



Unit 6

Interaction Styles

Interfaces Persona Computador
Dept. Sistemas Informáticos y
Computación. UPV

VIRTUAL TEACHING

Purpose:

Provision of the higher education public service
(art. 1 LOU)

Responsible:

Universitat Politècnica de València.

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Unit Goals

- ▶ Study the different interaction styles available for designing interfaces
- ▶ Learn the following interaction styles, their advantages and disadvantages and some guidelines for their design
 - Command Line Interfaces
 - Menu Selection
 - Form Fill-in
 - Direct Manipulation
 - Natural Language Interfaces
- ▶ Know advanced UI, like VR, AR, ambient devices...

Overview

- ▶ Introduction
- ▶ Command Line Interfaces
- ▶ Menu Selection
- ▶ Form Fill-in
- ▶ Direct Manipulation
- ▶ Natural Language Interfaces
- ▶ Comparison of Interaction Styles
- ▶ Advanced Interfaces

Introduction

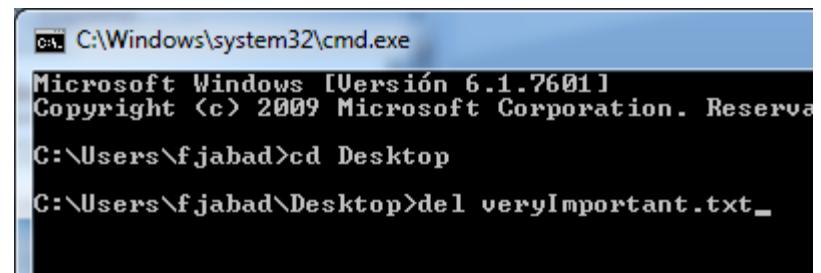
- ▶ After defining tasks and actions, the designer must choose an interaction style
- ▶ Interaction styles are ways a user and a computer system can communicate with each other
- ▶ An interaction style:
 - Is a collection of user interface controls and their associated behavior
 - Provides the look (appearance) and feel (behavior) of the user interface components

Introduction

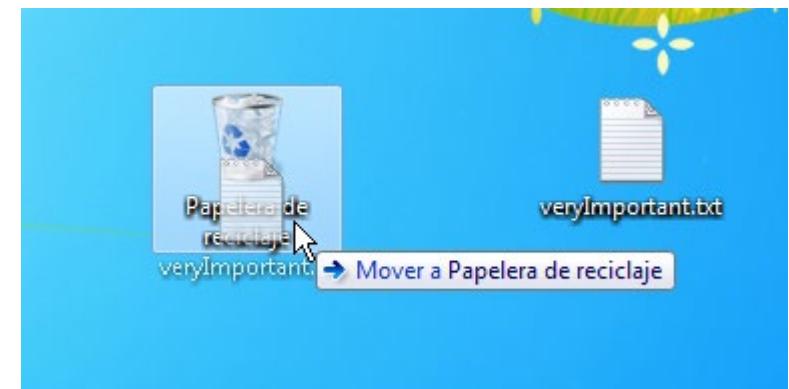
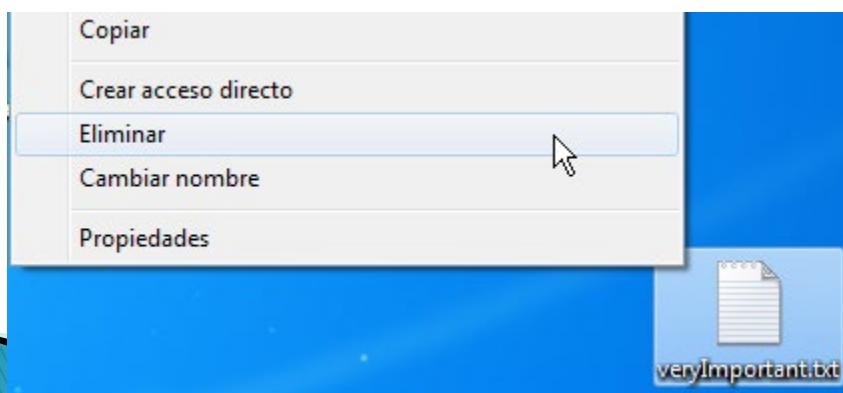
- ▶ We will study five interaction styles:

- Command line interfaces
- Menu selection
- Form Fill-in
- Direct Manipulation
- Natural Language

- ▶ The interaction styles can be combined

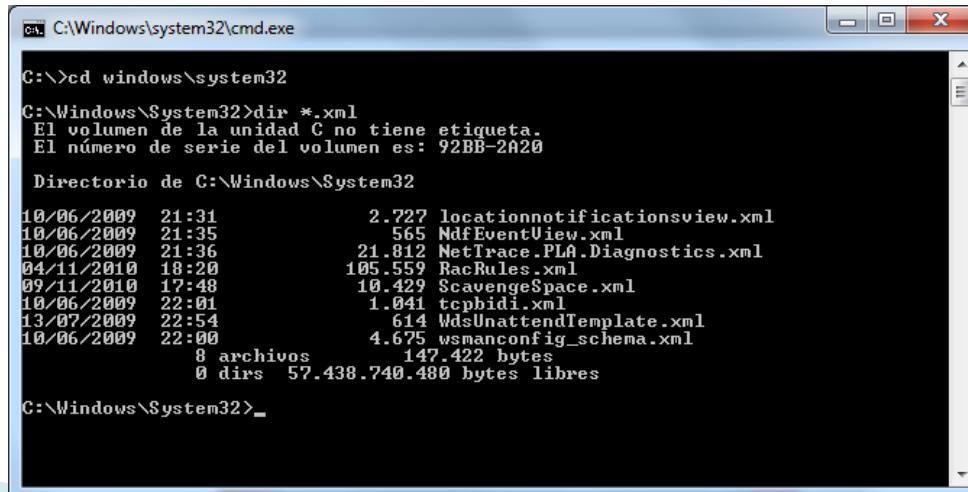


```
C:\Windows\system32\cmd.exe
Microsoft Windows [Versión 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. Reservados todos los derechos.
C:\Users\fjabad>cd Desktop
C:\Users\fjabad\Desktop>del veryImportant.txt
```



Command Line Interfaces

- ▶ The command line interface (CLI) was the first interactive dialog style to be commonly used
 - Allows to provide direct commands to the system
 - They are flexible: commands can have options
 - A command can be applied to many objects at once, so it is useful for repetitive tasks
 - Expert users feel they are in control, and they can express complex actions rapidly and concisely



```
C:\Windows\system32\cmd.exe
C:\>cd windows\system32
C:\Windows\System32>dir *.xml
El volumen de la unidad C no tiene etiqueta.
El n mero de serie del volumen es: 92BB-2A20

Directorio de C:\Windows\System32

10/06/2009 21:31           2.727 locationnotificationsview.xml
10/06/2009 21:35           565 NdfEventView.xml
10/06/2009 21:36          21.812 NetTrace.PLA.Diagnostics.xml
04/11/2010 18:20          105.559 RacRules.xml
09/11/2010 17:48          10.429 ScavengeSpace.xml
10/06/2009 22:01           1.041 tcpbidi.xml
13/07/2009 22:54           614 WdsUnattendTemplate.xml
10/06/2009 22:00          4.675 wsmancfg_schema.xml

               8 archivos      147.422 bytes
                  0 dirs   57.438.740.480 bytes libres

C:\Windows\System32>
```

Command Line Interfaces

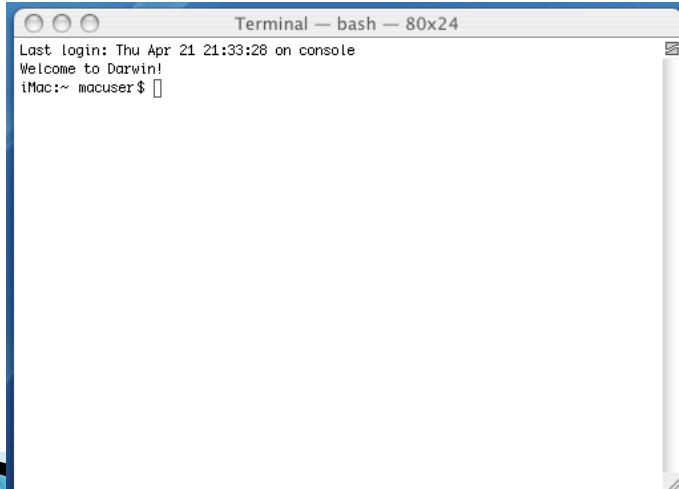
- ▶ Disadvantages of command line:
 - They are hard to learn
 - The user has to remember the commands, since there is no indication on what can be done
 - There is no help about what to do next
 - Commands can be cryptic or have a complex syntax
 - They vary from system to system
 - Low error tolerance, high error rate: a single typing mistake produce an error message in a long command
 - Retention over time is low
 - It is difficult to provide specific error messages and on-line help
- ▶ These problems can be reduced using consistent command names and abbreviations

Command Line Interfaces

- ▶ Command languages originated as a means of communicating with the operating-system
 - Unix philosophy:
 - small programs that do only one thing (cat, grep, ls...)
 - those programs can be chained: the output of a command can be the input to the following command
 - a correct execution does not provide feedback, errors do
 - fast interaction
 - macros are combinations of commands that can be executed at once

Command Line Interfaces

- ▶ Command-line interfaces are still in use:
 - OS interaction: Windows: Command prompt, UNIX, Mac: sh, csh, bash
 - System administration, script languages
 - Console applications: ftp, mail, ed, vi, lynx
- ▶ Useful for low level interaction, as a first interface for an application, or for advanced administration



Mac OS X terminal



Quake III console

Command Line Interfaces

▶ Guidelines for designing CLI

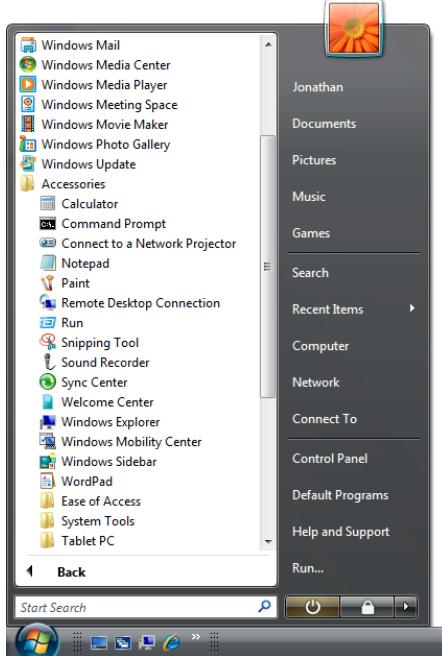
- Choose meaningful and representative command names
- Follow consistent syntax for all commands
- Support consistent rules for abbreviation
- Make commands as short as possible
- If commands or responses to commands can be abbreviated, use common abbreviations (Y/N)
- Limit the number of ways of accomplishing a task
- Allow users to define macros

Menu Selection

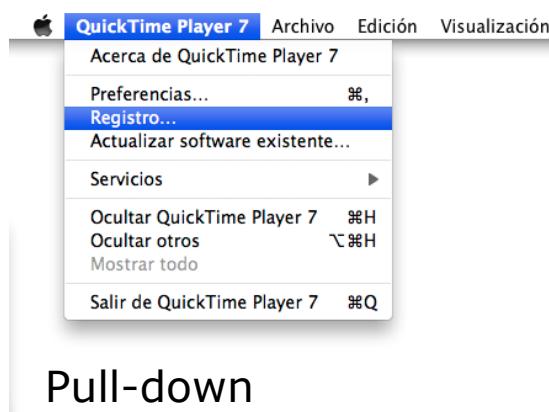
- ▶ A menu is a set of options from which the user must choose
- ▶ Menu selections avoids many problems of command line interfaces, because they offer cues for user recognition rather than forcing them to remember command names and syntax
- ▶ Menu items should be self-explanatory and distinguishable
- ▶ Menus are suitable for users with little training, intermittent users, users who do not know the terminology, or need help on making decisions.
 - On the other hand, expert users may feel restricted or slowed down

Menu Selection

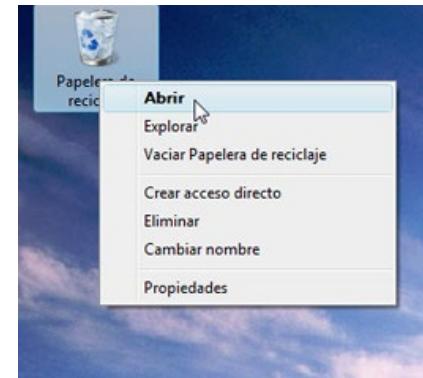
► Examples of menus



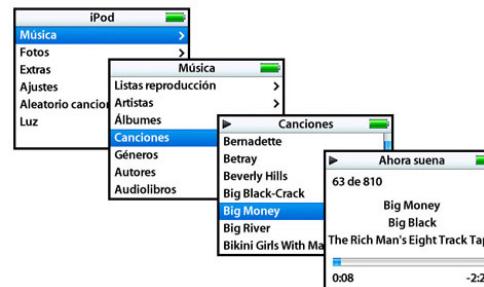
Pull-up



Pull-down



Pop-up

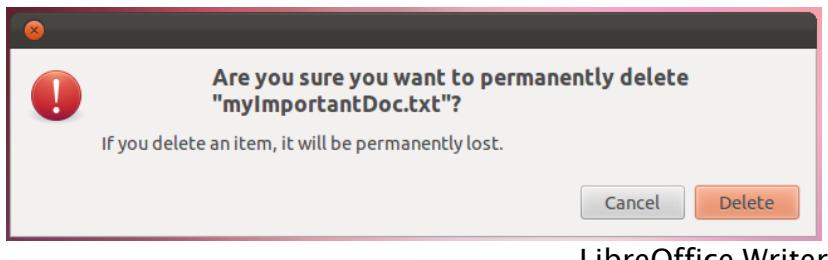


Sequential

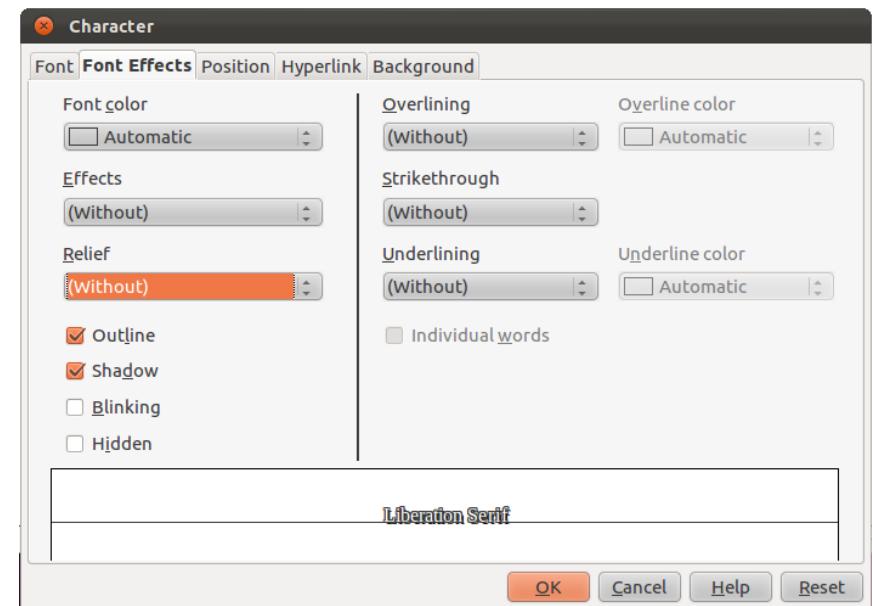
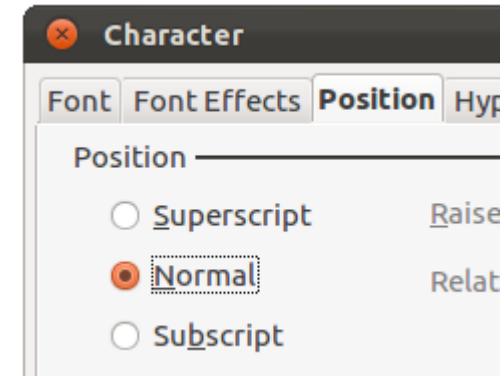
Single Menus

▶ Different types

- Binary menu
 - If repetitive, provide shortcuts and default values
- Radio buttons
 - Mutually exclusive options
- Check boxes
 - Multiple binary options

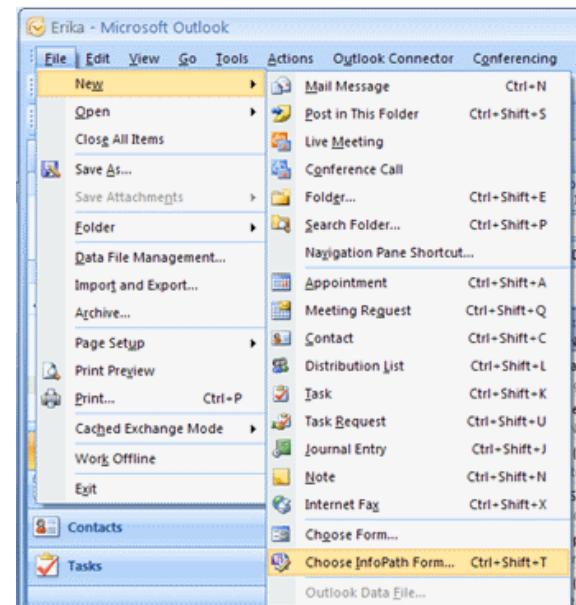


LibreOffice Writer



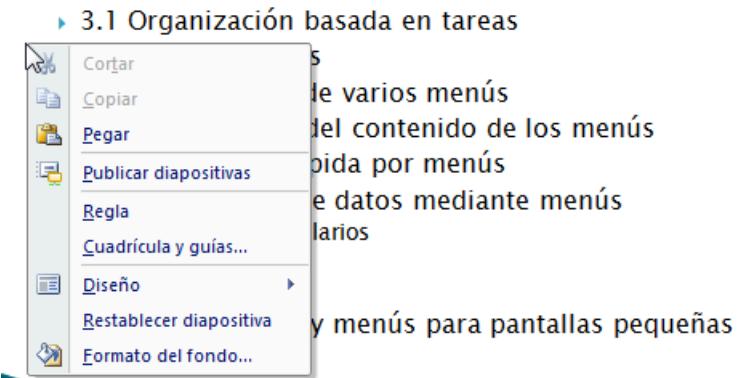
Other menus

- ▶ Pull-down menus
 - Show keyboard shortcuts
- ▶ Pop-up menus
 - Context-dependent (based on the current cursor position)
- ▶ In both cases:
 - Cascading submenus
 - Non available options are grayed out
 - Access keys



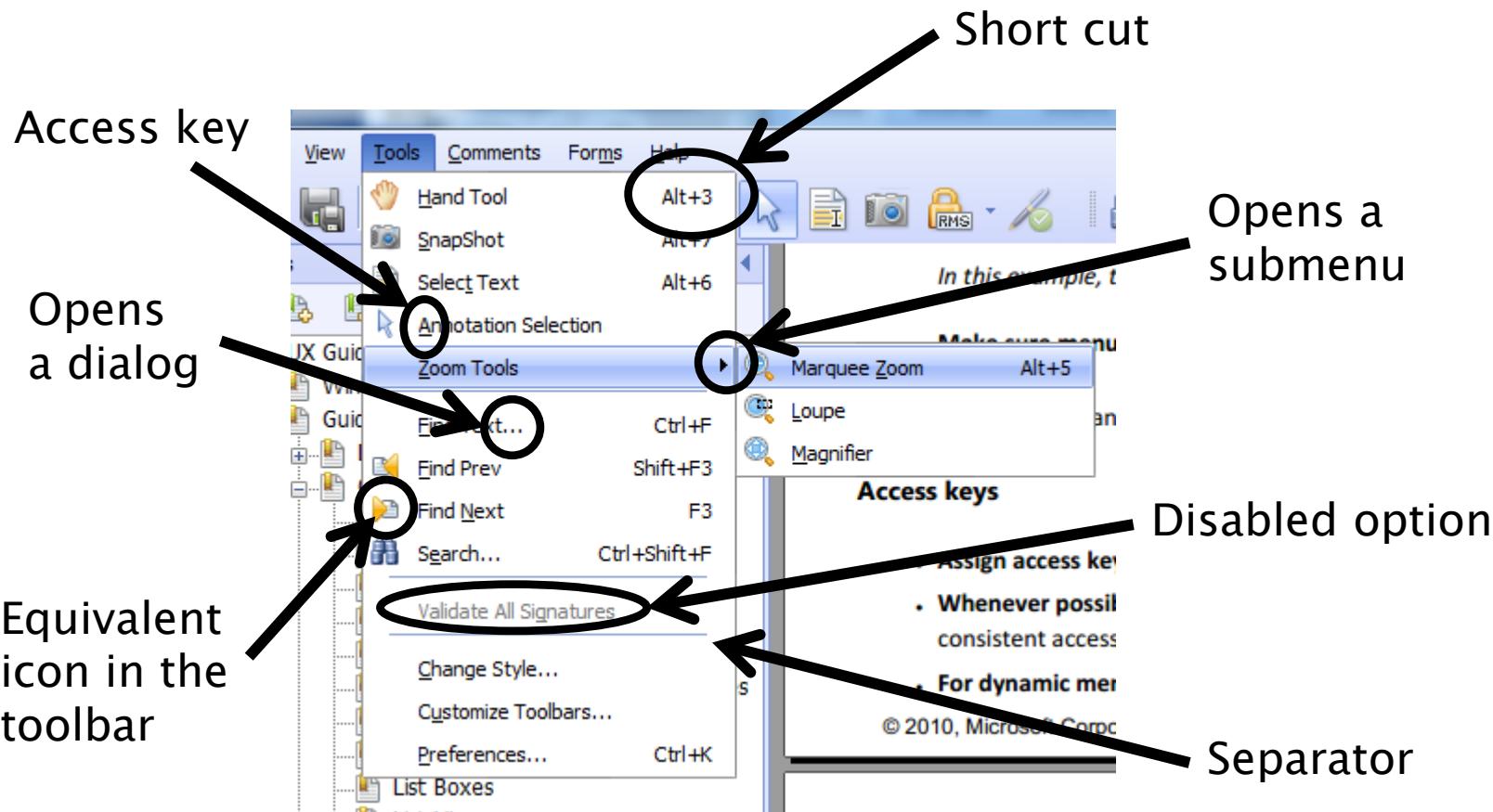
Microsoft Outlook

Índice



Microsoft PowerPoint 2007

Other menus



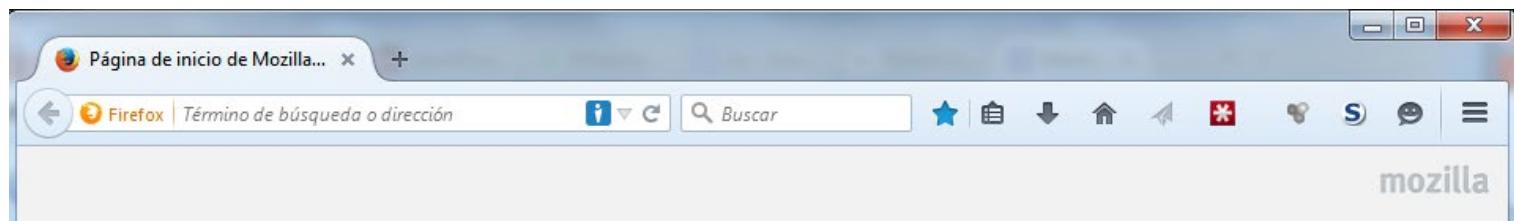
Other menus

▶ Toolbars

- Use icons instead of text



Floating tool bar. Foxit Reader



Firefox 36

▶ Ribbons

- Introduced in Office 2007: tabs



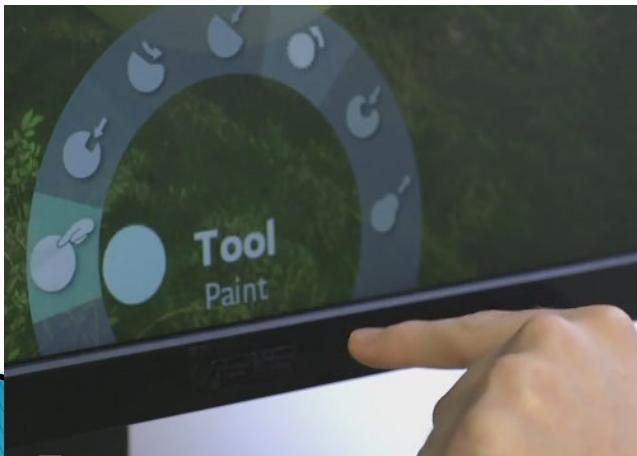
Microsoft Office 2007

Other menus

▶ Pie menus



<http://fuse.microsoft.com/page/kodu>



Leap Motion. Freeform



Brink



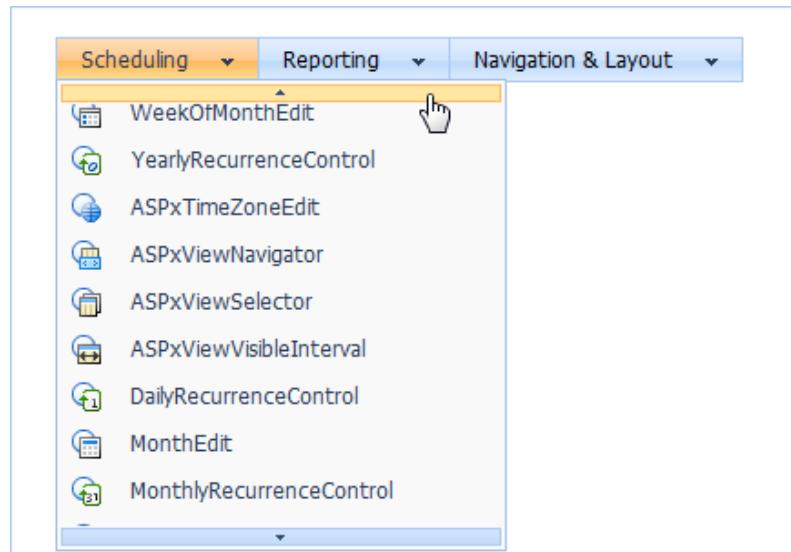
Dragon Age 2

Second Life: <http://youtu.be/TuA41VKqzZg>

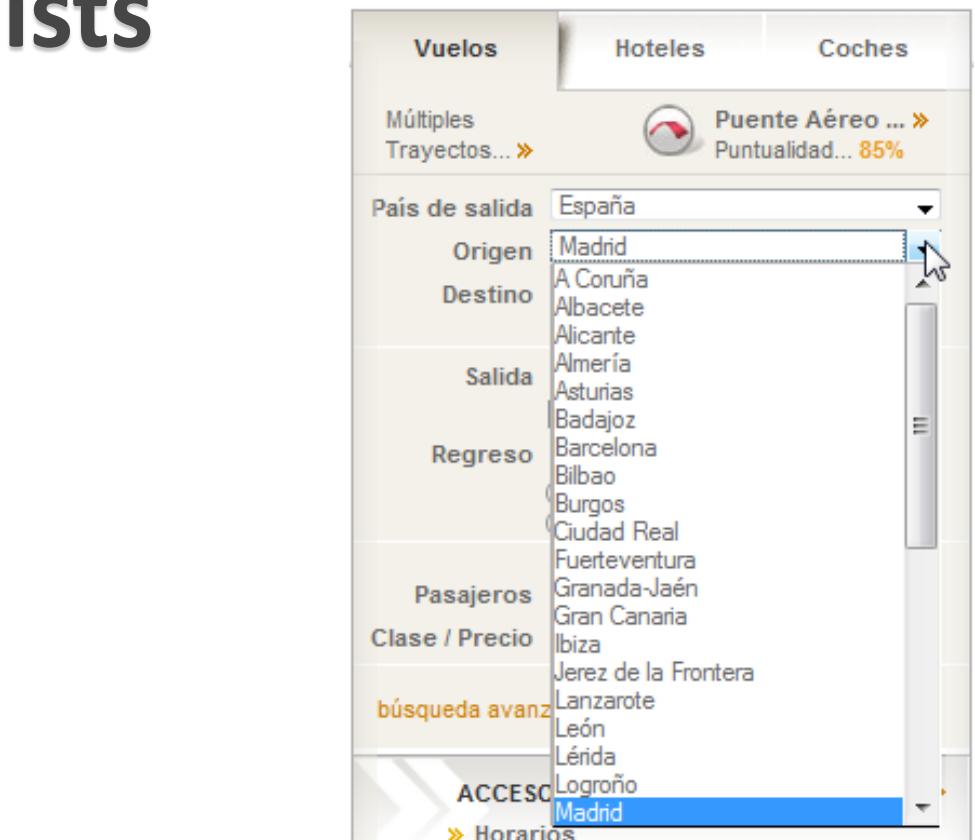
Search for “Pie menu” in youtube for more examples

Menus for long lists

- ▶ Scrolling menus
- ▶ Combo boxes
- ▶ Fisheye menus



community.devexpress.com



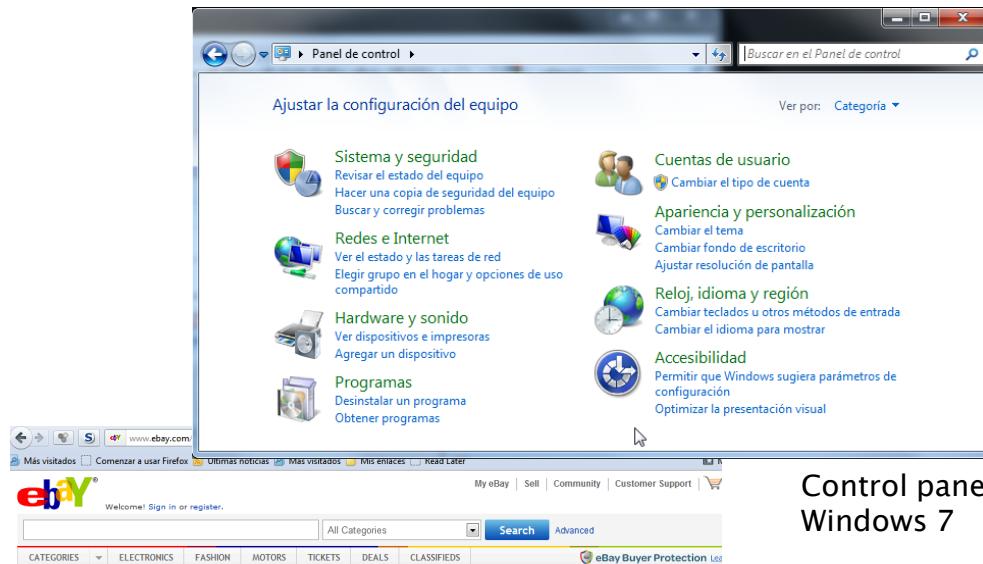
www.iberia.com

Mac OS X

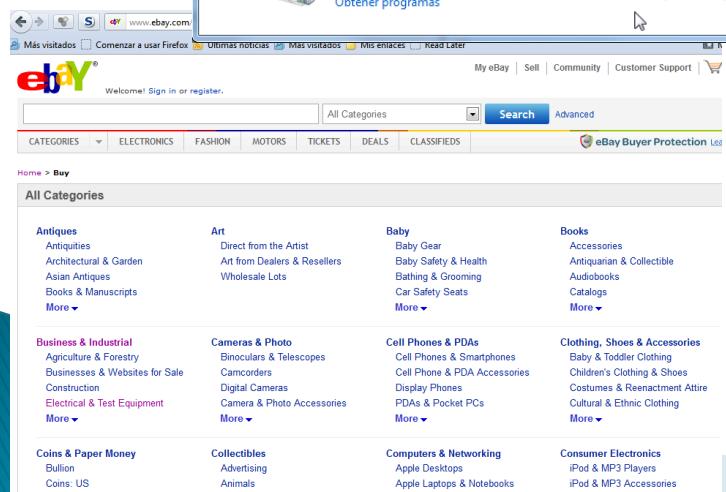


Menus for long lists

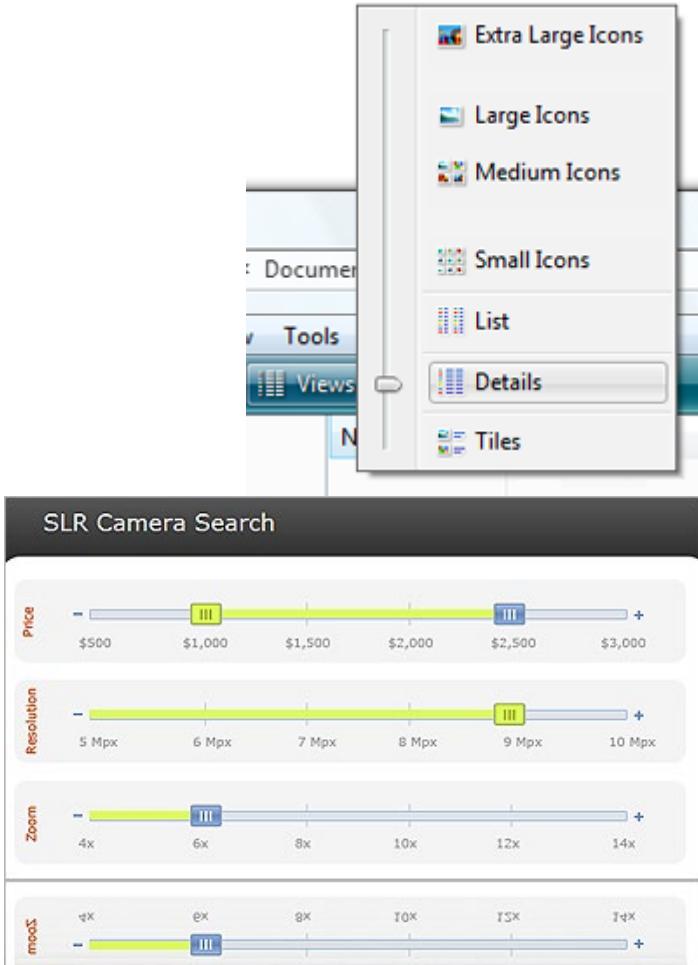
- ▶ Sliders
- ▶ Two-dimensional menus



Control panel
Windows 7



Interfaces Persona Computador



microsoft.com

Embedded menus and hotlinks

- ▶ Alternative to explicit menus
- ▶ Show options in their context
- ▶ Precursor of web hotlinks

Main Country/Region:
Europe

Country:
(Select)

Destinations labeled on the map include: Canada, United States, Mexico, Central America, South America, Caribbean, Puerto Rico, Africa, Middle East, Australia, and Guam.

www.alamo.com

Article: U.S. troops numb, uncertain after Afghan massacre
25 mins ago

Article: Roadside bomb kills 13 civilians in south Afghanistan
2 hrs 4 mins ago

Article: Afghanistan's Karzai calls for NATO to leave all villages
48 mins ago

DESTINATION 2012

COMPLETE ELECTION COVERAGE +

The Taliban also said talks with the government of President Hamid Karzai were pointless and none had taken place. The announcement came days after an American soldier was accused of slaughtering 16 Afghan civilians in the south. The killings in Kandahar province on Sunday have raised questions about Western strategy in Afghanistan and intensified calls for the withdrawal of foreign combat troops. Earlier on Thursday, a senior U.S. commander defended moving the American soldier accused of the killings to a military detention centre in Kuwait, saying it would help ensure a proper investigation and trial.

Furious Afghan civilians and members of parliament have demanded the staff sergeant be tried in

[yahoo.com](http://www.yahoo.com)

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Secretaría virtual Horarios centro

Información titulaciones Docencia Alumnos de Nuevo Ingreso Espacio europeo Delegación de alumnos Relaciones internacionales

En el curso 2010-11 la Escuela Técnica Superior de Ingeniería informática titula las siguientes titulaciones:

- Grado en Ingeniería Informática
- Licenciado en Documentación.
- Ingeniero en Informática (a extinguir).
- Ingeniero Técnico en Informática de Gestión (a extinguir).
- Ingeniero Técnico en Informática de Sistemas (a extinguir).

webTV.inf [etsinf](#)

Continuación de estudios 2011-2012

graduació 2010

Grado en Ing. Informática d'exposicions

www.etsinf.upv.es

Combination of multiple menus

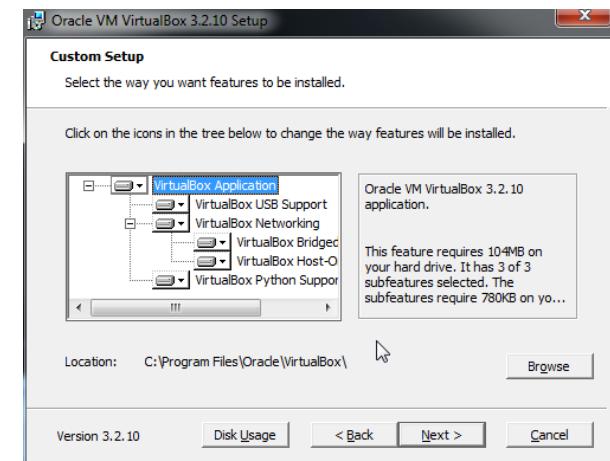
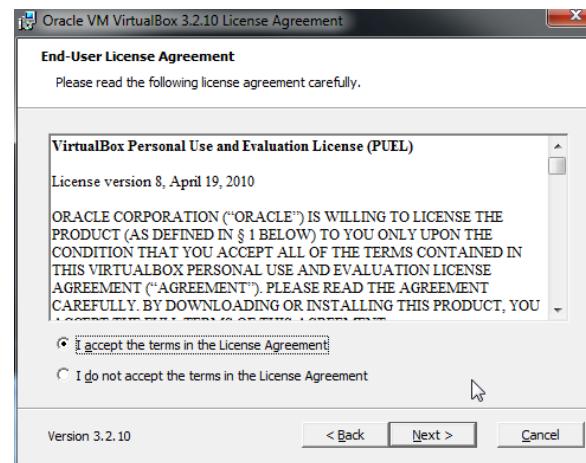
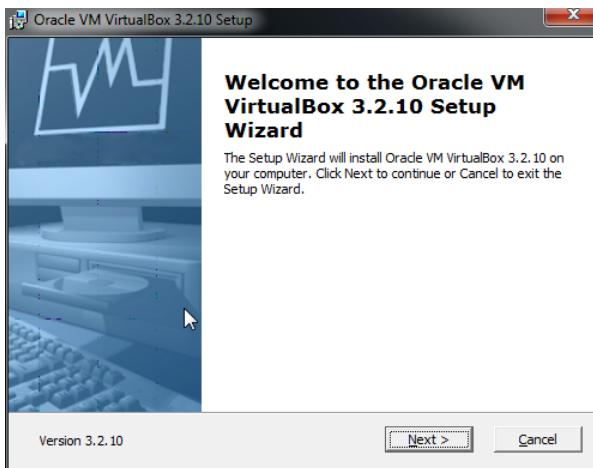
Introduction

- ▶ There are several techniques to organize items in several menus:
 - Linear menu sequences
 - Simultaneous menus
 - Tree-structured menus
 - Menu maps
 - Acyclic and cyclic menu networks

Combination of multiple menus

Linear menu sequences

- ▶ The user makes one decision at a time
- ▶ Effective for: novel users and simple tasks
- ▶ Examples: installation wizards, on-line pizza delivery...



Oracle VM VirtualBox Installer

Combination of multiple menus

Simultaneous menus

- ▶ Several menus at the same time
- ▶ Users enter choices in any order
- ▶ For expert users

The screenshot shows a complex web interface with multiple overlapping and integrated menus:

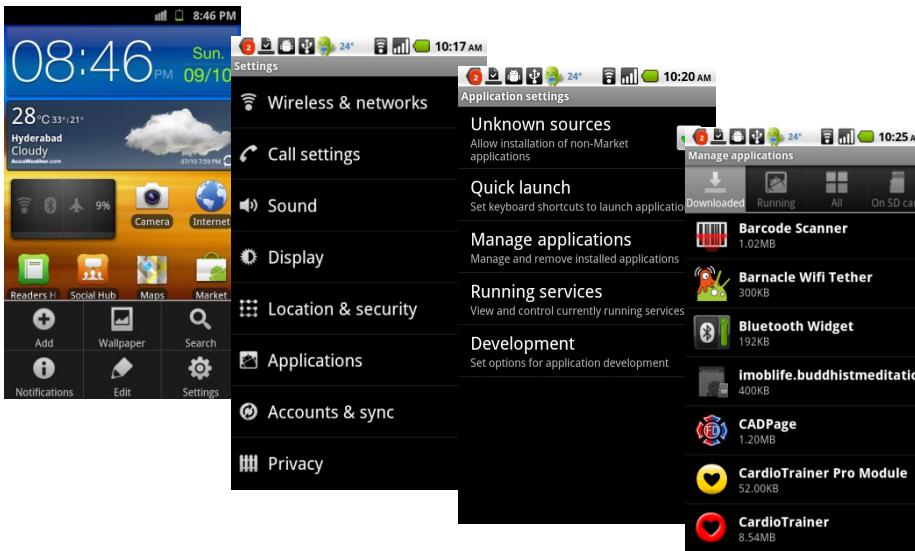
- Header:** Includes links like "Inicio", "Busca TU TIENDA APP", "Pon tu Franquicia de Informática APP", "«Quieres TRABAJAR en APP?»", and "ENCUESTAS APP".
- Left Sidebar:** A vertical menu with sections for "ORDENADORES", "COMPONENTES", "IMAGEN", and "PERIFERICOS".
- Top Center:** Features icons for globe, leaf, and speedometer, followed by text about WD drives and a "Más información" link.
- Middle Top:** A banner for "VALENCIA-CLARIANO" with options to "Enviar Mensaje" or "Elige Tienda APP".
- Search Bar:** "¿Qué buscas?" with dropdown options like "En Escaners".
- Product Listings:** Three products are shown:
 - ESCANER CANON LIDE 210:** Stock: 3 unid, Top: 364, Precio: 90,70.
 - ESCANER CANON LIDE 110:** Stock: 52 unid, Top: 654, Precio: 67,20.
 - ESCANER DOCUMENTAL FUJITSU SCANSNAP S1100:** Stock: 4 unid, Top: 3191, Oferta: HASTA 15 ABR, Precio: 194,80.
- Bottom Center:** A "LISTADO COMPLETO DE ESCANERS" table with columns for "Top Ventas", "Descripción", "Stock", and "Ver Escaners descatalagados". It lists the three products above.
- Right Sidebar:** Sections for "REDES", "SONIDO", and "SOFTWARE".
- Bottom Right:** A "www.appinformatica.com" watermark.

www.appinformatica.com

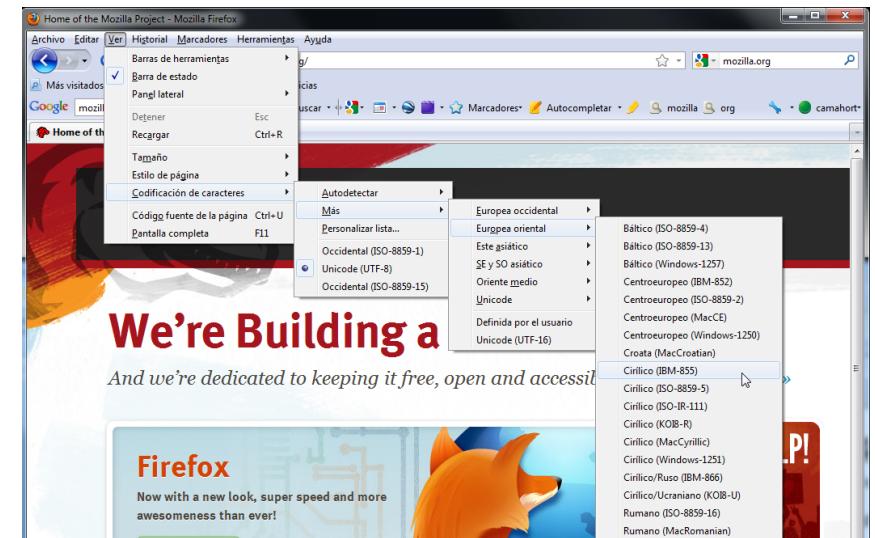
Combination of multiple menus

Tree-structured menus

- ▶ Group options in natural and easy to understand categories
- ▶ Use the terminology from the user's task domain
- ▶ Recommendations: 4-8 items per menu, 3-4 levels



Sequential menus
(Android)

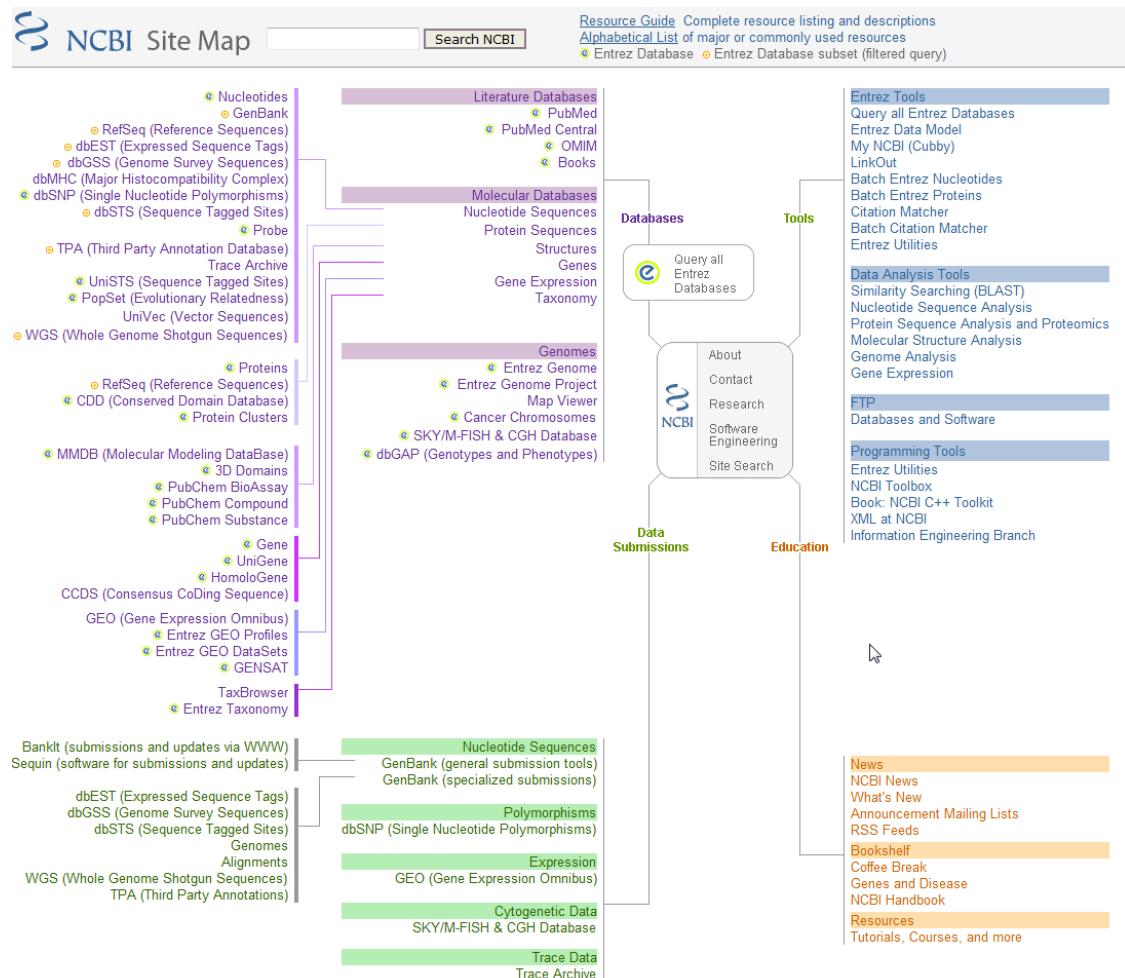


Expanding menus
(Firefox)

Combination of multiple menus

Menu maps

- ▶ Used when the menu tree grows
- ▶ Provide an overview of the options, keeping the sense of position
- ▶ Examples: Site maps



Combination of multiple menus

Menu maps

- ▶ Another example:
Cheatsheets

blender cheat sheet EDIT MODE | HOTKEYS

blender cheat sheet OBJECT MODE | HOTKEYS

Blender 2.4x Basic shortcut keys

Num Lock	/	*	-	Zoom Out
7 Top	8 View Up	9	+ Zoom In	
4 View Lt	5 Perspective	6 View Rgt		
1 Front	2 View Dwn	3 Side		Enter
0 Camera				Center on Selection

MOUSE NAVIGATION

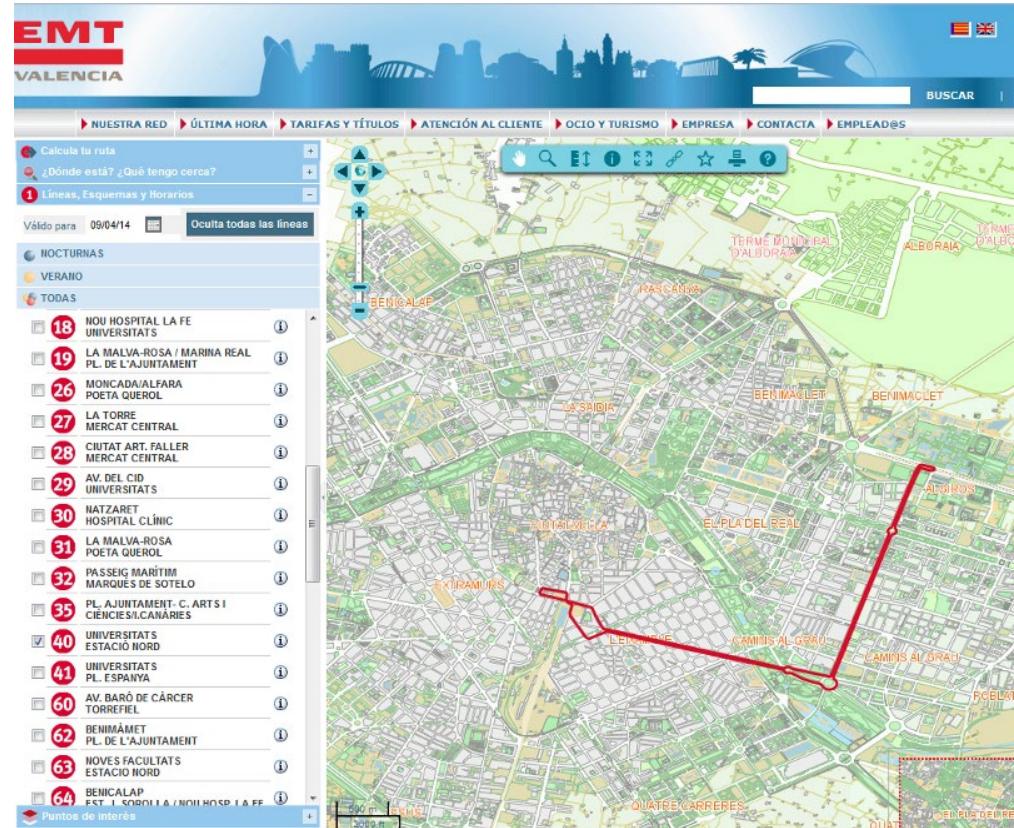
CTRL+ALT+0 Snap Camera to VIEW

<http://uo3d.blogspot.com.es/2010/08/new-cheat-sheet.html>

Combination of multiple menus

Acyclic and cyclic menu networks

- ▶ Allow users to reach an item from different start points
- ▶ Arise naturally in:
 - Social relationships
 - Transportation routing
 - Bibliographical cites
 - WWW
- ▶ They can confuse users



<http://www.emtvalencia.es>

Content organization

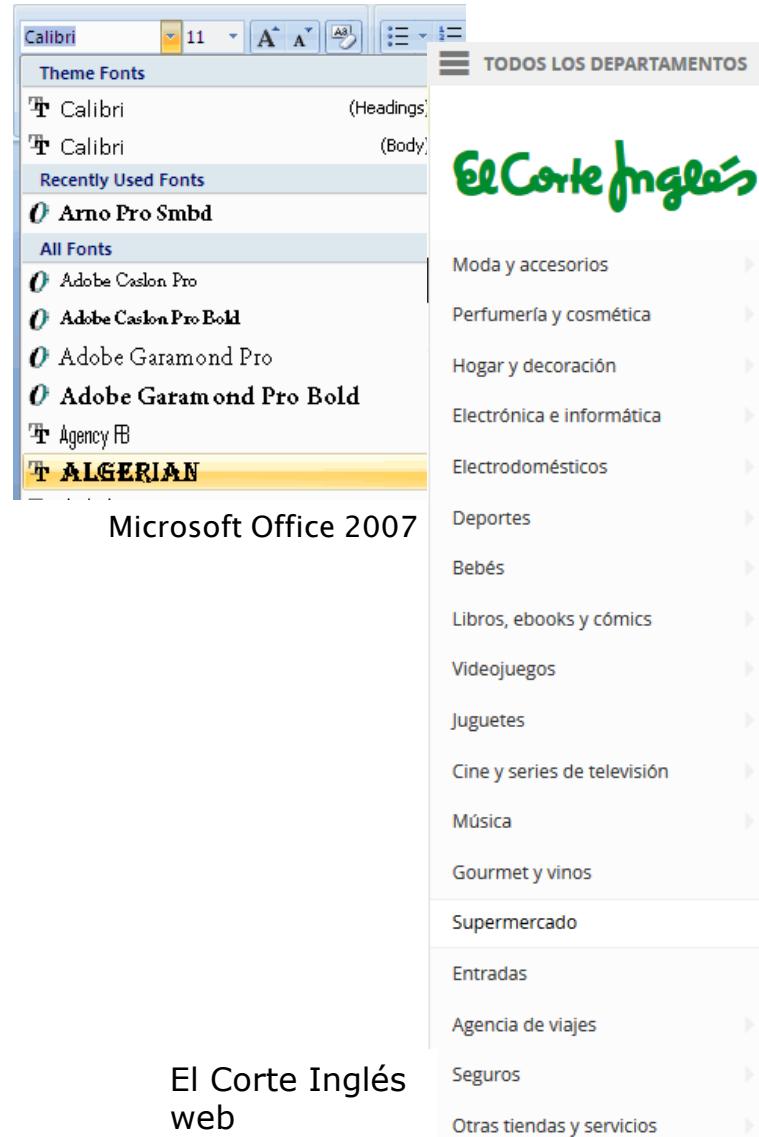
Task-related grouping in tree structures

- ▶ Create groups of logically similar items
Example: multi-level menu: countries, states or provinces, and cities
- ▶ Form groups that cover all the possibilities
Example: menu with age ranges: 0-18, 19-35, >35
- ▶ Make sure that items are non-overlapping
Example: use “Concerts” and “Sports” instead of “Entertainment” and “Events”
- ▶ Use familiar terminology, but differentiate the items
Examples: use “8:00 to 20:00” and “20:00 to 8:00” instead of “Day” and “Night”,

Content organization

Item presentation sequence

- ▶ How to sort the items in each menu
 - Natural order (time, numeric...)
Example: week days, ages, sizes...
 - or, using a standard order
Example: alphabetic, most frequently used items first, most important items first, in categories (separated by blank lines)
- ▶ The items can be sorted adaptively
 - Example: Office font-selection menus



El Corte Inglés
web

Content organization

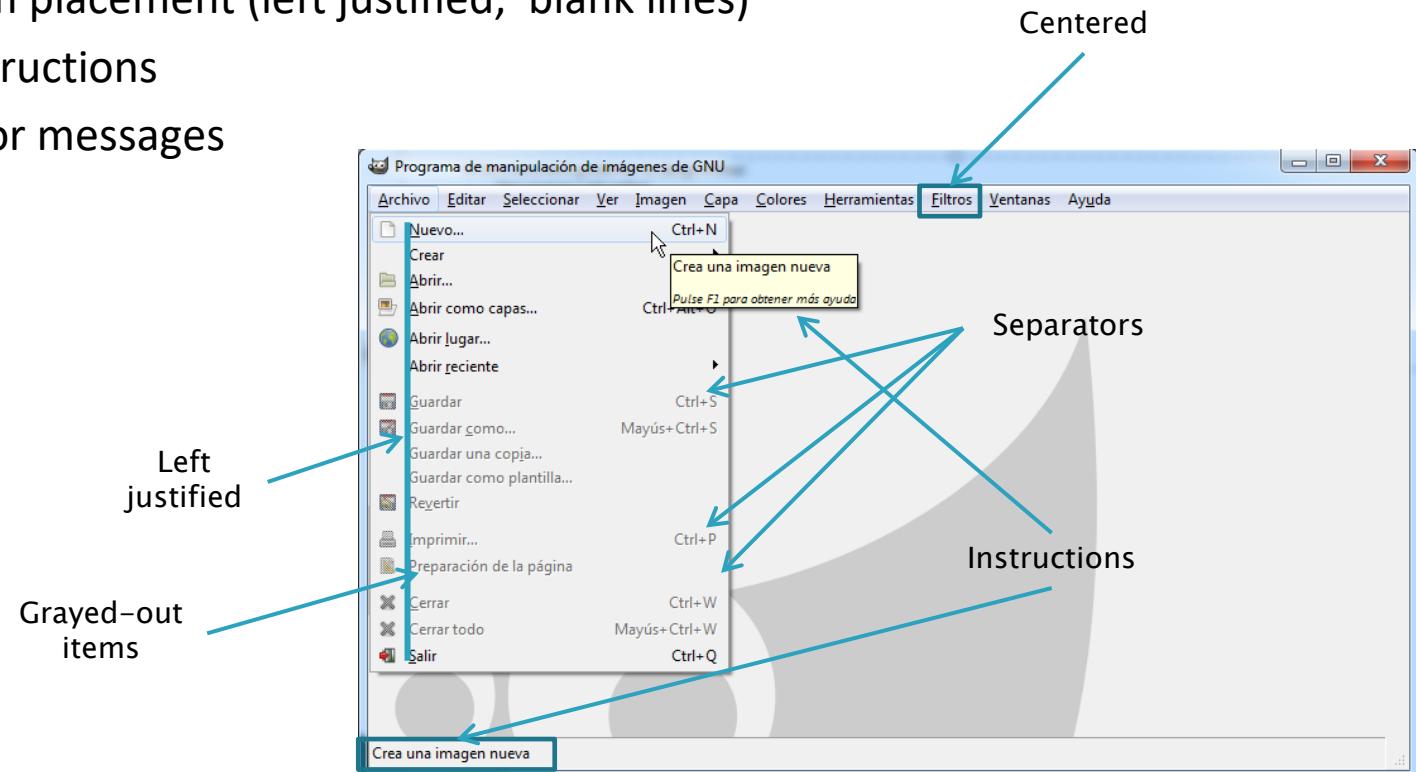
Menu layout

- ▶ Titles: must be simple and descriptive
- ▶ Phrasing and formatting:
 - Use familiar and consistent terminology
 - Ensure that items are distinct from one another
 - Use concise phrasing
 - Start the item name with a keyword
 - Example: “Size of type” instead of “Set the type size”

Content organization

Menu layout

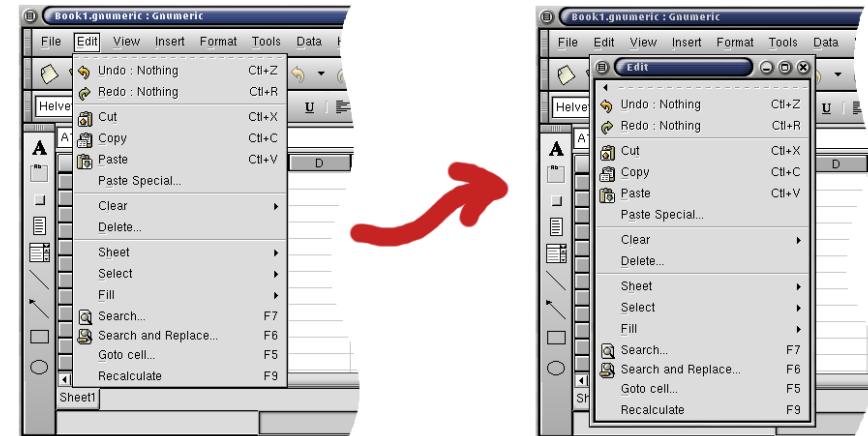
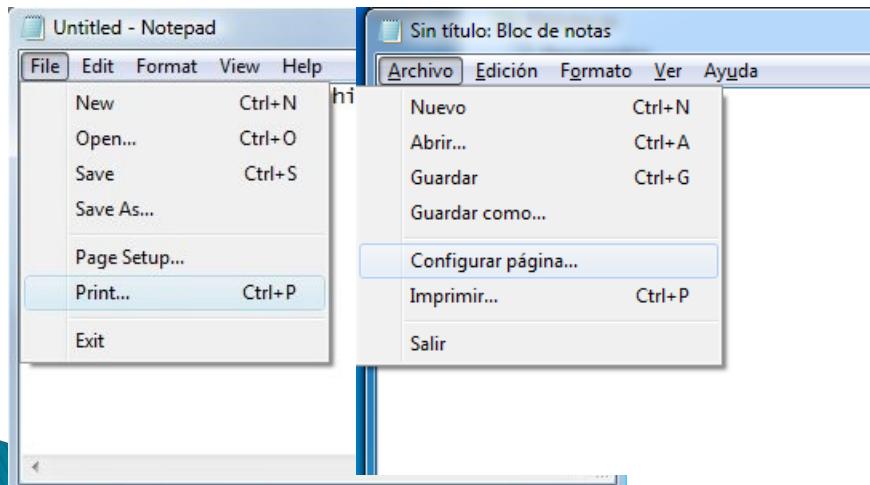
- ▶ Write a consistent guidelines to design menus:
 - ▶ Titles (centered or left justified)
 - ▶ Item placement (left justified, blank lines)
 - ▶ Instructions
 - ▶ Error messages



Gimp

Fast Movements Through Menus

- ▶ Keyboard shortcuts
 - For expert users
 - Problems for translation
- ▶ Pie menus
 - If item location is known, the user can move the pointer ahead
- ▶ Tear-off menus



Tear-off menus in Gnumeric. Gnumeric manual

Audio menus

- ▶ Used when hands and eyes are busy
 - Examples: GPSs, on-board computers, telephone interfaces
- ▶ Speak options and questions to the user
- ▶ And the user responds using a keyboard or by voice
- ▶ Non persistent, the user has to memorize the options
- ▶ The system has to provide auditory feedback
- ▶ Example
 - In a telephone interface, the user should be presented with 3 or 4 options
 - The system should allow the user to select the option before finishing the presentation of the rest

Menus for small displays

- ▶ Applications: entertainment, mobile phones, PDAs, etc.



Sony



Nokia



Nintendo

Menus for small displays

- ▶ Design goals
 - Learnability: they should be easy to learn
 - Account for target domain
 - Organize options by importance and frequency of use
 - Simplify: concentrate on the important options
 - Design for responsiveness: plan for interruptions and provide continuous feedback
- ▶ Elements
 - Hardware buttons for special options
Examples: dedicated buttons (call, hang up); Directional keys; soft keys
 - Touch-screen for gesture based interaction
 - Large color icons for on-screen options

Menus in Command Line Interfaces

▶ Command menus:

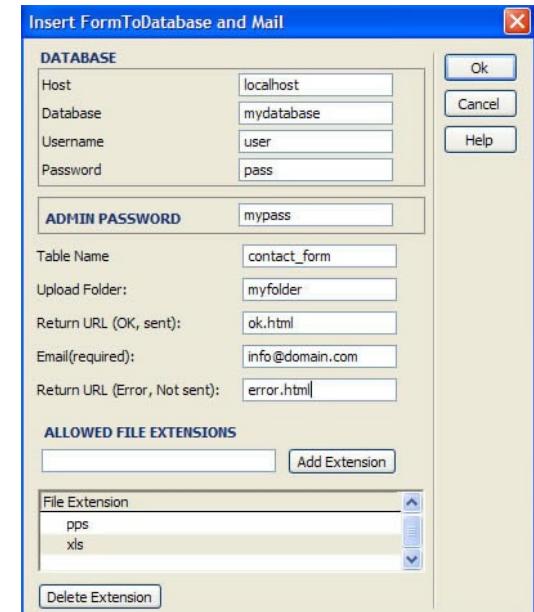
- Show the available options
- Useful for novice and intermediate users
- Example: Lynx's command menu: http://youtu.be/O_4iah3UtHo

```
H)elp O)ptions P)rint G)o M)ain screen Q)uit  
/=search [delete]=history list
```

▶ Command menus show shortcuts (type **P<Enter>** instead of **print<enter>**)

Form Fill-in

- ▶ Used when the application needs to gather lots of information from the user
- ▶ Form fill-in interfaces allows the user to
 - move easily around the form,
 - leave some fields blank
 - correct some data already entered
 - input of text and numeric data
- ▶ The form on the screen is a metaphor for a paper form



www.hotdreamweaver.com

Form Fill-in

► Guidelines

- Meaningful title (identify the topic without technical terms)
- Comprehensible instructions
 - “Type the address” or “Address” instead of “You should type the address”, or “The user has to enter the address”
- Logical grouping and sequencing fields
- Visually appealing layout of the form
 - Field labels right justified, input boxes vertically aligned
- Familiar field labels
- Consistent terminology and abbreviations

Form Fill-in

► Guidelines (continued):

- Visible space and boundaries for data-entry fields (give a hint on the maximum input length)
- Convenient cursor movement (Tab and cursor)
- Error correction for individual characters and entire fields
- Error prevention where possible
- Error messages for unacceptable values
- Immediate feedback
 - Better than feedback after form submission
- Marking of required fields
- Explanatory messages for fields
- Completion signal to support user control
 - Allow the user to review the form before sending

Form Fill-in

The screenshot shows a web browser window displaying the Yahoo! Registration page at <https://edit.y>. The page title is "Yahoo! Registration". The main heading is "YAHOO!". Below it, a sub-headline reads "With a Yahoo! Account, get free email and other leading web services." A horizontal line separates this from the registration fields.

Registration fields include:

- Name: IPC [input field]
- Gender: Male [dropdown menu]
- Birthday: February [dropdown menu] Day [input field] Year [input field]
- Country: Spain [dropdown menu]
- Language: English [dropdown menu]
- Postal Code: [input field]

A horizontal line separates this from the password section:

Select an ID and password
Yahoo! ID and Email: ipcrules@yahoo.com [Change](#)

Password: [input field] Very strong [progress bar]

Re-type Password: [input field]

A horizontal line separates this from the recovery information section:

In case you forget your ID or password...

Alternate Email (optional): [input field]

Secret Question 1: [- Select One -] [dropdown menu]
Your Answer: [input field]

Secret Question 2: [- Select One -] [dropdown menu]
Your Answer: [input field]

To the right of the recovery section is a note: "All communications from Yahoo will be sent to this primary email address, including information that will help you recover your ID or password."

Below the recovery section is a CAPTCHA area:

Visual code | Audio code | Help

Type the code shown:

Try a new code

At the bottom of the form, there is a terms and conditions agreement:

By clicking the "Create My Account" button below, I certify that I have read and agree to the [Yahoo! Terms of Service](#), [Yahoo! Privacy Policy](#) and [Communications Terms of Service](#), and to receive account related communications from Yahoo! electronically. To deliver product features, relevant advertising and abuse protection, Yahoo!'s automated systems scan and analyze all email, IM and other communications content.

[Create My Account](#)

Copyright © 2012 Yahoo! Inc. All rights reserved. [Copyright](#) [IP Policy](#) [Terms of Service](#) [Guide to Online Security](#)

www.yahoo.com

Form Fill-in

- ▶ Some entry fields may require special formatting
 - Text (left justified)
 - Numbers (left justified in entry, right-justified in display, decimal points aligned)
 - Telephone numbers
 - Id numbers, dates and times, currency

INFORMACIÓN DE LA SOLICITUD

La página en <https://www.dsic.upv.es> dice:

Objeto	Asistencia congreso
Lugar	Paris
Itinerario	vlc-cdg-vlc

FECHAS

SALIDA	REGRESO	Noches Hospedaje
1000/1000/ hh:mm	dd/mm/aaaa hh:mm	

TRANSPORTE

Tipo	Seleccione	Importe	€
------	------------	---------	---

! Fecha de SALIDA incorrecta (Utilice formato dd/mm/aaaa).

Aceptar

buscar vuelos

Precio mínimo garantizado

vuelos hoteles vuelo+hotel

buscar: ida y vuelta sólo ida múltiples destinos

aeropuerto salida: destino:

fecha salida:
29 marzo

fecha regreso:
30 marzo

mis fechas son flexibles

adultos: 1 niños: 0
(+12) (2-11)

búsqueda avanzada
[compañía, clase, etc...](#)

Marzo 2011 →

L	M	M	J	V	S	D
1	2	3	4	5	6	
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

publicidad

Cerrar

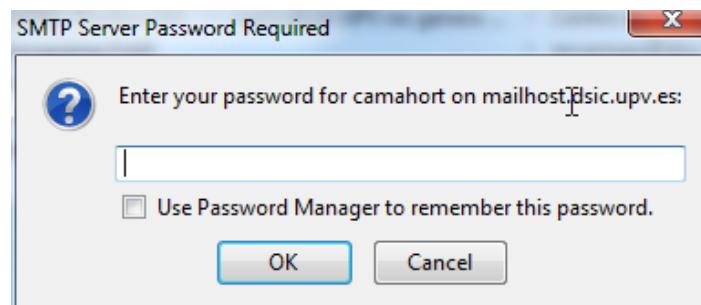
www.dsic.upv.es

www.lastminute.com

Form Fill-in and Menus

Dialog boxes

- ▶ Combine menus and form fill-in
 - Meaningful title, consistent style
 - Top-left to bottom-right sequencing
 - Clustering and emphasis
 - Consistent layout (margins, grids, whitespace, lines, boxes)
 - Consistent terminology, fonts, capitalization, and justification
 - Standard buttons (OK, Cancel)

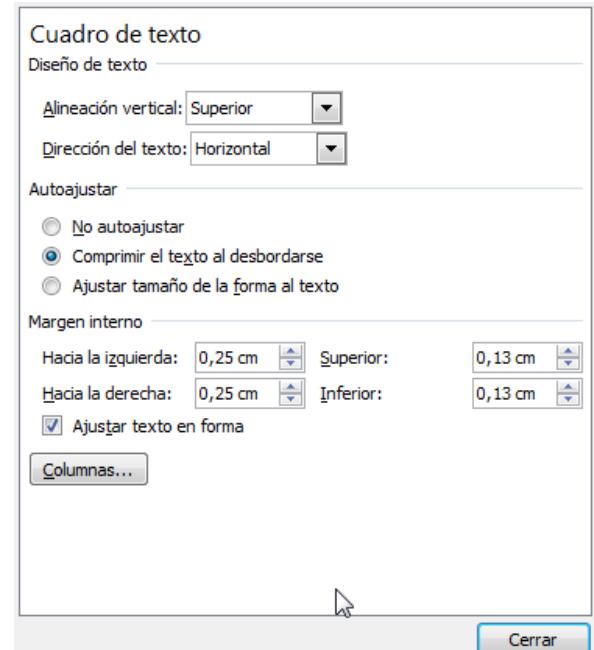


Mozilla Thunderbird

Form Fill-in and Menus

Dialog boxes

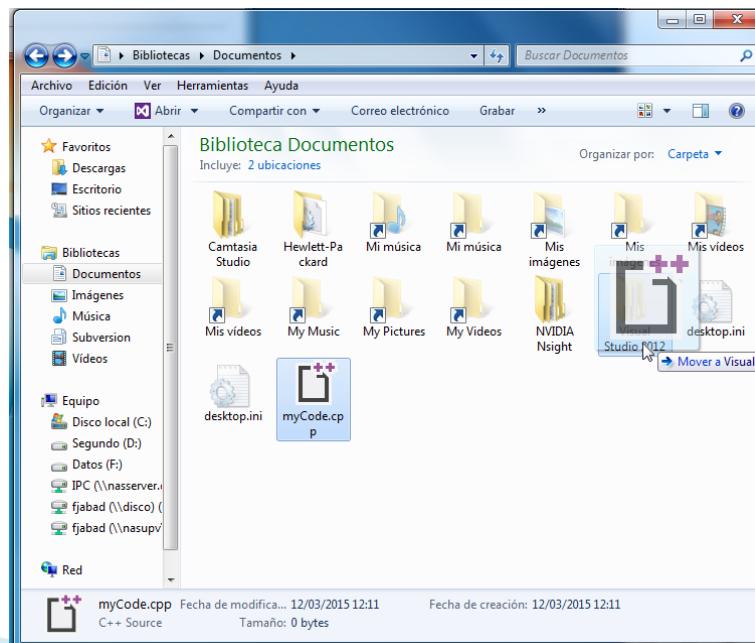
- ▶ Relationship with other elements
 - Smooth appearance and disappearance
 - Distinguishable but small boundary
 - Small enough to reduce overlap problems
 - Display close to appropriate items
 - No overlap of required items
 - Easy to make it disappear
 - Enter/Escape
 - Clear how to complete/cancel



MS PowerPoint 2007

Direct Manipulation

- ▶ Direct manipulation interfaces allow users to interact directly with the UI objects
 - They usually use continuous input devices, such a mouse, pen, joystick or touch screen
 - Example: drag and drop a file into a folder



Direct Manipulation

- ▶ There are many domains where DM interfaces are used:
 - Word processing, CAD, flight simulation, video games...
- ▶ Characteristics
 - Visible and continuous representation of task objects and their actions (no need to remember syntax)
 - The task objects are manipulated directly (instead of by means of commands)
 - Operations are rapid, incremental and reversible.
 - The user feels she is interacting with the objects of the domain directly, not through a intermediary
 - Novices can learn the basic functionality quickly

Direct Manipulation

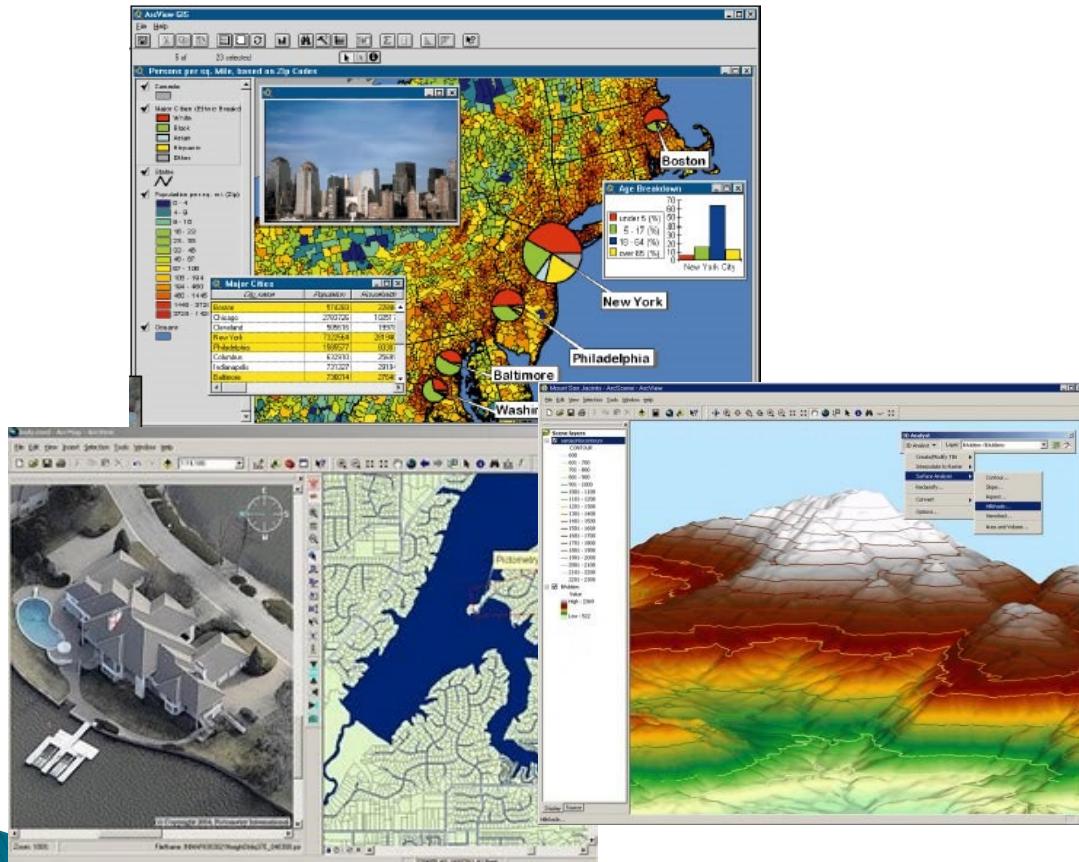
- ▶ Advantages of WYSIWYG word processors:
 - Users see a full page of text
 - The displayed document and the printed document look equal
 - The focus of edition is clearly seen
 - Cursor motion is natural
 - The most used actions are always on-screen as buttons
 - The user actions are instantly shown
 - Rapid response and display
 - Most actions can be reversed



Direct Manipulation

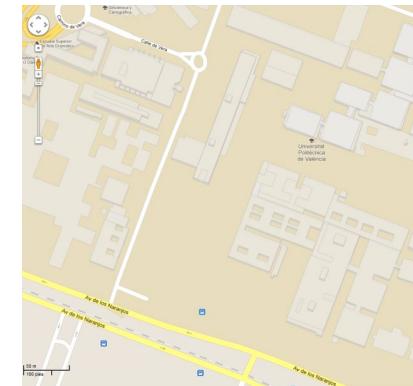
Example: Spatial data management

Esri ARCGIS



<http://www.esri.com/software/arcgis/arcgis-for-desktop>

Google Earth, Google Maps



Direct Manipulation

Example: Videogames

- ▶ Videogames have always taken advantage of direct manipulation
- ▶ User actions show immediately a reaction on screen
- ▶ There is no syntax to remember



Second Life



Quake 4



http://www.youtube.com/watch?v=ob28uK_kUXo



Simcity



Spore



Direct Manipulation

Example: Videogames

Guitar Hero



Rock Band

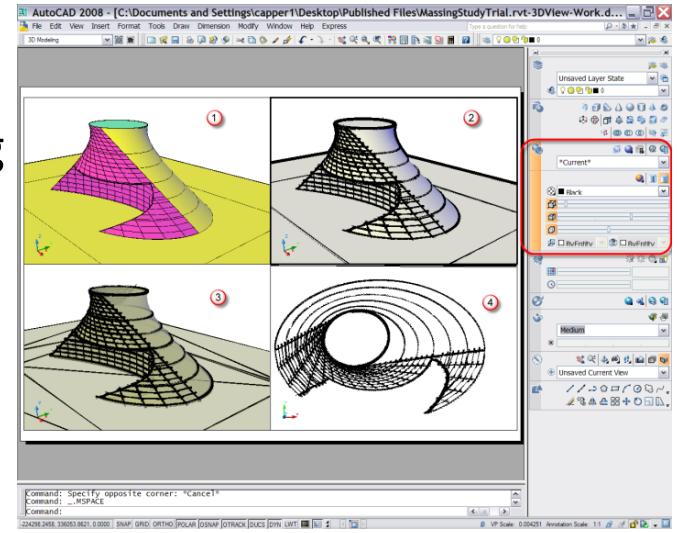
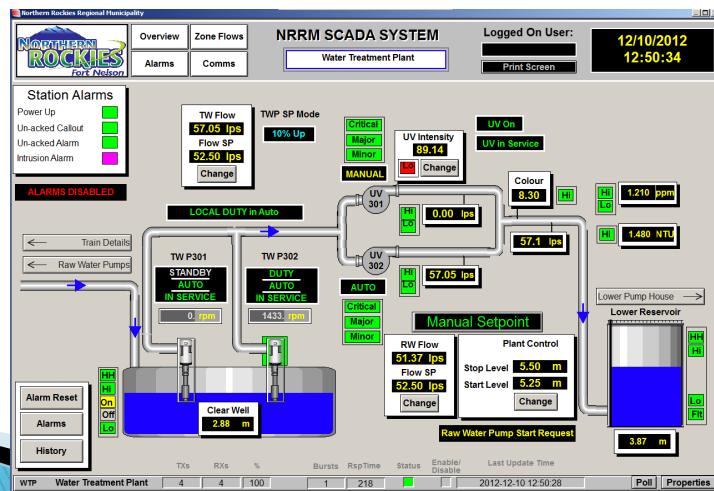


http://www.youtube.com/watch?v=J3OD_7tCtYw

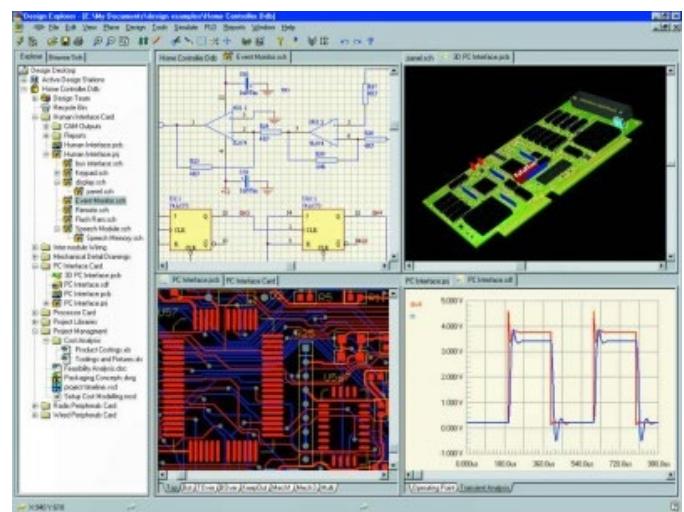
Direct Manipulation

Example: CAD, CAM, SCADA

- ▶ Computer Aided Design (CAD), Manufacturing (CAM), process control
 - Users manipulates the objects of interest directly
 - Easy to generate alternatives
 - Simulation of results
 - Easy to represent the real world for better understanding



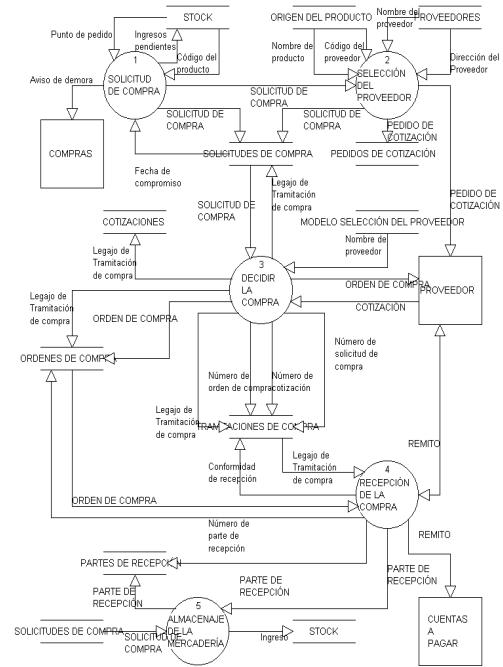
AutoCAD



Altium Designer

Problems with direct manipulation

- ▶ It is an impediment for vision-impaired users
- ▶ Visual representations are usually large and occupy screen space, and it may be necessary to use scrolling
- ▶ Users must learn the meanings of visual representations
- ▶ Visual representation may be misleading
- ▶ It can be slower for experts using keyboards
- ▶ Problematic in small screens
- ▶ Difficult in some applications (databases, web browsing...)



Data flow diagram



Advanced Interfaces

Natural-Language Interfaces

- ▶ Natural-language interfaces (NLI)
 - The user interacts with the computer using a familiar natural language (such as English) to give instructions and receive responses
 - Text or speech
 - There is no syntax or commands to learn
 - Successful in domain-specific applications
 - The advances in direct manipulation and its low recognition rates reduced the interests in this type of interface, but today is regaining attention

Advanced Interfaces

Natural-Language Interfaces

- ▶ Natural-language interaction (NLI)
 - It is not clear whether this is desirable:
 - computers can show information 1000x faster than the user can enter commands
 - novice and intermittent users prefer to choose among a visible set of options
 - experts prefer a precise, concise command language
 - lack of habitability: it is hard for the users to determine what objects and actions are appropriate
 - it requires clarification, that slows down the interaction

Advanced Interfaces

Natural-Language Interfaces

- ▶ Adventure games
 - Popular in the 70s-80s

```
.RUN ADV11

WELCOME TO ADVENTURE!! WOULD YOU LIKE INSTRUCTIONS?

YES
SOMEWHERE NEARBY IS COLOSSAL CAVE, WHERE OTHERS HAVE FOUND
FORTUNES IN TREASURE AND GOLD, THOUGH IT IS RUMORED
THAT SOME WHO ENTER ARE NEVER SEEN AGAIN. MAGIC IS SAID
TO WORK IN THE CAVE. I WILL BE YOUR EYES AND HANDS. DIRECT
ME WITH COMMANDS OF 1 OR 2 WORDS.
(ERROS, SUGGESTIONS, COMPLAINTS TO CROWTHER)
(IF STUCK TYPE HELP FOR SOME HINTS)

YOU ARE STANDING AT THE END OF A ROAD BEFORE A SMALL BRICK
BUILDING . AROUND YOU IS A FOREST. A SMALL
STREAM FLOWS OUT OF THE BUILDING AND DOWN A GULLY.

GO IN
YOU ARE INSIDE A BUILDING, A WELL HOUSE FOR A LARGE SPRING.

THERE ARE SOME KEYS ON THE GROUND HERE.

THERE IS A SHINY BRASS LAMP NEARBY.

THERE IS FOOD HERE.

THERE IS A BOTTLE OF WATER HERE.
```



Colossal Cave Adventure (1975-76). Wikipedia
<http://youtu.be/O3etkSoHrR8>

Mystery House, 1980
<http://youtu.be/kiwHwPvIHbs>

Advanced Interfaces

Natural-Language Interfaces

▶ Natural-language interaction (NLI)

- Examples:

- Weizenbaum's ELIZA
- Chatterbots, Turing test:
<http://www.loebner.net/Prizef/loebner-prize.html>
- WolframAlpha: <http://wolframalpha.com>
- Apple's Siri <http://www.youtube.com/watch?v=smlFtIFOFeQ>
- Android Voice Command
<http://www.youtube.com/watch?v=gGbYVvU0Z5s>
- Amazon Echo
<https://www.youtube.com/watch?v=F9uEMGhEYso>
- Amazon Alexa
https://www.youtube.com/watch?time_continue=2&v=UOEIH2l9z7c
<https://developer.amazon.com/es/documentation/>



1968

Comparison of Interaction Styles

▶ Command Line Interfaces

- ↑ Flexible
- ↑ Appealing to expert users
- ↑ Supports user's initiative by allowing them to create macros and shortcuts

- ↓ Poor error management
- ↓ Requires substantial training and memorization

▶ Menu Selection

- ↑ Is easy to learn
- ↑ Requires fewer keystrokes than CLI
- ↑ Structures decision making
- ↑ Good for learners and infrequent users

- ↓ Danger of creating too many menus
- ↓ May slow frequent users
- ↓ Consume screen space

▶ Form Fill-in

- ↑ Simplifies data entry
- ↑ May require modest training
- ↑ Assists users by providing defaults

- ↓ Consume screen space

Comparison of Interaction Styles

▶ Direct Manipulation

- ↑ Presents the task concepts visually
- ↑ Is easy to learn
- ↑ Is easy to remember how to use
- ↑ Avoids errors and allows easy recovery
- ↑ Encourages exploration

- ↓ Requires graphics displays and continuous input devices
- ↓ Icons and metaphors may have different meanings for different users

▶ Natural Language Interfaces

- ↑ There is no need to learn the syntax

- ↓ Can be unpredictable
- ↓ Difficult to implement

Advanced Interfaces

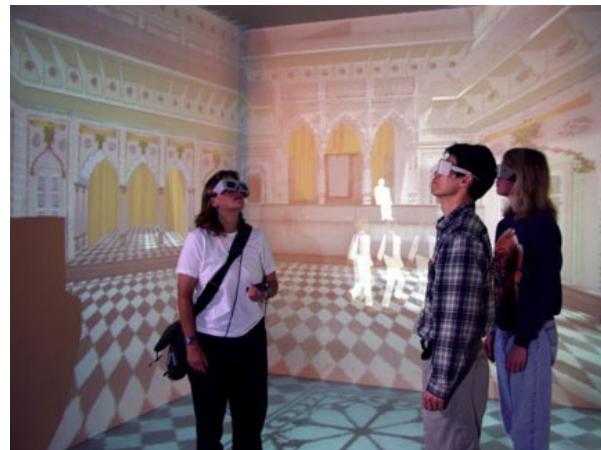
Virtual Reality

▶ Virtual Reality

- Interactive system that offers the sensory perception of a synthetic world that replaces completely the real world
- It breaks the physical limitations of space and allows users to act as if they were somewhere else



Ford



Iowa State University



San Fermín running of the bulls simulator

<http://www.youtube.com/watch?v=TH0i0RoJdPw>

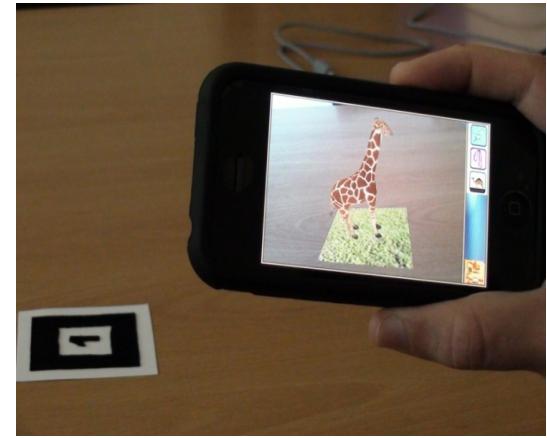
https://www.youtube.com/watch?v=_ANGdqNFVegc

Advanced Interfaces

Augmented Reality

▶ Augmented Reality

- Combines the real scene with virtual elements
- The virtual elements add additional information to the view of the scene
- The user movements have to be captured, and then update the shown images



APRENDRÁ

http://www.aprendra.es/index.php?option=com_content&view=article&id=48&Itemid=66



Sony EyePet. Pocket-lint

Advanced Interfaces

Virtual and Augmented Reality

- ▶ The success of virtual and augmented environments depend on the correct integration of:
 - Displays
 - Head tracking
 - Hands tracking
 - Force feedback
 - Sound input and output
 - Other sensations
 - Collaborative and competitive virtual environments



oculusvr.com

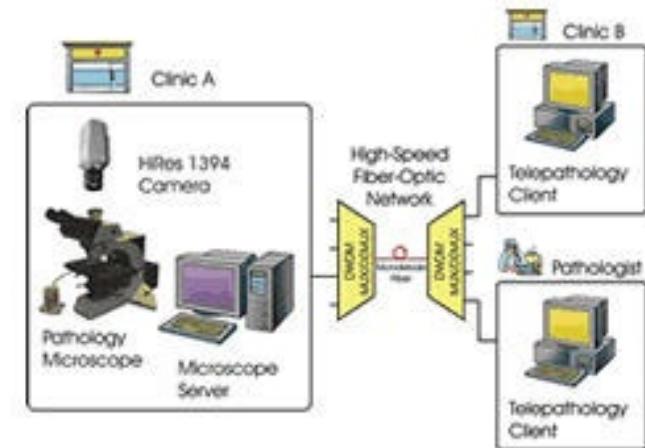


<http://www.youtube.com/watch?v=B9ioVceVlI>

Advanced Interfaces

Teleoperation

- ▶ Two parents: direct manipulation in personal computers and process control in complex environments
- ▶ Remote physical operation
- ▶ Complicating factors in teleoperation:
 - Time delays
 - In transmission
 - In the operation
 - Incomplete feedback
 - Unexpected interferences
 - More complex error-recovery procedures



AR.drone

ni.com

Advanced Interfaces

Teleoperation

► Applications

- Remote surgery
- Military
- Aerospace
- Security



wikipedia.org

Advanced Interfaces

Multitouch interfaces



<http://www.pixelseNSE.com>

Ambient devices



<http://www.ambientdevices.com>



Tangible
interfaces

<http://www.youtube.com/watch?v=I9AeUISg-Og>



<http://www.youtube.com/watch?v=Lj8mx2LM29M>Nabaztag/Karotz

References

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 - Chapter 11
- ▶ Shneiderman, B. y Plaisant, C. Designing the User Interface. Pearson 5th ed., 2010
 - Chapters 5, 6 and 7
- ▶ Shneiderman, B.; Plaisant,C.; Cohen,M. and Jacobs, S. Designing the user interface: strategies for effective human-computer interaction. Pearson Education 5th ed. 2013. Ebook. Available online from [PoliBuscador](#).
 - Chapters 5, 6 and 7