



Interfaces

The only means of interaction

Two components

- Action language
- Presentation language

These are not interfaces, but components of each interface

Types of interfaces

- Natural language
- Question and answer
- Command line
- Menu
- Graphical user interface (WIMP and GUI)
- Many new types of interfaces as well (touch, sound, speech, etc.)

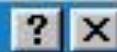
Natural language

- Allows the user to use their own natural language, without concern of syntax or structure
- Linguistic variations, even within language
 - And context, especially with text
- Interface is easy, processing is hard
- Needs to continually evolve, evidence of machine underpinnings always there
- Examples

Question and answer

- In this type of interface, machine asks YOU the questions
- Very limited in capability
- Novice v. Experienced user
 - Very guided
 - Very handholding
 - Very controlled
- Examples

AutoContent Wizard - [Generic]



- Start
- Presentation type
- Presentation style
- Presentation options
- Finish**

AutoContent Wizard

Those are all the answers the wizard needs to create your presentation!
Choose Finish to view the document.



- Cancel
- < Back
- Next >
- Finish

Microsoft PowerPoint - [AutoContentWizard.ppt]

File Edit View Insert Format Tools Slide Show Window Help

33% Common Tasks

1 **AutoContent Wizard**
user

2 **Introduction**

- State the purpose of the discussion
- Identify yourself

3 **Topic One**

- Details about this topic
- Supporting information and examples
- How it relates to your audience

4 **Topic Two**

- Details about this topic
- Supporting information and examples
- How it relates to your

Topic One

- Details about this topic
- Supporting information and examples
- How it relates to your audience

6/18/2007 Home and Learn 3

Click to add notes

Outline Generic

Interfaces.pptx

Design Transitions Animations Slide Show Review View Add-ins Help Acrobat Storyboarding Search

Layout 24 A A⁺ A⁻ B I U S ab AV Aa Font Paragraph Drawing Shape Fill Shape Outline Shape Effects Arrange Quick Styles Find Replace Select Adobe Acrobat Adobe PDF Request Signatures Dictate

Design Ideas

Microsoft PowerPoint - [AutoContentWizard.ppt]

File Edit View Insert Format Tools Slide Show Window Help

33% Common Tasks

1 AutoContent Wizard user

2 Introduction

- State the purpose of the discussion
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3 Topic One

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4 Topic Two

- Details about this topic
- Supporting information and examples
- How it relates to your

Click to add notes

Outline Generic

6/18/2007 Home and Learn 3

Topic One

- Details about this topic
- Supporting information and examples
- How it relates to your audience

Command line

- Uses a relatively non-descript prompt
- Keys, especially key combos, can be assigned to functions
- Benefits?
- Difficulties, especially in terms of usability metrics

Command-based

- Commands such as abbreviations (e.g. ls) typed in at the prompt to which the system responds (e.g. listing current files)
- Some are hard wired at keyboard, others can be assigned to keys
- Efficient, precise, and fast
- Large overhead to learning set of commands

*** COMMODORE 64 BASIC V2 ***

64K RAM SYSTEM 38911 BASIC BYTES FREE

READY.
LOAD"\$",8

SEARCHING FOR \$
LOADING
READY.
LIST

0	DISK	65	10
1	"DOS65"		PRG

0 BLOCKS FREE.
READY.
LOAD"DOS65",8,1

SEARCHING FOR DOS65
LOADING
READY.
RUN

CA Command Prompt

Microsoft Windows [Version 10.0.15063]
(c) 2017 Microsoft Corporation. All rights reserved.

C:\Users\Darren>cd\

C:\>_

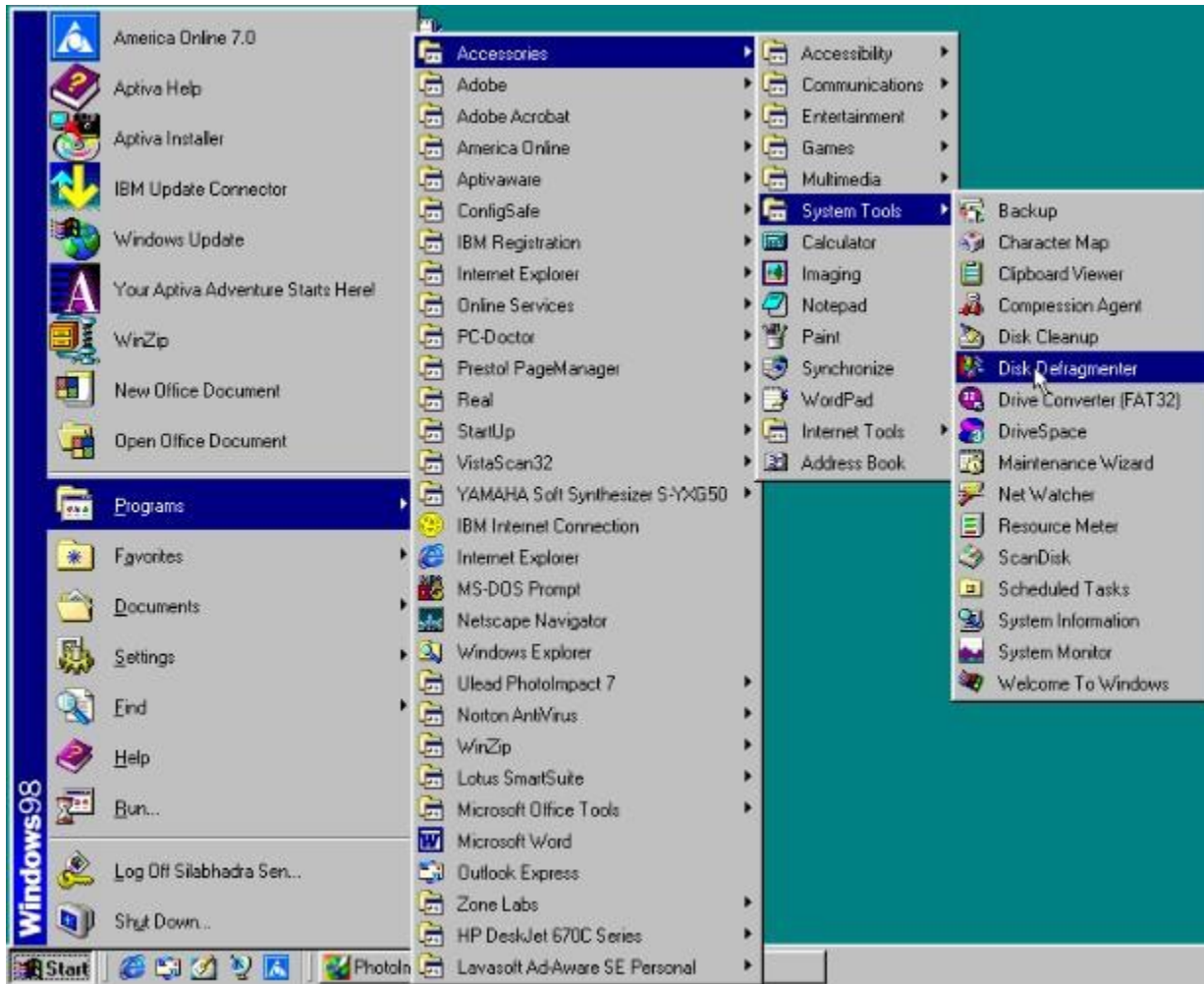
Menus

- Multiple interface styles
 - Cascading, flat lists, drop-down, pop-up, contextual, etc.
- Flat menus
 - good at displaying a small number of options at the same time and where the size of the display is small, e.g. iPods
 - but have to nest the lists of options within each other, requiring several steps to get to the list with the desired option
 - moving through previous screens can be tedious

Expanding menus

- Enables more options to be shown on a single screen than is possible with a single flat menu
- Flexible navigation, allowing for selection of options to be done in same window as parents / main program
- Most common are cascading menus
 - Primary, secondary, tertiary and more
 - Requires precise mouse control, or frustration ensues
 - Can result in incorrect selection, overshooting
 - Must weigh usability versus number of options, categorizations, and depth versus breadth

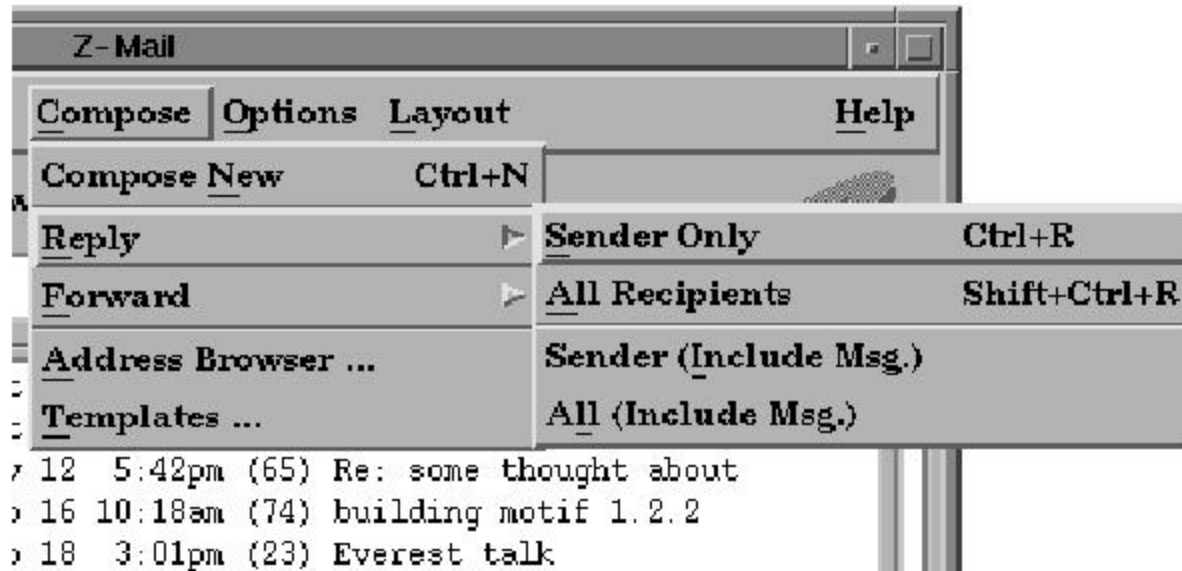
Cascading menu





Cascading menu

Cascading menu

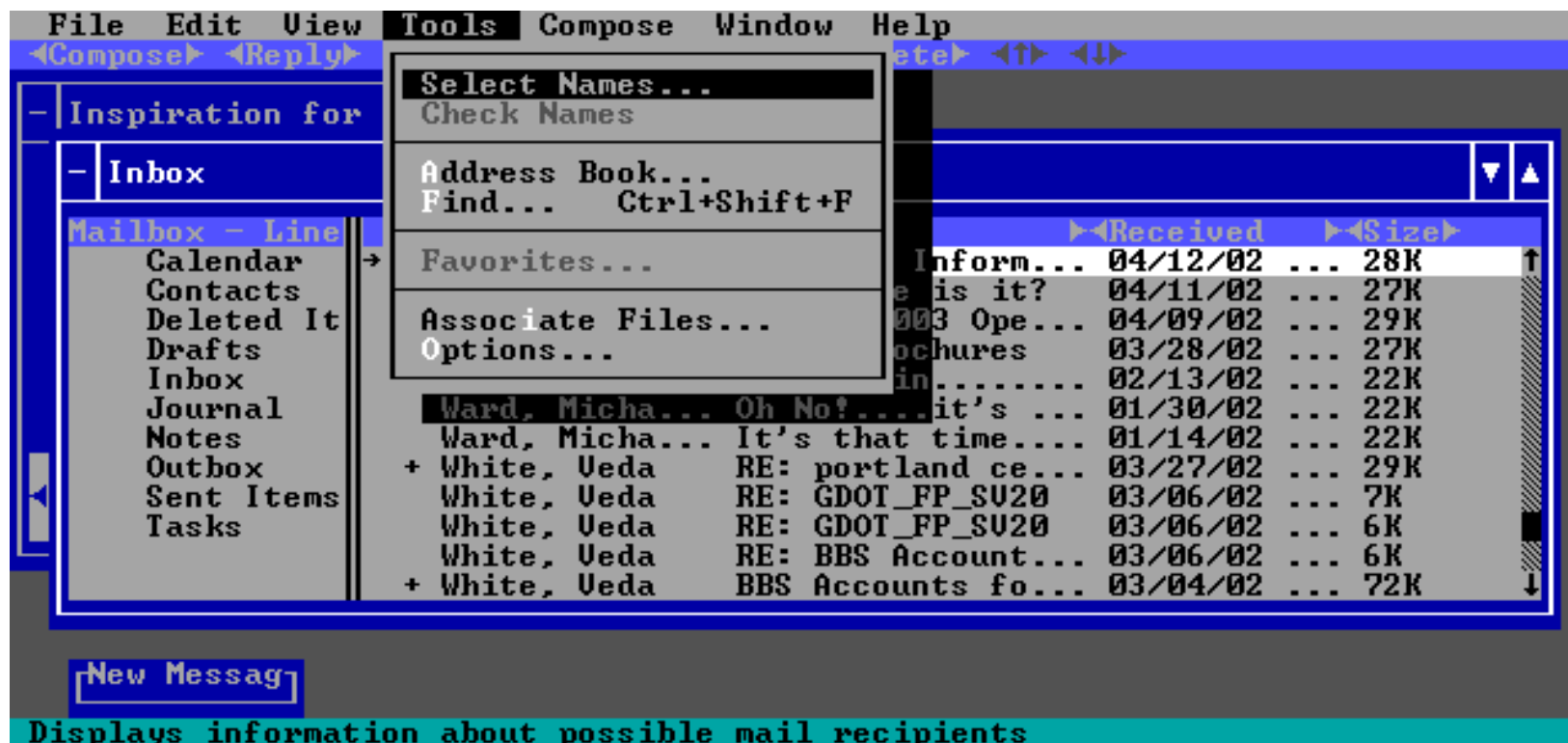


Contextual menus

- Provide quick access to often-used commands that make sense in terms of the current task
- Usually accessed via right-click
- Helps overcome navigational and usability issues with standard cascading menus
- Very helpful for novice users in limiting and guiding them (safety)
- Utilizes the magic pixel (not yet)

Standard menus

- With standard menus, consistency and selection method are concerns
- Cascades usually happen through new sub-menus
- That's inherently ok, however in practice can be difficult to see where you were, there's no breadcrumbing
 - Home & Kitchen > Furniture > Living Room Furniture > Tables > Sofa & Console Tables
- Still used surprisingly often



Design issues

What are best names/labels/phrases to use?

Placement in list is critical

- Quit and save need to be far apart

Choice of menu to use determined by application and type of system

- flat menus are best for displaying a small number of options at one time
- expanding menus are good for showing a large number of options

WIMP

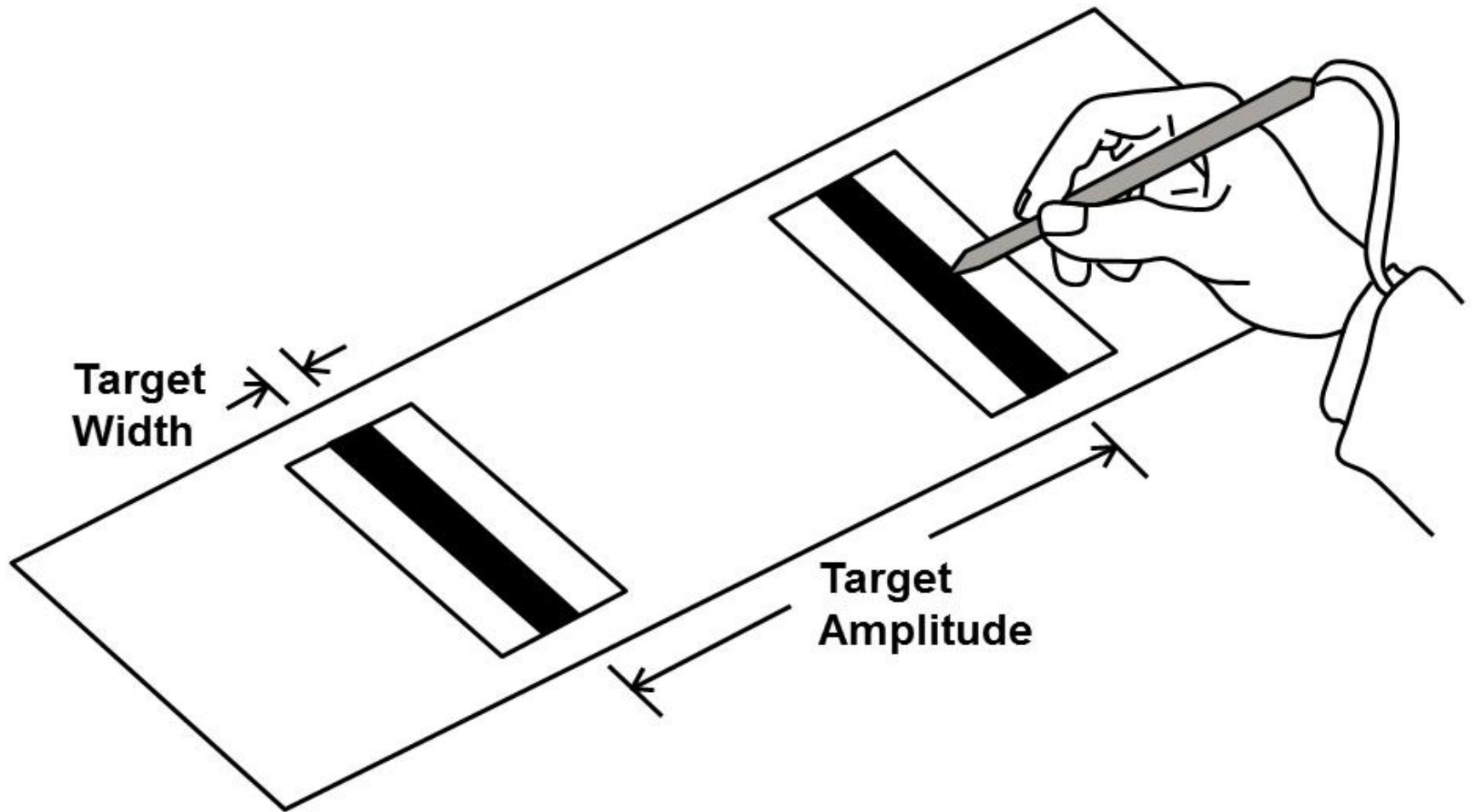
- **Windows**
 - Can Be scrolled, stretched, overlapped, opened, closed, and moved around using the mouse (even the keyboard), categorize functionality
- **Icons**
 - Represent applications, objects, commands and tools that would activate when clicked on
 - logical v. conceptual
- **Menus**
 - Offering lists of options that can be scrolled through, selected, and serve as list of shortcuts
- **Pointers**
 - Mouse controls cursor as entry to interface, stylus, finger



Fitts' Law

$$MT = a + b \log_2 \left(\frac{2A}{W} \right)$$

- 1954
- Not originally for HCI...
- ...but now one of the most used and studied HCI principles
- MT: Movement Time
- a and b: Context and device dependent
- The magic pixel, and most valuable screen real estate



**Target
Width**

**Target
Amplitude**

Fitts' Law

$$MT = a + b \log_2 \left(\frac{2A}{W} \right)$$

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Time to hire a carpet cleaner?

Schedule ▾

Toys & Games ▾ Puzzles ▾ Jigsaw Puzzles



Roll over image to zoom in

Spin Master Games

Perplexus Twist

★★★★★ 343 customer reviews | 16 answered questions

Price: **\$29.98** ✓prime

Get \$70 off instantly: Pay \$0.00 upon approval for the Amazon Prime Rewards Visa Card.

Note: Available at a lower price from other sellers, potentially without free Prime shipping.

Only 6 left in stock - order soon.

Want it tomorrow, Aug. 25? Order within **3 hrs 20 mins** and choose **One-Day Shipping** at checkout. [Details](#)
Sold by [Zerbert](#) and [Fulfilled by Amazon](#). Gift-wrap available.

- Perplexus Twist is the ultimate 4D labyrinth within a sphere!
- Inside the Perplexus Twist you'll need to navigate through 30 Challenging Barriers!
- Flip twist & spin your way to the finish line! Perplexus is easy-to-use, but hard to master!
- Perplexus Twist is the ultimate challenge for ages 5+
- Includes: 1 Perplexus Game Sphere

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Vintage Radio Shack TRS-80 Model 3 - Unmolested 16k Base Model - Tested & Works

2 viewed per hour

Item condition: --
"Normal wear consistent with normal use"

Facebook Twitter Pinterest | Add to watch list

Seller information
chasearooauctions (3695 ★)
100% Positive feedback



Follow this seller
See other items

Price: **US \$245.00**

Buy It Now

Add to cart

Best Offer:

Make Offer

12 watching

- Add to watch list
- Add to collection

30-day returns

Located in United States

Best offer available

Shipping: **\$99.99** Standard Shipping | See details
Item location: Sylvania, Ohio, United States
Ships to: United States

Delivery: Estimated between **Mon. Aug. 28** and **Tue. Sep. 5**

Payments: **PayPal** VISA Mastercard American Express Discover
Credit Cards processed by PayPal

PayPal CREDIT

6 months to pay on \$99+. Apply Now | See terms
See details

Returns: 30 days money back, buyer pays return shipping, 15% restocking fee may apply | See details

Guarantee: **ebay** MONEY BACK GUARANTEE | See details

Get the item you ordered or get your money back.
Covers your purchase price and original shipping.



Have one to sell? Sell now

[◀ Back To Mens Casual Shirts](#)



Polo Ralph Lauren Men's Hampton Embroidered Shirt

★★★★★ [1 Review](#)

Super Buy

Sale \$39.99 Reg. \$98.50

Sale ends 10/2/17

Color : **White/Indigo**



Size

[Size Chart](#)

[View
More](#)

Runs true to size. [Find Your True Fit](#)

Qty:

ADD TO BAG

ADD TO LIST

 **GIFTNOW**

Availability

Select color & size above.

Product Details

customers also
shopped



\$89.50
Sale \$39.99



\$89.50
Sale \$39.99
★★★★★ (1)



\$89.50
Sale \$39.99
★★★★☆ (2)



G.U.I.

- Built off of and designed from a WIMP framework
 - Color, 3D, sound, animation
 - Many types of menus, icons, windows, nav. methods
- Importance of familiarity, metaphorical design, consistency, standards, cognition, interpretation, etc.
- New elements, continual development
 - Toolbars, docks, rollovers, multiple desktops, etc.
 - How do we adapt and re-invent for new interaction platforms?

Example ViewPoint Document

Close Save Reset Save&Edit

Brother Dominic

XEROX 6085 Workstation

User-interface Design

To make it easy to compose text and graphics, to do electronic filing, printing, and mailing 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 does 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 work stations 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	Non 6085	6085
1978	85.2	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

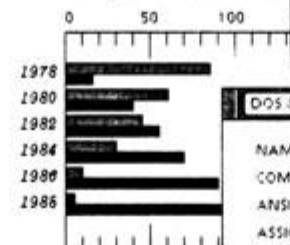


Figure 1. Data from Table 1 drive

$$X(t) = \sum_{i=1}^n \frac{A + P_i t^2}{\text{denominator}}$$

Workstation usage percentages: Table 1 and illustrated in Figure 1. 6085 users are likely to do more composition and layout, control process including printing and di

Text and Graphics

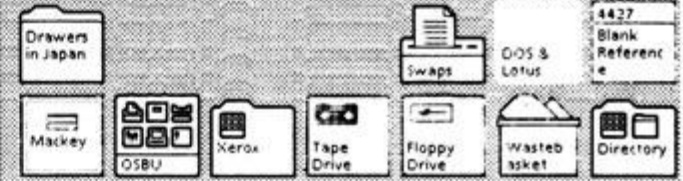
To replace typesetting, the 6085 offers a choice of type fonts and sizes, from 6 point to 36 point:

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.



DOS & Lotus data:

NAME	EXTENSION	SIZE	DATE
COMMAND	COM	22677	15-N
ANSI	SVS	2556	18-S
ASSIGN	COM	864	28-N
ATTRIB	EXE	15091	14-N
BACKUP	COM	17024	28-A
CHKDSK	COM	9435	24-C
CHMOD	COM	6528	27-A
COMP	COM	3018	10-S
DEBUG	EXE	15364	15-N



System Browser

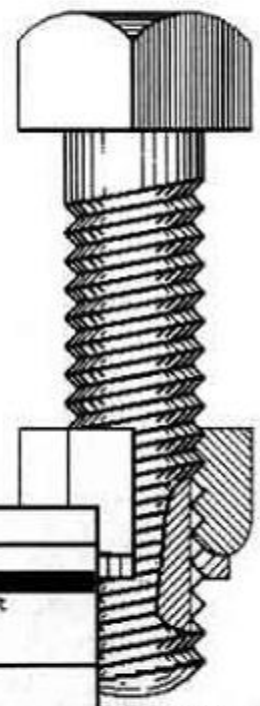
Collections-Sequence	Interval	accessing	collect:
Collections-Text	LinkedList	copying	do:
Collections-Array	MappedCollection	adding	do:andBetweenDo:
Collections-Stream	OrderedCollection	removing	promoteFirstSuchT
Collections-Support	SortedCollection	enumerating	reverse
Graphics-Primitives		private	reverseDo:
Graphics-Display			select: Form Editor
Graphics-Media			
Graphics-Paths			
	instance	class	



```
collect: aBlock
  "Evaluate aBlock with each of my elements as the argument. Collect
  resulting values into a collection that is like me. Answer with
  collection. Override superclass in order to use add:, not at:put:."

  | newCollection |
  newCollection ← self species new.
  self do: [each | newCollection add: (aBlock value: each)].
  +newCollection
```

Fig. 1.



User Interrupt

```
Paragraph>>characterBlockAtPoint:
Paragraph>>mouseSelectto:
CodeController(ParagraphEditor)>>processRedButton
CodeController(ParagraphEditor)>>processMouseButtons
CodeController(ParagraphEditor)>>controlActivity
CodeController(Controller)>>controlLoop
```

```
controlActivity
  self scrollBarContainsCursor
  ifTrue:
    [self scroll]
  ifFalse:
    [self processKeybo
    self processMouseE
```

```
blueButton 31@537 corner:
scrollBar 63@770
marker
savedArea
paragraph
startBlock
```

```
[<Robson>SF]*
[File]<Robson>SF>ScreenForm.st
[File]<Robson>SF>ScreenFormChanges.st
[File]<Robson>SF>WordGraphics.form
-----
Rectangle fromUser origin
ScreenForm setFullPageWidth.
(Form readFrom: 'FilledSkate.form') edit
```




Windows

- Developed to overcome design and interaction constraints of a standard interface / display
- Enabled more information to be more easily viewed, produced, manipulated, and tasks to be performed
- Scrollbars, text boxes, etc. allowed for access and viewing of more information
- Windows overload is possible, so need interface elements and features to deal with that
 - Listing, iconizing, shrinking, multiple desktops

Recurring Tasks

Description:

Default Priority:

Notes:

Est. Time Blocks: **Category:**

Start: **End:**

Weekdays		Weeks	
<input type="text" value="0"/> Day:	<input type="checkbox"/> Monday	<input type="checkbox"/> Thursday	<input checked="" type="checkbox"/> First
<input type="text" value="0"/> Month:	<input type="checkbox"/> Tuesday	<input type="checkbox"/> Friday	<input checked="" type="checkbox"/> Second
	<input type="checkbox"/> Wednesday	<input type="checkbox"/> Saturday	<input checked="" type="checkbox"/> Third
	<input type="checkbox"/> Sunday	<input type="checkbox"/> Sunday	<input checked="" type="checkbox"/> Fourth
			<input checked="" type="checkbox"/> Fifth
			<input checked="" type="checkbox"/> Last

Every Days Months Weeks

Performance

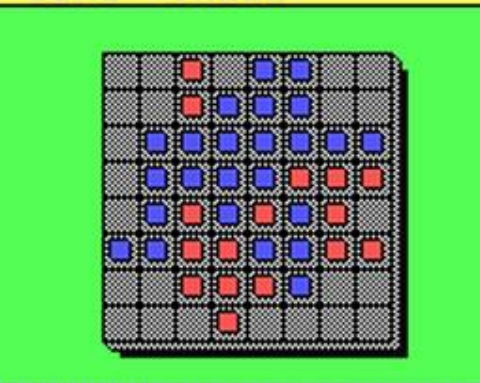
Sun Mon Tue Wed Thu Fri Sat

Req:0 Comp:0 %:0

Clock



Reversi
Game Skill



MS-DOS Executive

File View Special

A C D

C: \WINDOWS

ABC.T
 BUILD
 CALC.
 CALEN
 CARDF
 CGA.D
 CGA.G
 CGA.L
 CITH
 CLIPB
 CLOCK
 COMM.
 CONTROL.EXE
 COURA.FON
 COURB.FON
 COURC.FON

EGAMONO.GRB
 EGAMONO.LGO
 EMM.AT
 EMM.PC

HPLA
 IBMO
 JOYK
 KERN

Write - README.DOC

File Edit Search

Character Paragraph

Document

Microsoft Windows
 MS-DOS Executive



Version 1.01
 Copyright © 1985, Microsoft Corp.

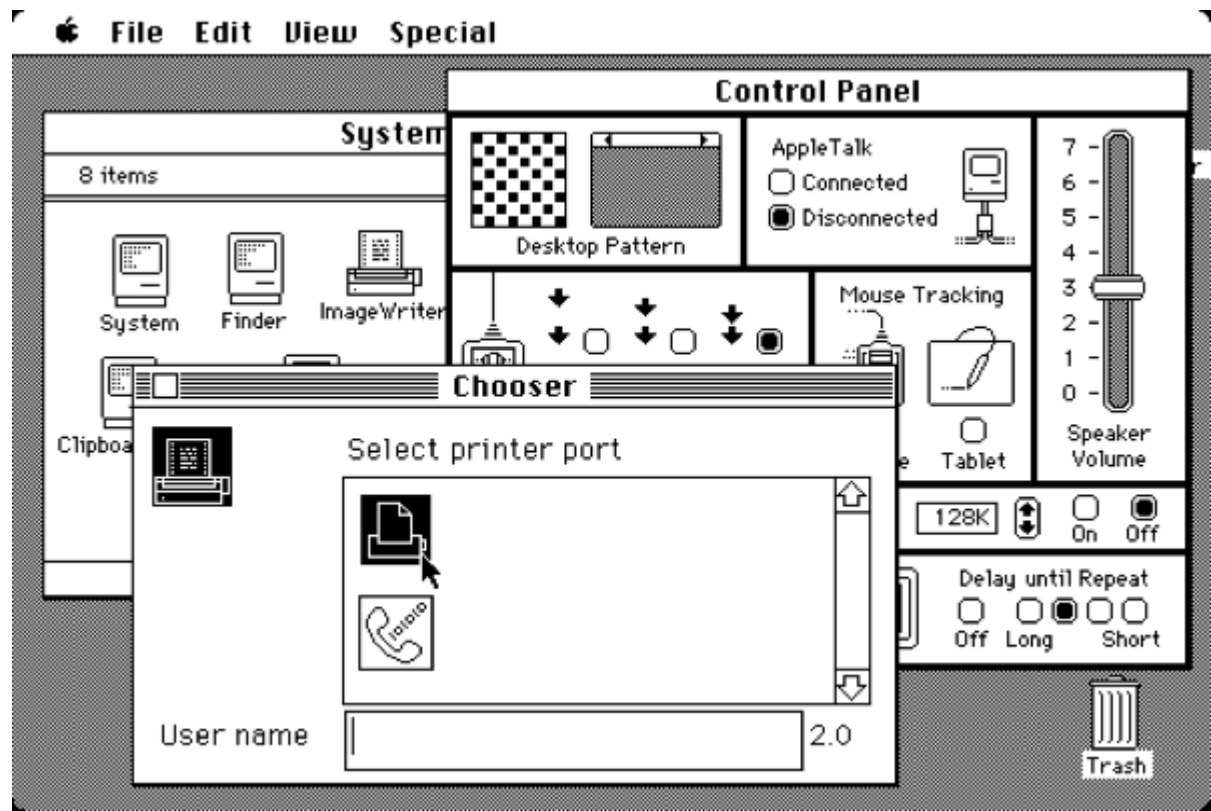
Disk Space Free: 30024K
 Memory Free: 303K

Information should
 windows. Also co
 Addendum encl

WITHOUT THE SPO
 to print from an ap
 This may be prefe
 onfiguration as it
 ature change the
 ction of the WIN.IN

Spooler=no will c

Terminal
 RUNNING BATCH (.BAT) FILES
 If you run a standard applicatio
 should create a PIF file for the k



Paint

File Edit View Image Options Help

For Help, click Help Topics on the Help Menu.

Help Topics: Windows Help

Contents Index Find

Click a book, and then click Open. Or click another tab sub as index.

- Introducing Internet Explorer
- Introducing Windows
 - Welcome
 - Using Windows Accessories
- How To...
 - Run Programs
 - Work with Files or Folders
 - Print
 - Setting up a printer
 - Printing a document
 - Viewing documents waiting to be printed
 - Changing printer settings
 - Using a shared printer
 - Sharing your printer
 - Troubleshooting printing problems
- Use a Network
 - Communicate with Others
 - Safeguard Your Work
 - Change Windows Settings
 - Set Up Hardware
 - Maintain Your Computer

Display Print Cancel

Run

Type the name of a program, folder, or document, and Windows will open it for you.

Open: explorer.exe

Ok Cancel Browse...

Calculator

Edit View Help

0

Back CE C

MC 7 8 9 / sqrt

MR 4 5 6 x %

MS 1 2 3 - 1/x

M+ 0 +/- . + =

Phone Dialer

File Edit Tools Help

Number to dial: [dropdown]

Dial

Speed dial

1 [input]
2 [input]
3 [input]
4 [input]
5 [input]
6 [input]
7 [input]
8 [input]

1 ABC 2 DEF
4 GHI 5 JKL 6 MNO
7 PQRS 8 TUV 9 WXYZ
* 0 #

NotePad

File Edit Search Help

This game looks like a real operating system but it's not. Everything you see on the screen is completely simulated :)

Get a virus? No problem because it can never jump to your real computer!

Volume Control

Options Help

Volume Control Wave MIDI CD Audio Line-In

Balance: [sliders] Balance: [sliders] Balance: [sliders] Balance: [sliders] Balance: [sliders]

Volume: [sliders] Volume: [sliders] Volume: [sliders] Volume: [sliders] Volume: [sliders]

Mute all Mute Mute Mute Mute

SB16 Mixer [220]

Display Properties

Background Screen Saver Appearance Settings

Inactive Window
Active Window
Normal Disabled Selected
Message Box
Message Text

Item: Desktop Size: size
Font: Time New Roman Size: size

Ok Cancel Apply

Address Book - Main Identity

File Edit Toolbar Tools Help

New Properties Delete Print Find People Action

Shared Contacts
Main Identity's Contacts

Type Name or Select from the list: [input]

Name	E-Mail Address	Business Phone	Home Phone
0 items			

- Communications
- Multimedia
 - CD Player
 - Sound Recorder
 - Volume Control
 - Windows Media Player



Top Sites

A thumbnail of a website featuring a grid of small images and text blocks, possibly a gallery or a news site.

A thumbnail of the Facebook homepage, showing the profile picture, cover photo, and a list of recent posts.

A thumbnail of a website with a large central image and surrounding text, possibly a news or entertainment site.

A thumbnail of the TechCrunch website, displaying various tech news articles and a sidebar with additional content.

A thumbnail of the MacRumors website, showing a detailed article or product page with a large image of a device.

A thumbnail of a website with a blue background, featuring several images and text blocks.

A thumbnail of the TechCrunch website, showing a different article or section.

A thumbnail of the Los Angeles Times website, displaying a news article with a large image.

A thumbnail of the WordPress website, showing a page with text and a large image.

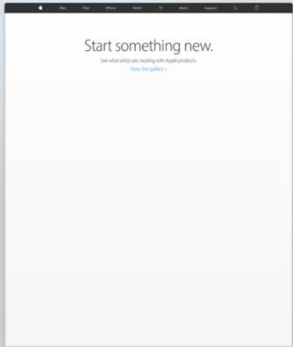
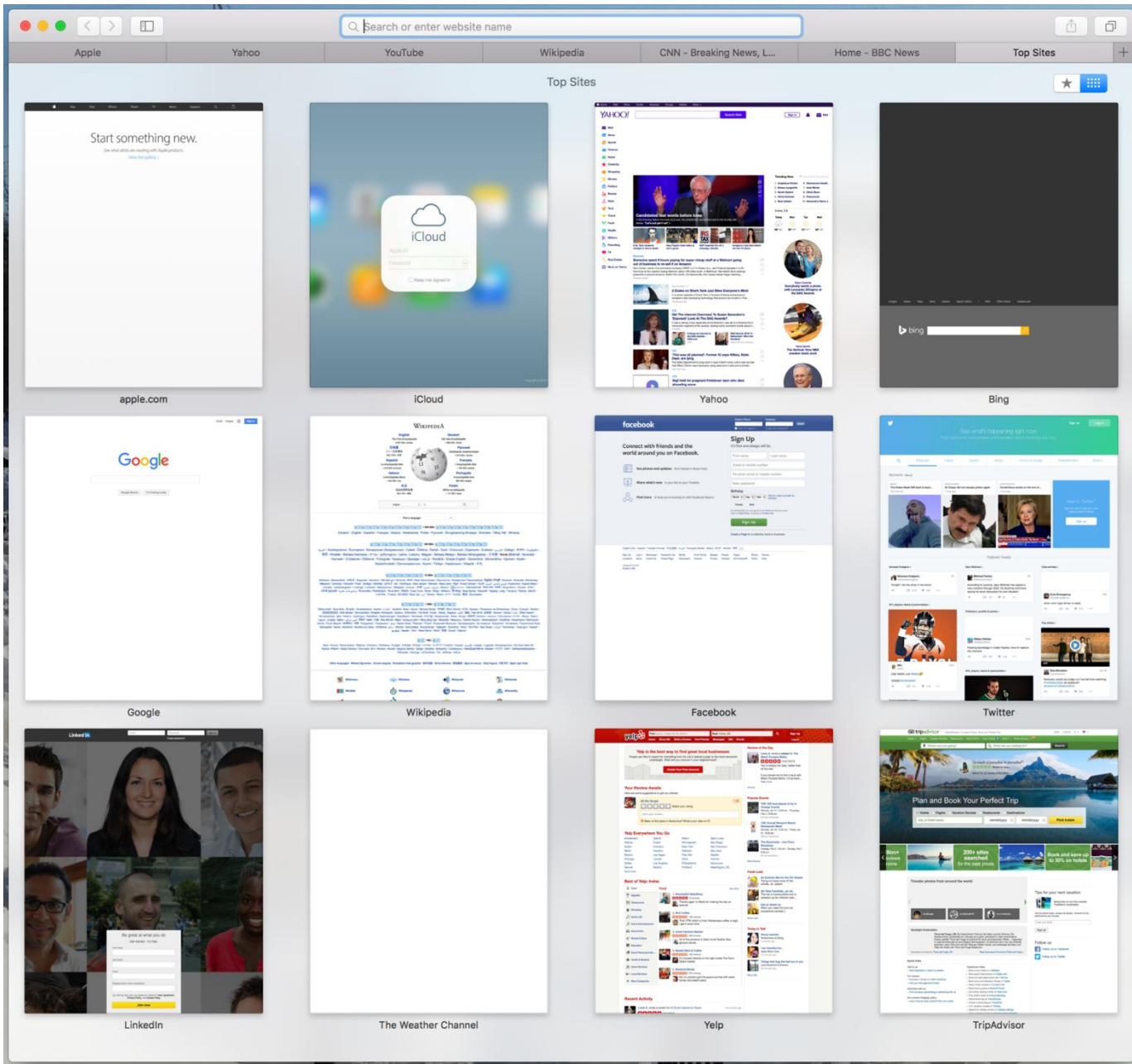
A thumbnail of the WordPress website, showing a different page or section.

A thumbnail of the WordPress website, showing a page with a video player and text.

A thumbnail of the Variety website, displaying a page with multiple images and text.

Facebook | Home
<http://www.facebook.com/home.php?>

Search History



apple.com



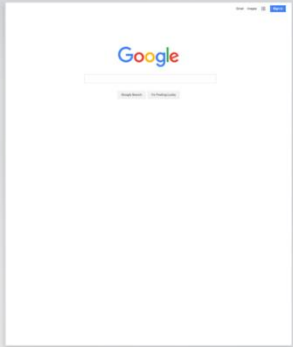
iCloud



Yahoo



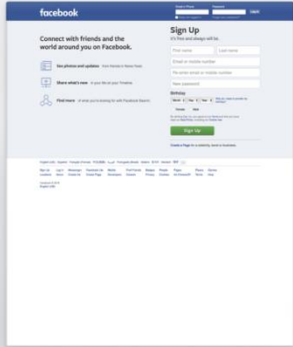
Bing



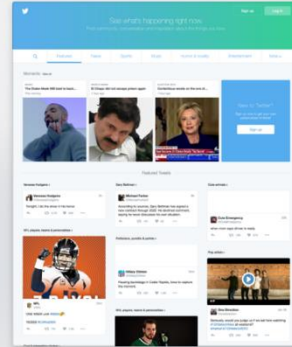
Google



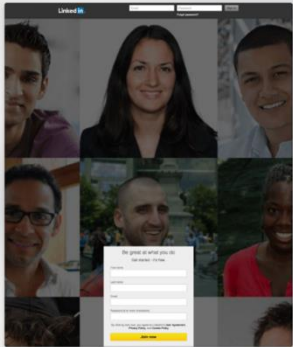
Wikipedia



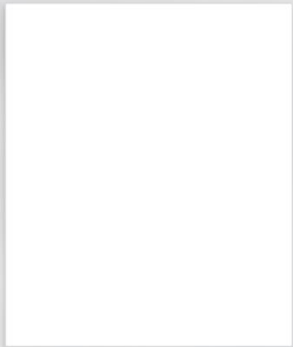
Facebook



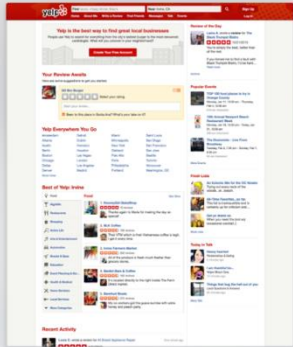
Twitter



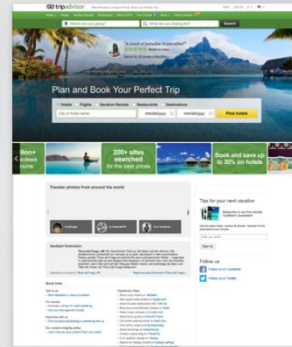
LinkedIn



The Weather Channel



Yelp



TripAdvisor

Research and design issues

- Window management
 - enables users to move fluidly between different windows (and monitors)
- How to switch attention between windows without getting distracted
- Design principles of spacing, grouping, and simplicity should be used

Icon Design

- Icons are assumed to be easier to learn and remember than commands
- Compact, variably positioned, visually communicative, afforded, but must adhere to standards for design
- Pervasive in every interface
- e.g. represent desktop objects, tools (e.g. paintbrush), applications (e.g. web browser), and operations (e.g. cut, paste, next, accept, change)

Icons

- Since the Xerox Star days icons have changed in their look and feel:
 - black and white -> color, shadowing, photorealistic images, 3D rendering, and animation
- Many designed to be very detailed and animated, making them both visually attractive and informative
- GUIs now highly inviting, emotionally appealing, and feel alive

Icon forms

- The mapping between the representation and underlying referent can be:
 - similar (e.g., a picture of a file to represent the object file)
 - analogical (e.g., a picture of a pair of scissors to represent 'cut')
 - arbitrary (e.g., the use of an X to represent 'delete')
- Most effective icons are similar ones
- Many operations are actions making it more difficult to represent them
 - use a combination of objects and symbols that capture the salient part of an action

Early icons

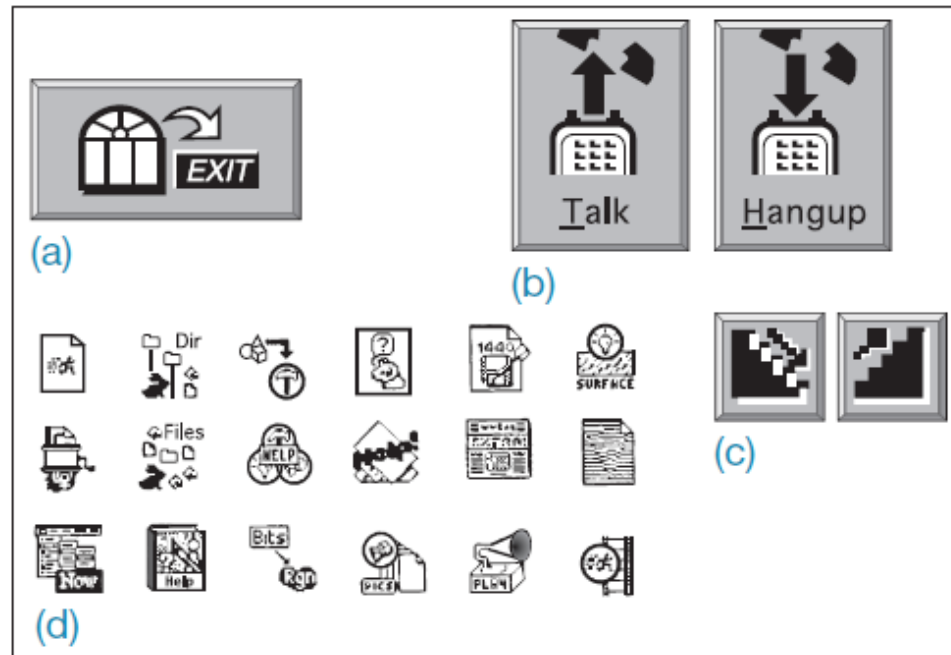


Figure 6.9 Poor icon set from the early 1990s. What do you think they mean and why are they so bad?

Source: K. Mullet and D. Sano: "Designing Visual Interfaces" Pearson 1995, reproduced with permission of Pearson Education.

Newer icons



Figure 6.11 Contrasting genres of Aqua icons used for the Mac. The top row of icons have been designed for user applications and the bottom row for utility applications



Even newer icons

Icon forms

- Skeuomorphism
 - Just like the real world
 - Has almost limitless reference
 - Curiously, we have been moving away from it, to more flat design





4G 4:23

Phone	1	4	0
Pinspiration	Adam	Wedding Chatter	
WORD NTD EMA	Adam	D	
kindle	Slave2Beauty		
VOGUE			
Book club at Sandra's Seattle Thursday 7:00 PM - 9:00 PM			



4G 12:38

4	1	2	ebay
Games	3		
Yearly accounts review Building 1940 Thursday to Friday			
Calendar		Tue 31	
ESPN SCORECENTER	e		



4G 12:38

3	1	Maria
2	31	
Missed call	e	0
Dave Barnett	AP	BBC NEWS
USA TODAY		



Research and design issues

- There is a wealth of resources now so do not have to draw or invent new icons from scratch unless necessary
 - Guidelines, style guides, icon builders, libraries
 - Can still stick to convention
- Text labels can be used alongside icons to help identification for small icon sets
- For large icon sets (e.g. photo editing or word processing) use rollovers

Future (current) interfaces

- What are some of the new interfaces we will be (are) using?
- New interaction methods require new research, new investigation, new design, new user requirements, new thinking, new expertise, new understanding, new...
- Many of these interfaces are still evolving, still in their infancy, while others are more mature.
- What counts as a new interface? A novel interface? How can we determine what works and what doesn't?

Voice / Speech

- Already talked about this, sort-of
- Same foundational concerns as natural language
- However now requires faster response, and prosodic interpretation
- Easy for humans, hard for machines
 - Continuous
 - Discrete

“ You need to start understanding me Siri ”

I'll make a note of that.

“ Yeah you better make a note of that ”

Got it:

Of that

“ I think I have alcohol poisoning what do I do ”

I found 7 liquor stores fairly close to you:

Garver Street
Spirit Shop 1.5 miles
★★★★☆ 1 review

12th Avenue
Thunderbird Liquors 1.5 miles
★★★★★ 1 review

West Main Street
Cellar Wine & Spirits 1.5 miles
★★★★☆ 3 reviews



What can I help you with?

“ Play a good song ”

Sorry, I couldn't find 'a good song' in your music.



“ Don't call me Eggs ”

I don't know what you mean by 'Don't call me Eggs'.

“ Eggs is not my name ”

Sorry, Eggs, I'm not allowed to remove relationships.

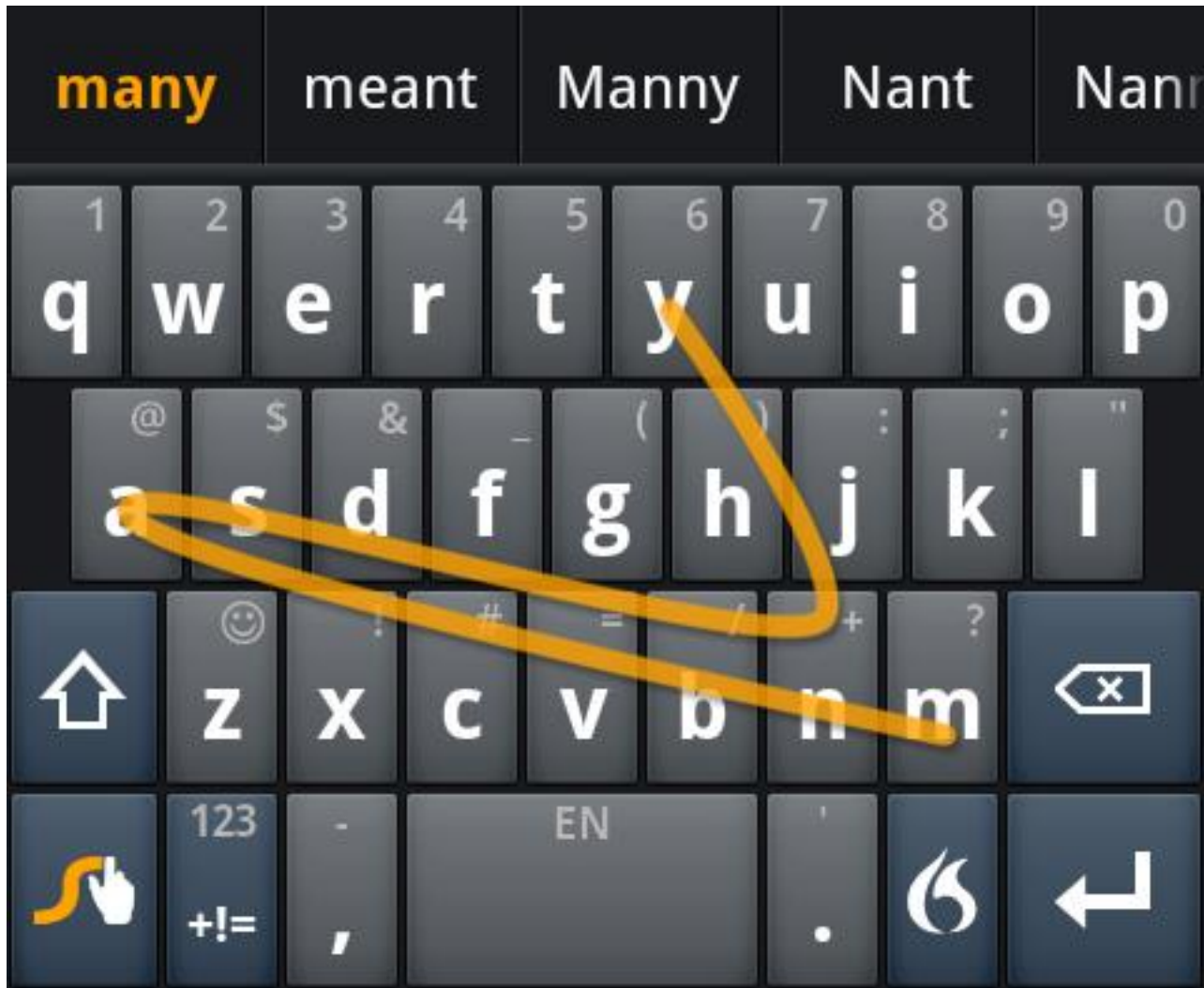
“ My name is not Eggs ”

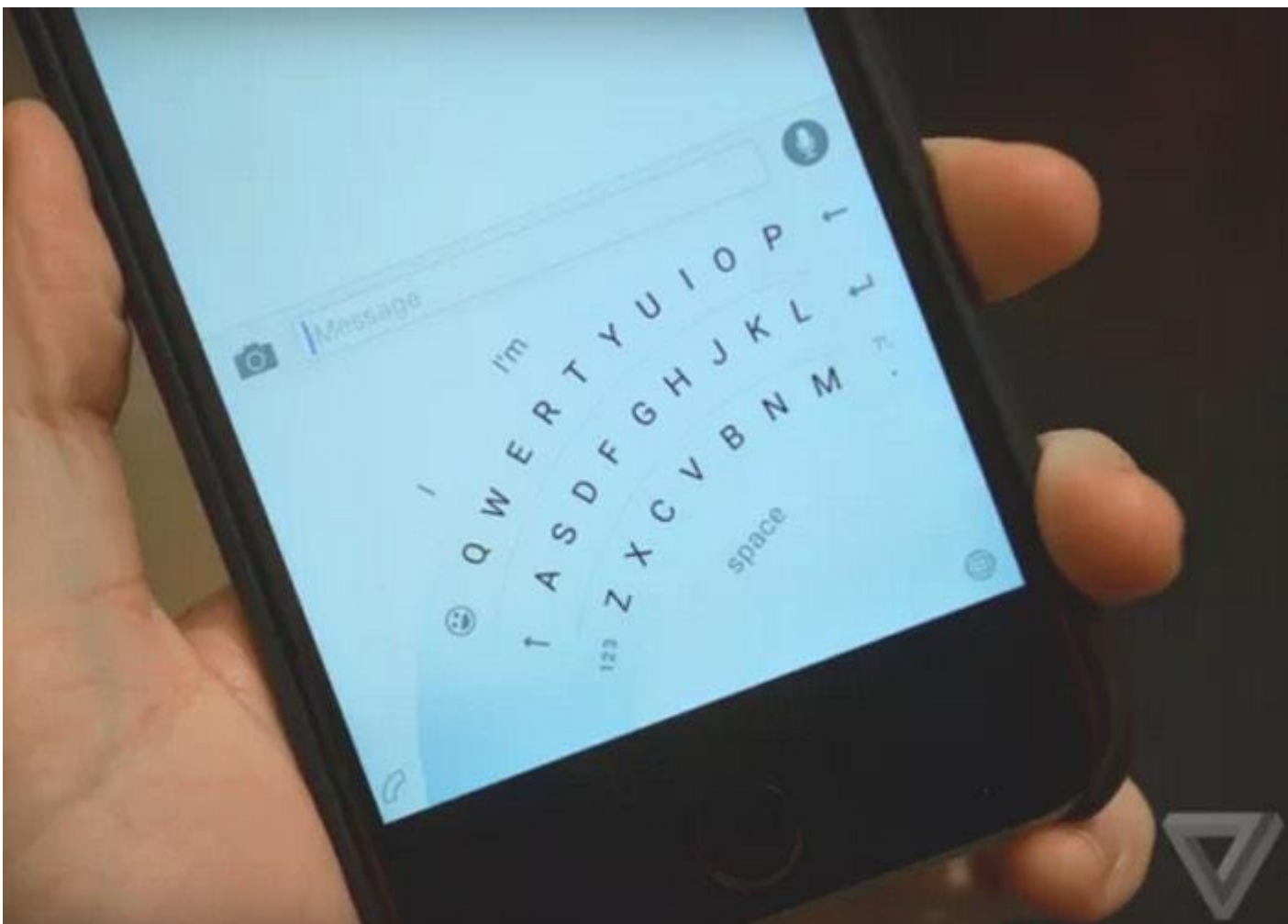
From now on, I'll call you 'Not Eggs'. OK?











Gaming

- Significant evolution in input methods
- Joysticks, paddles, keys, gamepads, footpads, motion detection, now we just have 'controllers.'













XBOX 360

KINECT

FIRE SECONDARY WEAPONS



FIRE PRIMARY WEAPONS



DECELERATE



ACCELERATE



(UI PANEL SELECT LEFT)

(UI PANEL SELECT RIGHT)

DEPLOY/UNDEPLOY
WEAPON HARDPOINTS



OPTIONS

Y-AXIS PITCH UP/DOWN,
X-AXIS YAW LEFT/RIGHT



SELECT TARGET IN VIEW

RAISE ENGINE POWER



UI PANEL VIEW (TOGGLE)

RAISE SYSTEM POWER



ENGINE BOOST (NITRO)

RAISE WEAPON POWER



UI PANEL SELECT / BUTTON MODIFIER (SEE M)

REBALANCE POWER



TOGGLE COCKPIT FREE
LOOK

Y-AXIS THRUST UP/DOWN, X-AXIS ROLL LEFT/R



ENABLE SUPERCUISE

Y-AXIS THRUST
FORWARDS/BACKWARD
S, X-AXIS THRUST
LEFT/RIGHT (STRAFE)



= SELECT HIGHEST
THREAT TARGET IN
RANGE



Some other examples

- Consumer interfaces are standardized, well-informed, commonplace, this aids in the design process
- Other interfaces do not have this luxury, and significant investigation, research, and requirements determination must inform their development.
- Can use interdisciplinary / industry standards





Examination
Viewing
Filming
3D

AbdomenRoutine (Adult)

Siemens

554545

Total mAs:

997




Patient Registration

Exam Protocols

Topogram  6s

AbdFast    3+15s

End Exam 24s

Recon job   

Series description: AbdFast 5.0 B41s

Slice 5.0 mm

Recon increment 5.0 mm

No. of images 59

Kernel (B41) medium

Window Abdomen

FoV 239 mm

Center X 17 mm

Center Y 0 mm

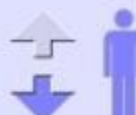


Image order

Comments

Auto transfer None

Auto viewing

Auto 3D

Auto filming

every 3 image

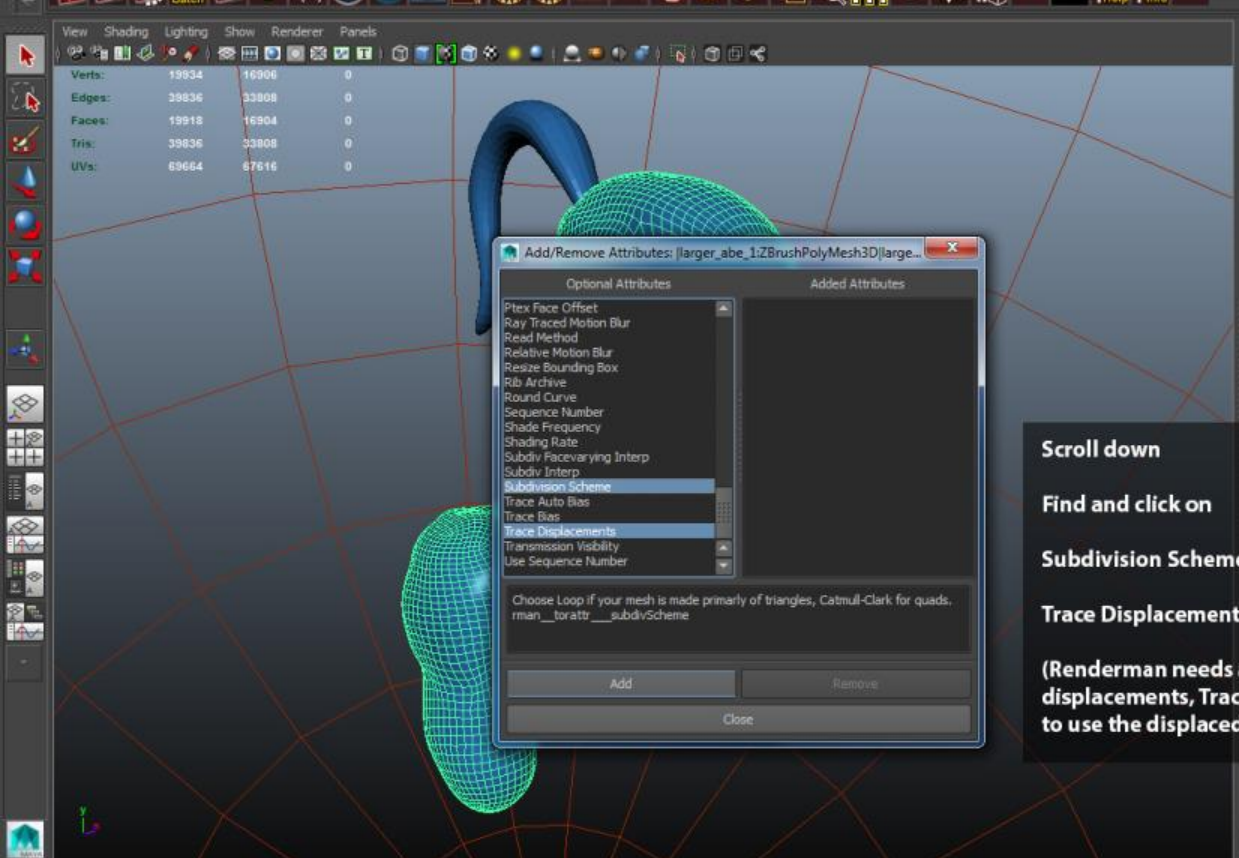
No. of filmed images 0

Auto reference lines

Scan

Recon





Add/Remove Attributes: |larger_abe_1:ZBrushPolyMesh3D|large...

Optional Attributes	Added Attributes
Ptex Face Offset	
Ray Traced Motion Blur	
Resid Method	
Relative Motion Blur	
Resize Bounding Box	
Rib Archive	
Round Curve	
Sequence Number	
Shade Frequency	
Shading Rate	
Subdiv Facevarying Interp	
Subdiv Interp	
Subdivision Scheme	
Trace Auto Bias	
Trace Bias	
Trace Displacements	
Transmission Visibility	
Use Sequence Number	

Choose Loop if your mesh is made primarily of triangles, Catmull-Clark for quads.
rman__torattr__subdivScheme

Add Remove Close

Scroll down
Find and click on
Subdivision Scheme
Trace Displacements
(Renderman needs a Subdiv scheme to properly create displacements, Trace Displacements tells Renderman to use the displaced surface to ray trace calculations)

Attribute Editor

List Selected Focus Attributes Show Help

larger_abe_1:ZBrushPolyMesh3D larger_abe_1:ZBrushPolyMesh3DShape larger_abe_1:polySurface

mesh: be_1:ZBrushPolyMesh3DShape Focus Presets Show Hide

- Tessellation Attributes
- Mesh Component Display
- Mesh Controls
- Tangent Space
- Smooth Mesh
- Displacement Map
- Render Stats
- Object Display
- mental ray
- Node Behavior
- Extra Attributes

Select Load Attributes Copy Tab



Medstrat Viewer

File Edit View Tools Measurement Image Help

Patient Name: _____ Patient ID: _____

Image type: Original Compressed

Everything To-Do Templated Planned Training Complete Post-Op Zimmer

Patient Name	Sex	Patient ID	Date
Advocate Trilogy CH	M	21	2011-10-4
BFC HA Trilogy MH	F	14	2011-08-4
BFC Trilogy CH	F	13	2011-02-4
CLS Brevard Continuum CH	F	9	2013-03-4
CR FLEX GSF Pegged	F	36	2012-11-4
CR FLEX GSF Stemmed	F	13	2013-01-4
CR FLEX GSF Stemmed	F	20	2012-11-4
CR FLEX Pegged	M	21	2012-11-4
CR Persona	F	7	2013-05-4
CR Persona	F	10	2013-06-4
CR Persona	M	14	2013-02-4
CR Persona	F	5	2013-05-4
CR Persona	M	12	2012-09-4
CR Persona	F	8	2013-04-4
Fibrose Continuum MH	M	15	2013-02-4
Fibrose Trilogy CH	F	16	2013-04-4
Fibrose Trilogy CH	F	19	2013-03-4
LCOX Stemmed		22	2013-04-4
LPS FLEX Fulled		23	2011-11-4
LPS FLEX GSF Mini Keel	F	17	2013-02-4
LPS FLEX GSF Stemmed		25	2013-03-4
LPS FLEX GSF Stemmed		17	2013-02-4
LPS FLEX TV Stemmed	F	24	2013-02-4
LPS FLEX TV Stemmed	F	18	2013-01-4
LPS FLEX TV Stemmed	F	15	2013-03-4
LPS FLEX TV Stemmed	F	12	2013-03-4
ML Taper Trilogy MH	M	2	2013-04-4
ML Taper Continuum	M	1	2013-03-4
ML Taper Continuum	F	24	2013-03-4
ML Taper Continuum CH	M	17	2012-10-4
ML Taper Continuum MH	M	17	2013-03-4
ML Taper MMC	F	25	2013-03-4
ML Taper MMC	M	22	2013-12-4
ML Taper RNL Continuum MH	F	3	2013-02-4
ML Taper RNL Continuum MH	M	6	2013-04-4
ML Taper RNL Continuum MH	M	4	2013-03-4
ML Taper Trilogy CH	M	20	2013-04-4
ML Taper Trilogy CH	M	5	2012-08-4
ML Taper Trilogy CH	M	4	2012-09-4
PS Persona	F	3	2012-11-4
PS Persona	F	8	2012-12-4
PS Persona	F	2	2012-12-4
PS Persona	F	6	2012-12-4
PS Persona	M	1	2013-04-4
PS Persona	F	9	2012-09-4
PS Persona	F	11	2012-10-4



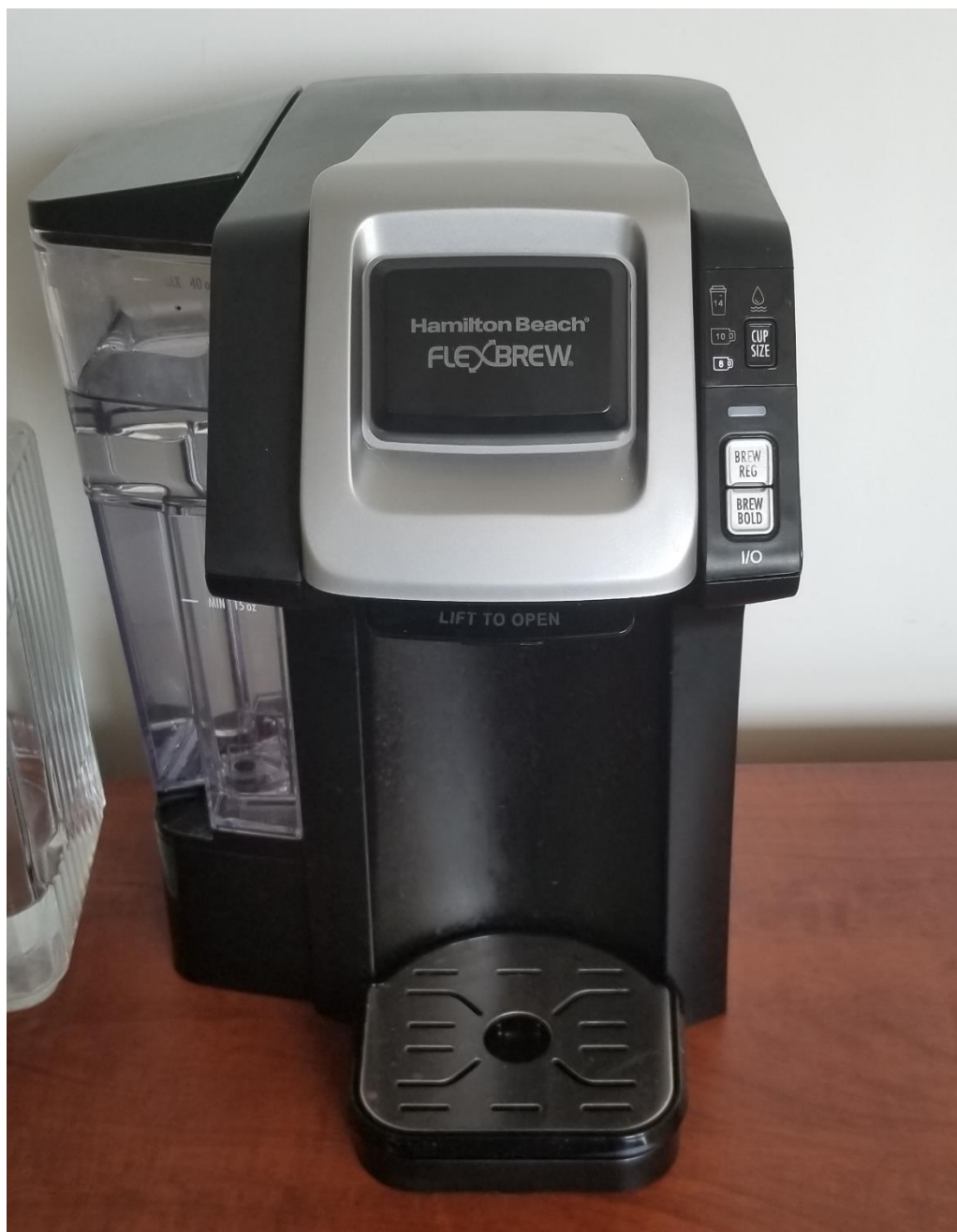
CR Persona
 Example
 Pt ID: 10
 Birth: 1/1/1942
 Desc: LEFT KNEE / KNEE
 Exam Date: 6/1/2013
 Plan: None



Consumer products

- Wide variety of goals
- Limited variety of interaction methods
- Very device / domain dependent
- Product design is (usually) important









Shooting Menu 2



Image Stabilizer

Off



Brack



Change image stabilizer mode.
IS \square and IS \square are used for
panning with the camera.



RC

Sync 1

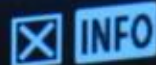


Sync

Off



Back MENU



Set OK

STYLUS

TASCAM

DIGITAL PORTASTUDIO III DP-03

REMOTE

INPUT A

INPUT B

LINE OUT

PHONES

DC IN

STANDBY/ON

INPUT A

OL TRIM

LINE MIC

GUITAR
MIC/LINE
INTERNAL MIC A

PHANTOM

ASSIGN

INPUT B

OL TRIM

LINE MIC

MIC/LINE
INTERNAL MIC B

BOUNCE

MIXDOWN/MASTERING

PHONES

LEVEL

MIN MAX



MULTI-TRACK P

00:00:15.24f

TRACK 1

REVERB

MIN MAX

PAN

L R

REC

1

TRACK 2

REVERB

MIN MAX

PAN

L R

REC

2

TRACK 3

REVERB

MIN MAX

PAN

L R

REC

3

TRACK 4

REVERB

MIN MAX

PAN

L R

REC

4

TRACK 5

REVERB

MIN MAX

PAN

L R

REC

5

TRACK 6

REVERB

MIN MAX

PAN

L R

REC

6

TRACK 7

REVERB

MIN MAX

PAN

L R

REC

7

TRACK 8

REVERB

MIN MAX

PAN

L R

REC

8

REVERB

EQ

MUTE

MASTER

EQ HIGH

EQ LOW

TUNER

HOME

MENU

DATA

REPEAT

LOCATE LIST

AUTO PUNCH

UNDO/REDO

LOCATE SET

HISTORY

REW

F FWD

TO ZERO TO LAST REC

SET IN SET OUT SET TO

STOP

PLAY

RECORD

6

0

5

20

∞





VR

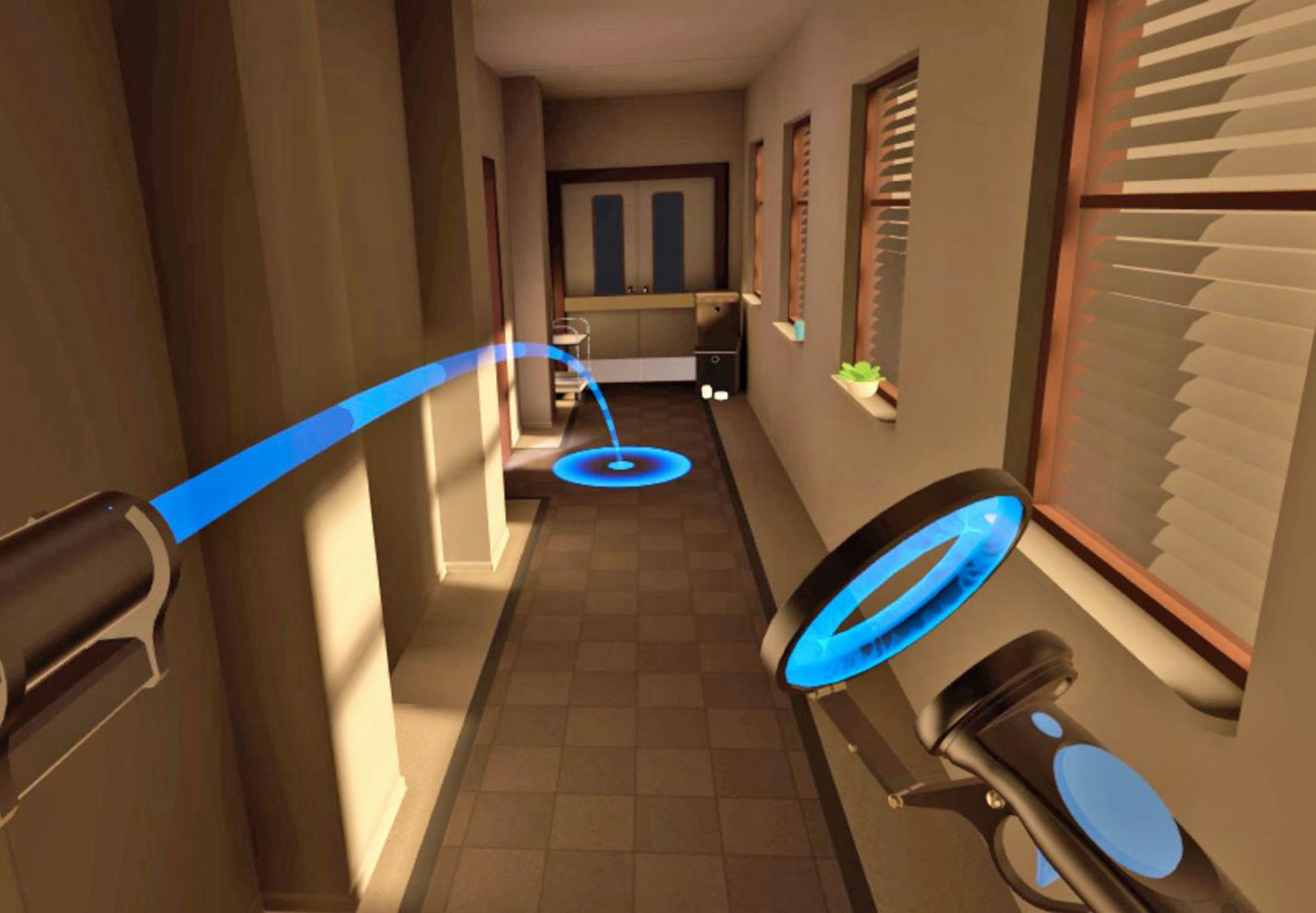
- Brand new domain, still very young
- Interaction methods aren't anywhere close to being worked out
- Significant strides have made, but much more to be done
- Control, or lack thereof, often informs design













The Web

- Not the Internet
- Used to be websites were informational, with occasional links
- Information was meant to be accessed easily and quickly
- Now, emphasis is on making webpages interactive, aesthetically pleasing, enjoyable, usable, configurable, etc.
- New interaction methods have forced a rethink of web page design, seen primarily in responsive design
- Developers should consider the purpose and platform of the site, visitors can want many things in terms of content, interaction method, and experience
- Sites need to be 'sticky'

Google

Web Images Maps News Shopping Google Mail more u
Video Groups Books Scholar Finance Blogs
YouTube Calendar Photos Documents Reader Sites
even more

^J

iGoogle | Sign in

Google

Google Search I'm Feeling Lucky

Advanced Search
Preferences
Language Tools

Search: (*) the web () pages from the UK

Advertising Programmes - Business Solutions - About Google - Go to
Google.com

208 - Privacy

(NORMAL LINK) Use right-arrow or <return> to activate.

Arrow keys: Up and Down to move. Right to follow a link; Left to go back.
H)elp O)ptions P)rint G)o M)ain screen Q)uit /=search [delete]=history list _



YAHOO!



[Auctions](#)

[Messenger](#)

[Check Email](#)

[What's New](#)

[My](#)

[Help](#)

Yahoo! Mail
free email for life

Know when friends are online!
Click to download Yahoo! Messenger

Play free
Fantasy Football

[advanced search](#)

[Shop](#) [Auctions](#) [Classifieds](#) [Shopping](#) [Travel](#) [Yellow Pages](#) [Maps](#) [Media](#) [News](#) [Sports](#) [Stock Quotes](#) [TV](#) [Weather](#)
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[Personal](#) [My Yahoo!](#) [Add Book](#) [Calendar](#) [Briefcase](#) [Photos](#) [Alerts](#) [Bookmarks](#) [Companion](#) [Bill Pay](#) [more..](#)

Yahoo! Auctions - Bid, buy, or sell anything!

Categories	Items	Features
Antiques	Golf	Closed auctions
Autos	Hello Kitty	Charity auctions
Coins	X-Men memorabilia	PayDirect
Computers	Sales Mean	My Auctions

In the News

- U.S. busts major Colombian drug ring
- U.A. pilots reach tentative pact
- Venezuelans win Little League World Series

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Marketplace

- Shopping: computers, videos, CDs, toys, electronics and more
- new!** Yahoo! PayDirect - send and receive money online
- Free SK Internet Access

Broadcast Events

- 9am ET - [IPO Show](#)
- 1pm - [Cardinals vs. Braves](#)
- 5pm - [Georgia Tech vs. Virginia Tech](#)

[more..](#)

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- [Y! Minutes](#) - [Bring it On](#) [Art of War](#) [The Crew](#)

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- Sports
- Finance
- Autos
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- Shopping
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- Food
- Health
- Makers
- Parenting
- TV
- Real Estate
- More on Yahoo

Christie, Fiorina end White House bids
The New Jersey governor suspends his presidential campaign shortly after Fiorina made her official announcement. **Poor showing in primary**



How humiliation has made Job Bush stronger



Dad blames 'the Boss' for daughter's tardiness



Megatron's Hall credentials questioned



The 'crazy, crazy journey' of 'Deadpool'



Celebrity
Chicago Release Official Statement on Peter Cetera
Chicago has released an official statement on their induction into the Rock and Roll Hall of Fame and the participation, or lack there of, by original



Rock and Roll Hall of Fame to Feature Guns 'N Roses Exhibit
Radio.com



Rock Hall induction simulcast tickets on sale next week
Cleveland.com



Sponsored
Drivers With No Tickets In 3 Years Must Read This
United States drivers are surprised that they never knew this. If you drive less than 50 mi/day, you better read this...



News
Family dead in murder-suicide struggled with financial problems

Trending Now **Valentine's Day**

- Sephora gift card
- Swiss Army watch...
- iPhone 6s Plus
- Stacking rings
- Chocolate delivery
- Men's leather jack...
- Jewelry armoire
- Luxury bedding
- Chloé sunglasses
- Last-minute hotel ...

Irvine, CA

Today	Thu	Fri	Sat
80° 53°	82° 54°	81° 55°	78° 56°



Yahoo Music
The easiest way to win a Grammy? Collaborate!

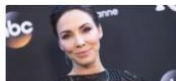




Family confirms body of missing teen found

Rescuers found the body of a Caucasian female in the forest surrounding a nature resort where the 15-year-old disappeared on Aug. 4. ["The body is Nora Anne" »](#)

440 people reacting



Comedian posts topless pic to thwart blackmailers



Katy Perry accused of sexual misconduct



Smart tool will ease the pain of gardening



Andy Dick attacked, suffers 'possible' brain damage



Semi-retired man in line to inherit Epstein's money



U.S. Yahoo Canada News

Shocking act of road rage caught on camera in broad daylight

A 'disgusting' act of road rage was captured in Middle Swan near Perth on Sunday morning.

3080



Don't like this news source? [Customize here](#)



U.S. The Telegraph

Jeffrey Epstein: Who is embroiled in sex scandal - and why are there conspiracy theories over his death?

Outrage and intrigue surrounds the apparent suicide in prison of Jeffrey Epstein, a convicted paedophile who had connections to celebrities and presidents. His death sparked questions...

2446



How Jeffrey Epstein's Death May Affect Lingering Lawsuits and Investigations
The Wrap



The Queen shows support for Duke of York amid Jeffrey Epstein scandal
The Telegraph



Celebrity Entertainment Tonight

Inside: Mitt Romney and Melissa McCarthy Meet Old Queen



Trending Now

Back to School

1. Caprine animals
2. Melanie Griffith
3. Priscilla Presley
4. Sanne hamers
5. High Yield Savings
6. Mortgage Refinan...
7. Elisabeth Shue
8. George Clooney
9. Medicare Supple...
10. Sara Haines

United States

Today	Wed	Thu	Fri
89° 76°	87° 68°	87° 68°	87° 73°

Scoreboard

MLB

Yesterday Today Tomorrow

Houston	1:40 PM PDT
Chi White Sox	
Baltimore	4:05 PM PDT
NY Yankees	
Cincinnati	4:05 PM PDT
Washington	
Chi Cubs	4:05 PM PDT
Philadelphia	
Texas	4:07 PM PDT
Toronto	
Boston	4:10 PM PDT
Cleveland	

The advent of the (iPhone) app

A whole new user experience that was designed primarily for people to enjoy

- many apps not designed for any need, want or use but purely for idle moments to have some fun (and utilize available technologies)
- e.g. iBeer developed by magician Steve Sheraton
- clever use of the accelerometer that is inside the phone

iBeer®



iBeer app

The advent of the (iPhone) app

A whole new user experience that was designed primarily for people to enjoy (originally)

- Now, mobile apps are used more than desktop applications, and for many tasks.
- Banking, airline tickets, mortgage applications, etc.
- Still uses integrated phone features, but for things like the 'quantified self.'

Square app





Quantified self

So

- The point is, interaction methods are evolving rapidly, as they always have
- New challenges will be addressed through research and design
- We are already seeing the evolution of interface design in and within novel interfaces
- There is still a long, fun, infuriating way to go