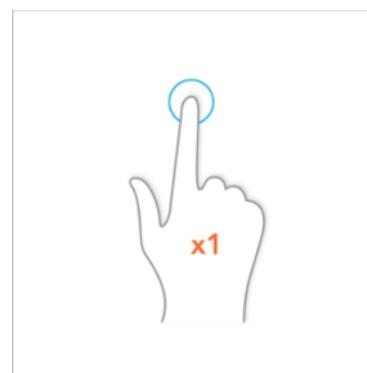
Pan



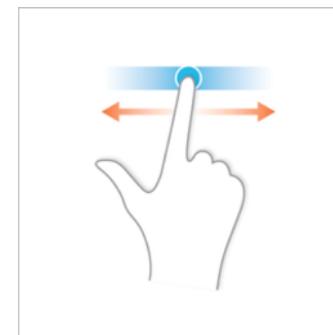
Pinch



Zoom



Tap



Flick

# Touch

- Allows for development of tactile interactive experiences
- Direct interaction with media content
- Mapping gestures to advanced functions is hard

# Mid-air gesture

Uses camera, computer vision and sensors  
(multi array microphone, depth sensor)

Detects body movements for interaction  
using 3D positioning of joints.

Remotes with accelerometers can be used  
(Wii mote)

Movements mapped onto functions

# Considerations

Delineation of each gesture

- What is the start and end point?
- Accidental or on purpose?

Mapping of gestures to functions

- Naturalness of complex gestures  
questionable

# Haptic

Tactile feedback using vibrations

e.g. Pilot's wheel on aircraft

Commonly used on games & phones

Vibrotactile feedback used:

- To alert (e.g. text messages)
- To simulate touch
- To guide physical learning (e.g instruments)

# Considerations

Length & intensity of haptic feedback

Where best to place the actuators?

Using sequence or single shot?

When to activate haptic feedback?

# Multi-modal

Combining modalities

- Eye gaze & touch (Samsung Phone)
- Haptic & touch (e.g. smartphone)
- Speech & Vision (Kinect)

Assumed that multimodal= more akin to  
multimodal world we experience

Allows people to interact in rich ways

# Tangibles

- Interactive physical objects
  - Can be lifted, rearranged, sorted, chuck!
- When use physical object, affects digital state (e.g sound, video etc)
- RFID embedded into objects
- Used for learning, design activities, urban planning

# Considerations

Affordances of physical object

- Lead to predictable uses of object
- Supports programming functions to movements
- What physical object= crucial

Linking of physical artefact & action

Where should the digital appear

- On top of the object? beside?

# Augmented & Mixed Reality

- Virtual on top of physical
- Overlay of x ray results on physical body
- Overlay of restaurant reviews on street
- Used extensively in museums

# Nearby



Prentiss Brown Thea...  
★★★★★ 0.44mi



Banana Republic  
★★★★★ 0.02mi



Old Town  
★★★★★ 0.04mi



Posh Bagel  
★★★★★ 0.02mi



Steamer's Grill Hous...  
★★★★★ 0.04mi



GapBody  
★★★★★ 0.04mi



Wine Cellar  
★★★★★ 0.05mi

# Considerations

Form, when and where to augment?

- Needs to stand out but not distract from ongoing activity

Simple and accurate alignment with physical world

Accuracy trade off in use

- E.g. military & medical need precision

# Wearables

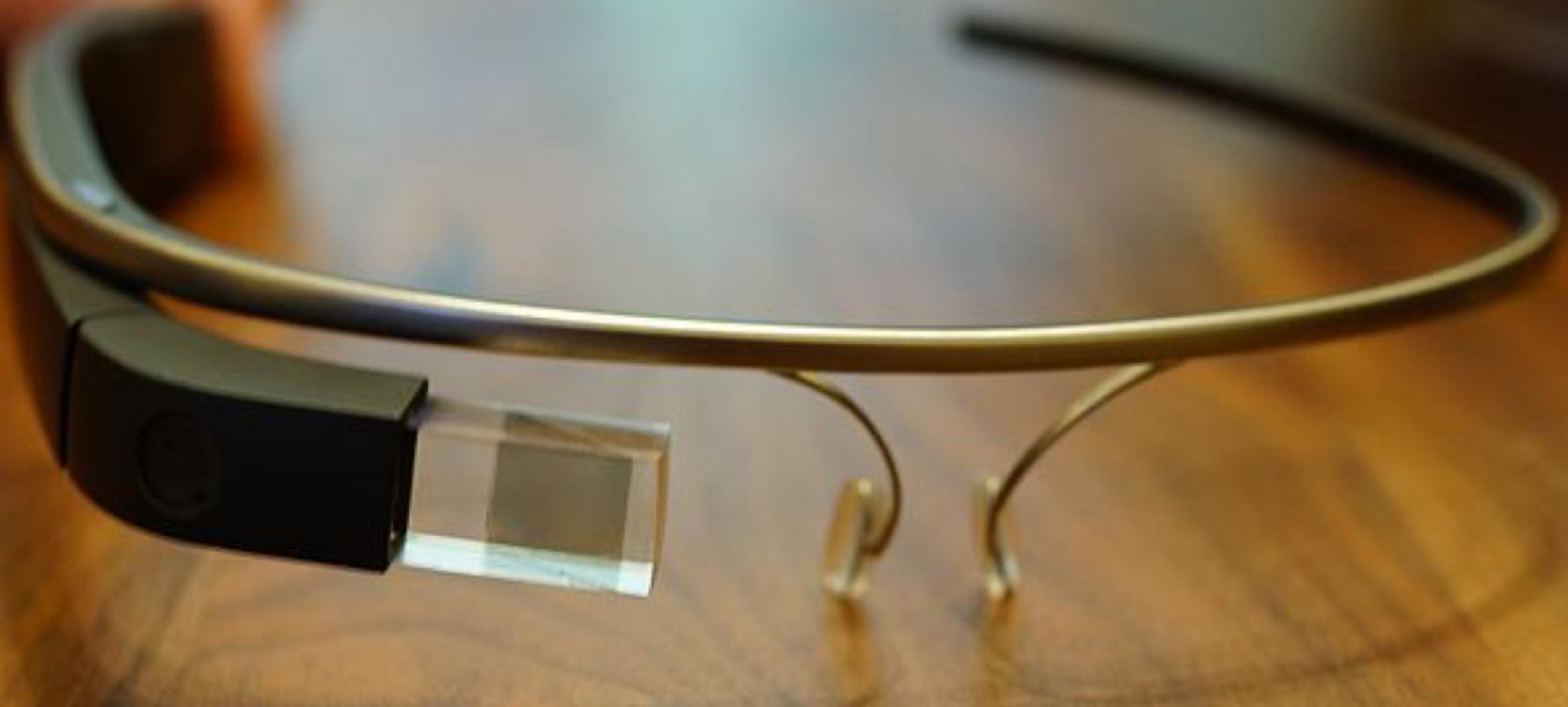
- Head mounted display technologies
  - Google Glass
- Clothing augmented with sensors, haptics
- Smart watch
- Allows interaction without need to get out handheld devices

# Considerations

- Fashion & Comfort
  - Need to look and feel good
  - Needs to be light and unobtrusive
- Hygiene
  - How to wash them
  - How will that affect sensors?

# Considerations

- How to control the interaction (speech, gesture, buttons?)
- Social acceptability
- Privacy



## Google Glass: is it a threat to our privacy?

The tech giant's 'wearable computing' project is now being tested by volunteers, meaning you might already have been surreptitiously filmed and uploaded on to Google's servers. How worried should you be?



Charles Arthur

[Follow @charlesarthur](#)[Follow @guardiantech](#)

The Guardian, Wednesday 6 March 2013 15.08 GMT

[Jump to comments \(732\)](#)

Google's Sergey Brin wearing Google Glass at New York fashion week. Photograph: [A. S. / Alamy](#)

## Google Glass – Wearable tech but would you wear it?

Rumoured to be launching later this year, the Silicon Valley giant's headset is exciting early-adopters, but what about the rest of us? Will it compromise our privacy? What will happen to the data it collects? And does it look a bit, like, lame?



Zoë Corbyn

The Observer, Sunday 6 April 2014

[Jump to comments \(153\)](#)

Zoë Corbyn's Google Glass picture of the Bay bridge view from Google Glass base camp in San Francisco. Photograph: Zoë Corbyn

[Share](#) 542[Tweet](#) 594[G+1](#) 60[Pin it](#) 3[Share](#) 141[Email](#)[Share](#) [Article history](#)**Technology**

Google Glass · Google · Computing · Smartphones · Mobile phones · Silicon Valley

**World news**

Privacy

**More features**

# From GUI to NUI

## Natural User Interface

- Allows to interact with like we do in physical world with voice, gesture etc
- Moves away from keyboard & mouse
- Exploit our existing skills
  - Talking, walking, writing, picking up things
  - No need to remember complex functions

# Is NUI better?

Depends on:

- Complexity of action
  - What is the “natural” gesture for save?
- Accuracy and speed are needed
  - Gesture can streamline but also hinder
- User Experience desired
  - NUI are seen as fun and playful

Difficult to get a mental model of a NUI

- Affordances & design cues lacking

User Group

Which is best?

Depends on situation, availability, user type, task, user habits, complexity of functions

e.g. Google Motion = awful idea (it was a Google April Fool's prank)

What are most effective for certain tasks?

...That is still being researched as we speak