



The Importance of the User Interface

The Essential Guide to UI Design:
Chapter 1

What is UI?

- UI design is a subset of HCI
- Part of a computer & its software that people can see, hear, understand, etc.
- Two components: input & output
- IO devices?





Is Good Design Important?

- UI is the most important part of any computer system!
- Over 50% of code devoted to UI
- Users' productivity improved 25 to 40%.
- A company saved \$20 000 !



What comprises good design?

- **PEOPLE:**

- How we see, understand, and think

- **INFORMATION:**

- Enhance human acceptance
- Ease eye & hand movements

- **HARDWARE & SOFTWARE:**

- Capabilities & limitations of HCI



The Goals of UI Design

- To make working with a computer
 - EASY
 - PRODUCTIVE
 - ENJOYABLE



Examples

- Interface screen of Text Properties
- Text Editor
- Class registration form (lab #1)

Text Properties

Family ☐ times ☐ helvetica ☐ courier ☐ sans serif ☐

Size ☐ small ☐ medium ☐ large ☐

Style ☐ underline ☐ bold ☐ italic ☐

Pitch ☐ 10 CPI ☐ 12 CPI ☐ 15 CPI ☐ proportional ☐

Color ☐ black ☐ blue ☐ red ☐ green ☐

Border ☐  ☐  ☐  ☐ 

OK

Apply

Cancel

Help

TEXT PROPERTIES





Family

- ☐ Courier
- ☐ Helvetica
- ☐ Sans Serif
- ☐ Times

Pitch

- ☐ 10 CPI
- ☐ 12 CPI
- ☐ 15 CPI
- ☐ Proportional

Border

- ☐ 
- ☐ 
- ☐ 
- ☐ 

Size

- ☐ Small
- ☐ Medium
- ☐ Large

Style

- ☐ Bold
- ☐ Italic
- ☐ Underline

Color

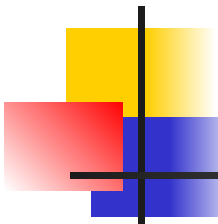
- ☐ Black
- ☐ Blue
- ☐ Green
- ☐ Red

OK

Apply

Cancel

Help



PIF Editor					
Program Filename:	<input type="text"/>				
Window Title:	<input type="text"/>				
Optional Parameters:	<input type="text"/>				
Start-up Directory:	<input type="text"/>				
Video Memory:	<input type="radio"/> Text	<input type="radio"/> Low Graphics	<input type="radio"/> High Graphics		
Memory Requirements:	KB Required	<input type="text"/>	KB Desired	<input type="text"/>	
EMS Memory:	KB Required	<input type="text"/>	KB Limit	<input type="text"/>	
XMS Memory:	KB Required	<input type="text"/>	KB Limit	<input type="text"/>	
Display Usage:	<input type="radio"/> Full Screen	<input type="radio"/> Windowed		Execution:	<input type="radio"/> Background
					<input type="radio"/> Exclusive
<input type="checkbox"/> Close Window on Exit					

PIF EDITOR

APPLICATION

Program Filename:

Window Title:

Optional Parameters:

Start-up Directory:

MEMORY

REAL >

Required:

KB

Desired:

KB

EMS >

Required:

KB

Limit:

KB

XMS >

Required:

KB

Limit:

KB

VIDEO > Type:

☐

Text

☐

Low Graphics

☒

High Graphics

Display Usage

☐

Full Screen

☒

Windowed

Execution

☒

Background

☐

Exclusive

Window

☐

Close on Exit



14 steps



- 1) Know Your User
- 2) Understand the Business Function
- 3) Understand the Principles of Good ID
- 4) Develop System Menus
- 5) Select the Proper Kinds of Windows
- 6) Select the Proper Interaction Devices
- 7) Choose the Proper Screen-Based Controls

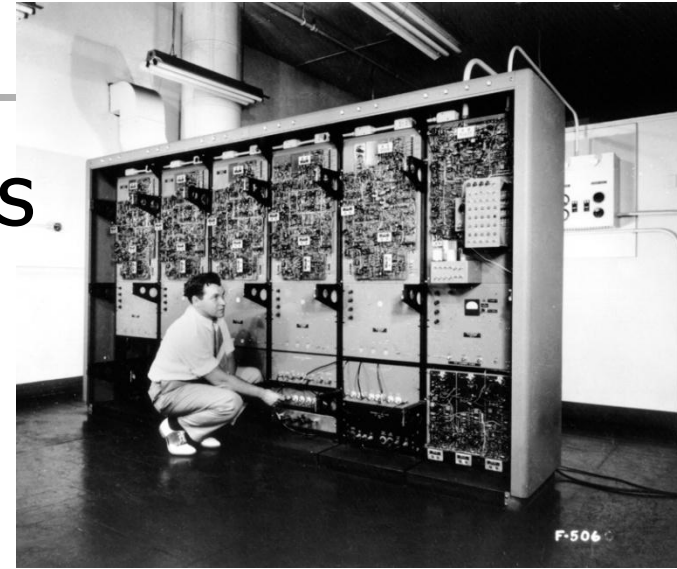


14 steps (cont.)

- 8) Write Clear Text
- 9) Provide Effective Feedback
- 10) Provide Effective Accessibility
- 11) Create Meaningful Graphics
- 12) Choose the Proper Colors
- 13) Organize Windows
- 14) Test

History of HCI

- 1) Movements & gestures
- 2) Spoken language
- 3) Written language
- 4) Typewriter
- 5) Computers: QA, Menu selection, Form fill-in (Speech & handwriting recognition)
- 6) Introduction of GUI



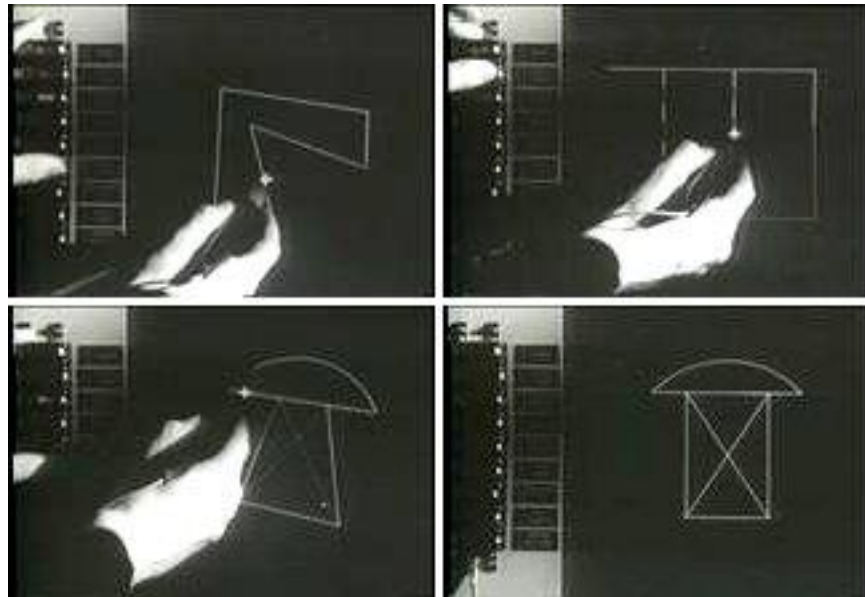


What is GUI?

- Pronounced “gooey”
- A **graphical user interface (GUI)** is a type of user interface which allows people to interact with electronic devices such as computers; hand-held devices such as MP3 Players, Portable Media Players or Gaming devices; household appliances and office equipment with images rather than text commands. (Wikipedia)

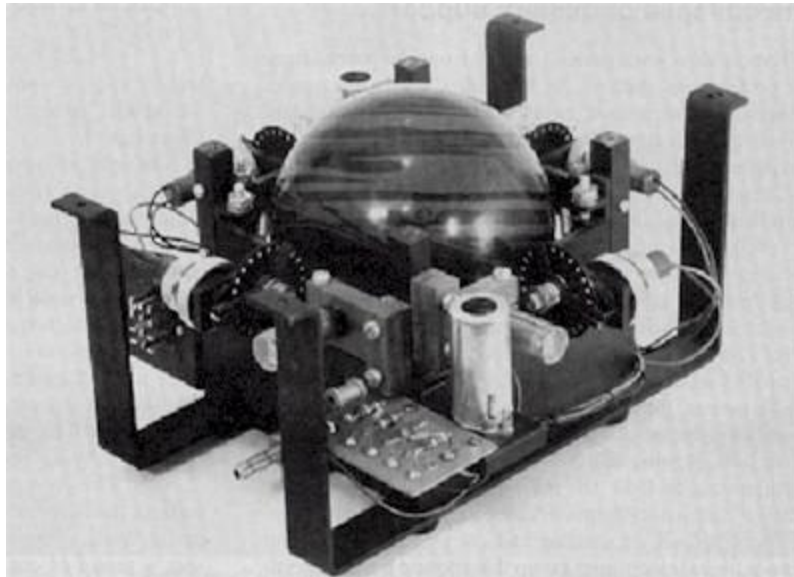
History of HCI (cont)

- 1963, Ivan Sutherland, MIT. Sketchpad program. Lines, circles, and points could be drawn on a screen using a light pen.



History of HCI (cont)

- 1970s, Xerox's Palo Alto Research Center, Altus & STAR systems. Mouse (pointing & selecting).



History of HCI (cont)

- 1974, Xerox. Today's mouse.



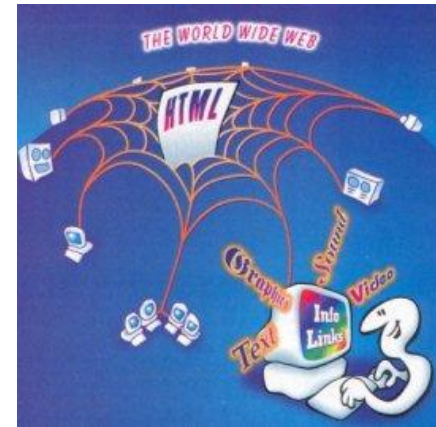


History of HCI (cont)

- 1984, Apple. Macintosh
- 1985, Microsoft. Windows 1.0
- 1987, Apple. Macintosh II. The first color Macintosh.
- IBM. System Application Architecture and Presentation Manager. Graphics OS replacement for DOS.
- 1988, NeXT. NeXTStep, 3-d Screen simulation.
- UNIX-based GUIs.

The Blossoming of the World Wide Web

- 1960s, Licklider, MIT. Proposed a global network of computers & moved to DARPA.
- 1969. ARPANET. 4 major universities.
- 1974, Bolt, Beranek, & Newman. Telnet. Commercial version of ARPANET.
- 1970s. TCP/IP. Common language of all Internet computers.
- 1982. "Internet"



The Blossoming of the World Wide Web (cont.)



- 1991, Gopher, University of Minnesota. First really friendly interface.
- 1989, European Laboratory for Particle Physics. Hypertext protocol. HTML (Hypertext Markup language).
- 1991, Berners-Lee. World Wide Web.



Web vs. Internet

- Global information space in which people can read & write using computers connected to the Internet.
- The Web is a service that operates over the Internet, just as e-mail operates over the Internet (Wikipedia.org, 2006).

The Blossoming of the World Wide Web (cont.)



- 1993, NCSA at Univ. of Illinois. Mosaic. First popular graphics-based hypertext browser.
- 1994. Netscape Navigator
- 1995, Microsoft. Internet Explorer
- 1994. NSF stopped support. W3C formed to promote & develop standards for the Web.
- 2003, Apple. Safari 1.0
- 2004. Mozilla Firefox

A Brief History of Screen Design

- 1970s, IBM. 3270 cathode ray tube text-based terminal





1970s screen

TDX95210

THE CAR RENTAL COMPANY

10/11/76 10:25

NAME

TEL

RO

PUD

RD

C

RT

MPD

ENTRY ERROR XX465628996Q.997

Command===>



A Brief History of Screen Design (cont.)

- 1970s screens
 - Cryptic & unintelligible captions
 - Always had to remember what to type
 - Ambiguous messages
 - Monochromatic, green text on black background



1980s screen

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RENTER >>

Name: _____

Telephone: ____ _

LOCATION >>

Office: _____

Pick-up Date: ____ _

Return Date: ____ _

AUTOMOBILE >>

Class: _____ (PR, ST, FU, MD, CO, SC)

Rate: _____

Miles Per Day: _____

The maximum allowed miles per day is 150.

Enter F1=Help F3=Exit F12=Cancel



A Brief History of Screen Design (cont.)

- 1980s
 - Grouping & alignment
 - Clear captions
 - Command list (+ function keys)
 - Instructions had to be inscribed



1990s and beyond

THE CAR RENTAL COMPANY

RENTER

Name:

Telephone:


LOCATION


Office:


Pick-up Date:

Return Date:

AUTOMOBILE

Class: 

Rate: 

Miles Per Day: 

OK Apply Cancel Help

A Brief History of Screen Design (cont.)



- 1990s and beyond
 - Borders
 - Buttons
 - Menus
 - Different font sizes, styles, colors, etc.
 - List boxes, drop-down combination boxes, etc.
 - Screens modified