

تصميم واجهات المستخدم

User Interfaces Design

[ITWT322]

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Topics to be studied in a course : User Interface Design

- 1 Introduction.
- 2 The User Interface.
- 3 Science and specialties that contribute to the design of user interfaces.
- 4 The genesis of the user interface.
- 5 User Interface and User Experience (UI & UX).
- 6 Types of User Interfaces.
- 7 Virtual Reality (VR).
- 8 User Interface Design.

User Interface and User Experience (UI & UX)



Interface Experience



User Interface

To the differences between user interface design and user experience design

A simple introduction to the differences between user interface design and user experience design:

- User interface design and user experience:
 - It is a professional area that includes marketing, psychology, web design and development.
 - It directly affects how your customer interacts with your brand or product.
- When it comes to web sites, apps and online platforms, the user experience is a key factor contributing to a unique digital presence.
- **Brands** invest in user interface design and user experience to ensure that their products are easy to use and attractive at the same time.



To the differences between user interface design and user experience design

User interface design and user experience design are among the most distracting and confusing terms in web design and applications?

This is true because the two terms are often integrated into one term, the user interface/experience design, and it seems superficial that the same thing is described. It is often difficult to find a clear and strong description of the two terms,

In order to distinguish between the two terms and know how they relate to each other; you must go into the details of the two terms.

To the differences between user interface design and user experience design

User interface design :

- The user interface is the app's pictorial interface:
 - It consists of user-pressed buttons, displayed text, images, animations, text fields in which the user enters their data, and all the elements with which the user interacts.
 - It also includes page format, how to move and move in the interface, and any user interaction of items, even if small.



To the differences between user interface design and user experience design

User interface design :

▪ User experience:

- It is he who decides how the application should appear (to choose the appropriate colors, the shape of icons, the display of drawn lines, and the type of font used in the texts). So the designer creates the design and appearance of the app's user interface.
- He is the one who makes sure that the design model is appropriate to the purpose of the application and is proportional to the character of the application.
- He is the one who makes sure that all the elements are interconnected, beautiful and purpose-making.



To the differences between user interface design and user experience design

User experience design :

▪ User experience:

- Measured by how the user interacts with the app:
 - ❖ Is the app experience easy and effective, or is it difficult and confusing ?
 - ❖ Does navigating the app make sense or is it difficult ?
 - ❖ Interacting with the app makes users feel that they are doing their tasks efficiently and easily or feel conflicted with the app to get their tasks ?
- The user experience determines how easy or difficult it is to interact with items in the user interface designed by the user interface designer.



To the differences between user interface design and user experience design

User experience design :

▪ User experience designer:

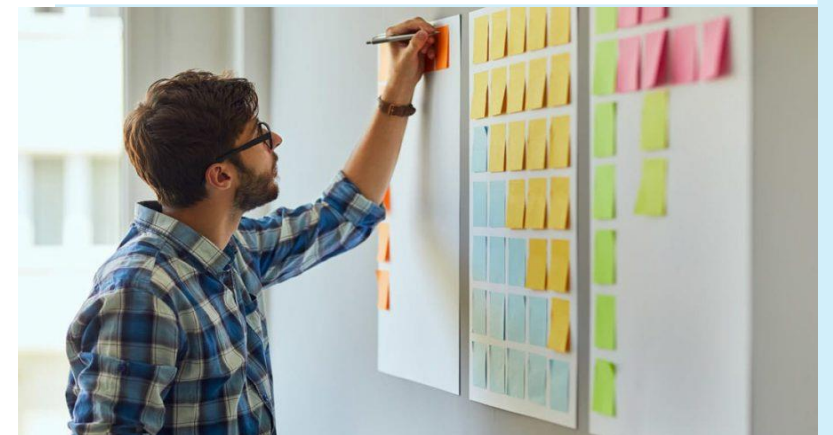
- It also cares about the user interface, which is why the two terms are dispersed.
- When the user interface designer determines the appearance of the interface, the user experience designer will be responsible for how this interface works.
- Determines the structure and functions of the interface. It determines how they are arranged and how connected each part is to the other.



To the differences between user interface design and user experience design

User experience design :

- If the interface works smoothly and easily, the user will have a good experience with the design, while if navigating the app is complex and counterintuitive, the user will have a bad experience with the design. Here the user experience designer works his work to avoid the second scenario.
- A design without layout leads to less ideal results.
- There are a number of interconnections that are within the user experience design, and user experience designers will plan how items interact in the interface and present them to the user for feedback and integrate these notes with their design. It is essential for the user experience designer to have a holistic understanding of the way the user prefers while dealing with his application.



How do they work together ?

User experience design :

- If the user experience designer (UX) determines how the interface works (concept aspects of the design process), while the user interface designer (UI) determines the interface image and how it appears to the user (physical elements). The process between designers is very collaborative, and the two teams are moving to work together up close.
- While the user experience designer team works on how the process works in the app and how effective the buttons are in navigating tasks, the user interface designer team works on how to take out the look of items in the app screen.
- Let's say that at a certain stage of the design it is necessary to add other buttons to the interface, which will change how the buttons are organized, and may change their shape or size:
 - The team of user experience designers will find the best way to put the buttons in the interface.
 - The user interface designer team will adapt to these changes to suit the new design.

The continuous collaboration between user experience designers and user interface designers helps to look as good as possible for the interface and work efficiently and smoothly.

How do they work together ?

And it can be likened to a restaurant.

The UI user interface is table, chair, painting, glass, utensils,

The user experience is everything from food to service, parking and lighting.



The search is the key

For both user interface designers and user experience designers

- Research is vital for both **user experience and user interface designers** and is **important for both disciplines** to gather as good information as possible to help them formulate a suitable design, and both disciplines follow the same approach.
- Both will look at **what the user wants, what they expect from the applications being developed. This search is often repetitive**, including sessions to use the app. Real users will interact with a mini-version of the app with certain functions or visual designs to determine whether designers are moving in the right direction. Notes are then merged with each new version.
- **This process involves creating prototypes with low accuracy, such as:** planning models that display and arrange interface elements, in order to accurately measure the user's response to the functions tested. This also includes quick prototypes, A/B tests to choose between possible versions of the shape and order in appearance, to determine what the user prefers.

In all cases, research helps guide the steps designers take as they build the app. However, the information that user and user interface designers are looking for is very different.

The search is the key

For both user interface designers and user experience designers

Search user interface designs :

- User interface designers need to make sure that the visual language of their choice fits the category of the app they write and try to predict the user's expectations.
- **If your team is working on a travel app, it's important to look for older applications that have been developed in this area, which ones have been effective? And which one wasn't?** Many lessons can be learned from other people's apps they've worked in before.
- **Research may suggest that people prefer light framed symbols rather than dark shapes.** This is an abbreviation for a visual format that users prefer and enjoy. User interface designers must incorporate this lesson into their designs.
- Aesthetic form is up to the designer, **but the basic rules or the need to comply with user expectations** cannot be ignored by the designer.
- This does not mean that the design is not risky. UI designers want their interface designs to be outstanding and memorable. But things must be balanced against how much the user understands the purpose of the item you're putting on the interface.

The search is the key

For both user interface designers and user experience designers

Search Experience interface designs :

- User experience designs are particularly interested in user expectations:
 - All the experiences and interactions users have experienced with each app they've used in their lives have helped determine their expectations about how interfaces work.
 - If the user experience designer is not fully aware of these expectations, he will inadvertently design an interface that makes sense to him but breaks generally agreed rules and expectations.
 - The user does not like the design to violate his expectations and be away from them, and this negatively affects their experience.
- If the user experience designer decides to do something different from the habit, he or she should have a good reason, because breaking the behavior of the user's expectations will cause users to do things wrong frequently.
 - **For example**, most users are accustomed to the fact that when you click on the file twice, the file will open, while it will choose the file when you click on it once, this behavior has existed since there were graphical interfaces.

User interface design and user experience design :

Two completely different disciplines and they work together in harmony.

- User interface design and user experience design require completely different skills, but they are an integral part of each other's success.
- The beautiful design does not eliminate the presence of a bored and distracting interface when moving. A great user experience that is very convenient is obliterated by a bad interface design that makes the use of the app uncomfortable.
- User interface design and user experience design must be flawless and in line with pre-existing user expectations to create an excellent user interface/experience. So, the results can be amazing.

Types of User Interfaces

Types of User Interfaces

- At present, it has become observed of the wide variety of user interfaces in terms of form as well as in terms of the functions performed by each type, including:

1 Command Line Interface.

2 Text User Interface (TUI).

3 Graphical User Interface (GUI).

4 Batch Interface.

5 Conversational Interface Agents.

6 Intelligent User Interfaces.

7 Live User Interface.

Types of User Interfaces

- 8 Multi-screen Interface.
- 9 Noncommand User Interface.
- 10 Reflexive User Interface .
- 11 Tangible User Interface.
- 12 Voice User Interface.
- 13 Natural-Language Interface.
- 14 Zero-Input Interface.
- 15 Zooming Interface.

Types of User Interfaces

1 Command Line Interface:

- Using the computer was relatively difficult because it required the user to write commands using only the keyboard.
- The user was dealing with interfaces called Command Line Interface, called CLI.
- The user should save large amounts of commands and always be careful to write these commands without misspellings or rules.
- Commands are directed to the computer by typing commands in lines where each order is written in a single line and the system remains in waiting and the command is executed only after the user presses the Enter key in the keyboard.

```
mar2@mar2main ~$ pwd
/home/mars
mar2@mar2main ~$ cd /usr/portage/app-shells/bash
mar2@mar2main /usr/portage/app-shells/bash$ ls -al
total 136
drwxr-xr-x 3 portage portage 1024 Jul 25 10:06 .
drwxr-xr-x 33 portage portage 1024 Aug 7 22:39 ..
-rw-r--r-- 1 root root 35000 Jul 25 10:06 ChangeLog
-rw-r--r-- 1 root root 27002 Jul 25 10:06 Manifest
-rw-r--r-- 1 portage portage 4645 Mar 23 21:37 bash-3.1_p17.ebuild
-rw-r--r-- 1 portage portage 5977 Mar 23 21:37 bash-3.2_p39.ebuild
-rw-r--r-- 1 portage portage 6151 Apr 5 14:37 bash-3.2_p49-r1.ebuild
-rw-r--r-- 1 portage portage 5200 Mar 23 21:37 bash-3.2_p49.ebuild
-rw-r--r-- 1 portage portage 5643 Apr 5 14:37 bash-4.0_p19-r1.ebuild
-rw-r--r-- 1 portage portage 6230 Apr 5 14:37 bash-4.0_p18.ebuild
-rw-r--r-- 1 portage portage 5640 Apr 14 05:52 bash-4.0_p17-r1.ebuild
-rw-r--r-- 1 portage portage 5532 Apr 8 18:21 bash-4.0_p17.ebuild
-rw-r--r-- 1 portage portage 5660 May 30 03:35 bash-4.0_p24.ebuild
-rw-r--r-- 1 root root 5660 Jul 25 09:43 bash-4.0_p29.ebuild
drwxr-xr-x 2 portage portage 2048 May 30 03:35 files
-rw-r--r-- 1 portage portage 469 Feb 9 04:35 metadata.xml
mar2@mar2main /usr/portage/app-shells/bash$ cat metadata.xml
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE pkgmetadata SYSTEM "http://www.gentoo.org/dtd/metadata.dtd">
<pkgmetadata>
  <herd>base-system</herd>
  <use>
    <flag name="bashlogger">Log ALL commands typed into bash; should ONLY be
      used in restricted environments such as honeypots</flag>
    <flag name="net">Enable /dev/tcp/host/port redirection</flag>
    <flag name="plugins">Add support for loading builtins at runtime via
      'enable'</flag>
  </use>
</pkgmetadata>
mar2@mar2main /usr/portage/app-shells/bash$ sudo /etc/init.d/bluetooth status
Password:
* status: started
mar2@mar2main /usr/portage/app-shells/bash$ ping -q -c1 en.wikipedia.org
PING rr.esams.wikimedia.org (91.198.174.2) 56(84) bytes of data.
--- rr.esams.wikimedia.org ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 2ms
rtt min/avg/max/mdev = 49.020/49.020/49.020/0.000 ms
mar2@mar2main /usr/portage/app-shells/bash$ grep -i /dev/sda /etc/fstab | cut --fields=3
/dev/sda1
/dev/sda2 none
/dev/sda3 /
mar2@mar2main /usr/portage/app-shells/bash$ date
Sat Aug 8 02:42:24 HST 2009
mar2@mar2main /usr/portage/app-shells/bash$ lsmod
Module Size Used by
rndis_wlan 23424 0
rndis_host 6056 1 rndis_wlan
cdc_ether 5672 1 rndis_host
usbnet 18688 3 rndis_wlan,rndis_host,cdc_ether
parport_pc 29464 0
lprng 2388128 28
parport 39640 1 parport_pc
l7C0_vdt 12272 0
l2c_1881 9388 0
mar2@mar2main /usr/portage/app-shells/bash$
```

Types of User Interfaces

1

Command Line Interface:

- CLI Shell's linear UI shell consists of two parts:

- 1) Syntax formula: Is the set of spelling and grammar rules that must be followed when writing orders, and each operating system has its own provisions that must be adhered to when writing the code or code and these provisions vary from system to system.
 - If these provisions are not followed, compiler will not be able to translate and understand these commands, called Syntax Error, resulting in these orders not being executed, for example: writing ffor instead of for.
- 2) Study the meanings of semantics: the part responsible for determining what processes the system can perform or the tasks it can perform, what kind of data is required for implementation, as well as how processes and data are represented (i.e., symbolic meaning).

Simple linear interfaces usually show a prompt that receives the linear command that the user prints using the keyboard, and when you press enter key, this command starts to appear on the screen in text, or a Message Error error message may appear when an error occurs.

Types of User Interfaces

1

Command Line Interface:

```
PS C:\> <[umiSearcher]@'
>> SELECT * FROM CIM_Job
>> WHERE Priority > 1
>> 'e).get() | Format-Custom
>>

class ManagementObject#root\cimv2\Win32_PrintJob
<
  Document = Monad Manifesto - Public
  JobId = 6
  JobStatus =
  Owner = User
  Priority = 42
  Size = 1027088
  Name = Epson Stylus COLOR 740 ESC/P 2, 6
>
```

```
Windows PowerShell
PS C:\> Get-Childitem 'MediaCenter:\Music' -rec |
>> where { -not $_.PSIsContainer -and $_.Extension -match '.mp3' } |
>> Measure-Object -property length -sum -min -max -ave
>>

Count      : 1307
Average    : 5491276.09563887
Sum        : 7177097857
Maximum    : 22905267
Minimum    : 3235
Property   : Length

PS C:\> Get-WmiObject CIM_BIOSElement | select biosv*, man*, ser* | Format-List

BIOSVersion : <TOSCPPL - 6040000, Ver 1.00PARTIBL>
Manufacturer : TOSHIBA
SerialNumber : M821116H

PS C:\> <[umiSearcher]@'
>> SELECT * FROM CIM_Job
>> WHERE Priority > 1
>> 'e).get() | Format-Custom
>>

class ManagementObject#root\cimv2\Win32_PrintJob
<
  Document = Monad Manifesto - Public
  JobId = 6
  JobStatus =
  Owner = User
  Priority = 42
  Size = 1027088
  Name = Epson Stylus COLOR 740 ESC/P 2, 6
>

PS C:\> $rssUrl = 'http://blogs.msdn.com/powershell/rss.aspx'
PS C:\> $blog = [xml](new-object System.Net.WebClient).DownloadString($rssUrl)
PS C:\> $blog.rss.channel.item | select title -first 3

title
-----
MMS: What's Coming In PowerShell V2
PowerShell Presence at MMS
MMS Talk: System Center Foundation Technologies

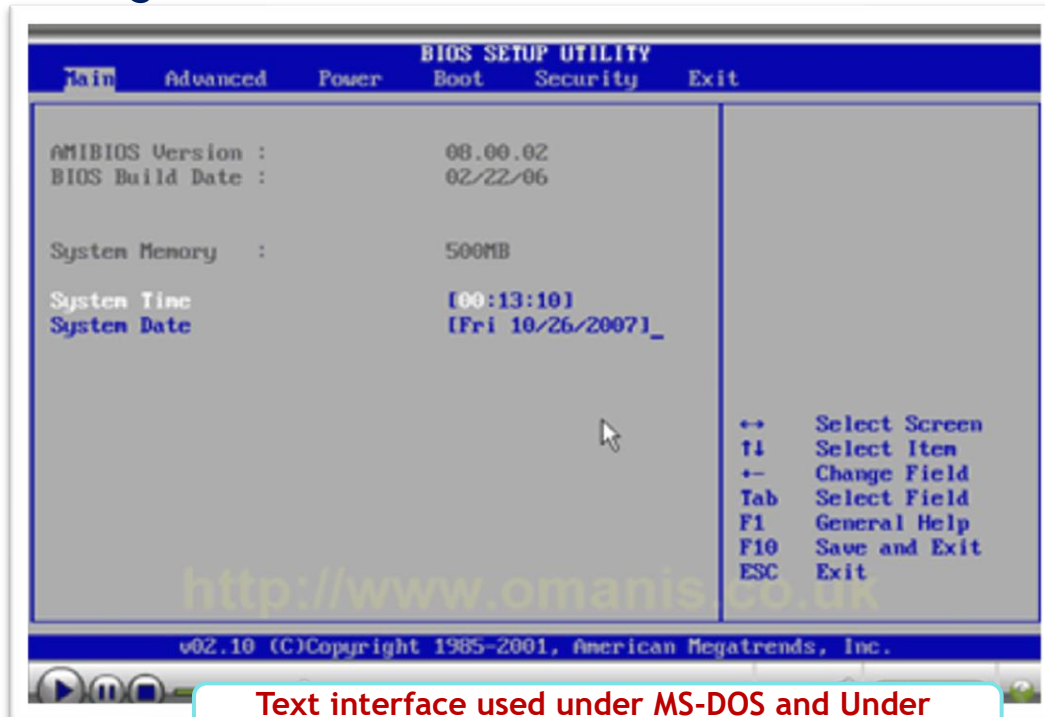
PS C:\> $host.version.ToString().Insert(0, 'Windows PowerShell: ')
Windows PowerShell: 1.0.0.0
PS C:\>
```

Types of User Interfaces

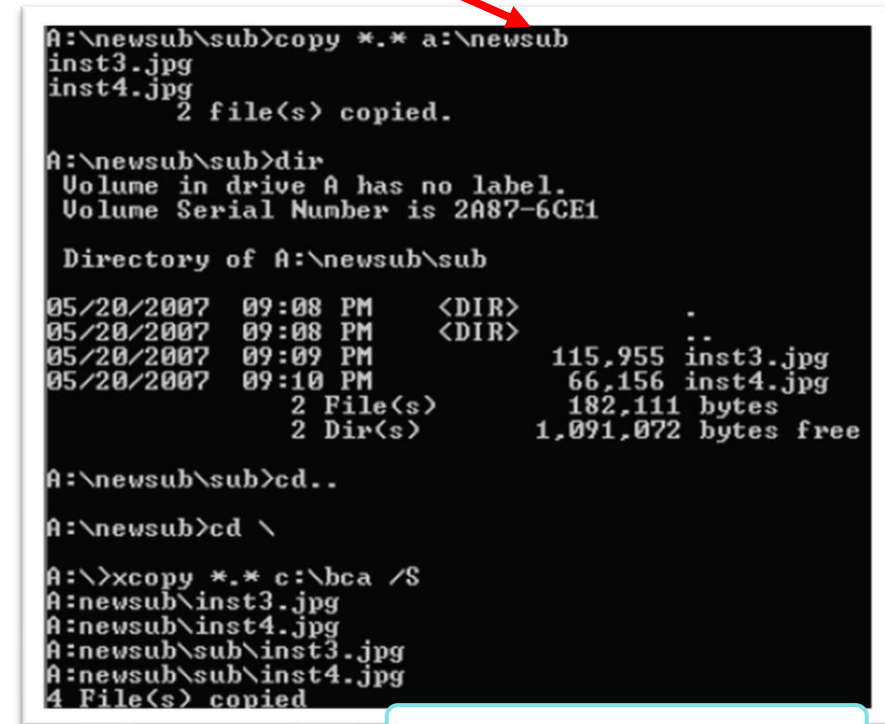
2

Text User Interface (TUI):

- Allows a wide area of the screen to be used to enter commands and not by writing commands in lines only.
- It features **buttons** and **menus** that are handled and navigated by the keyboard only as you cannot use mouse clicking.



Text interface used under MS-DOS and Under Windows



Typical Text User Interface

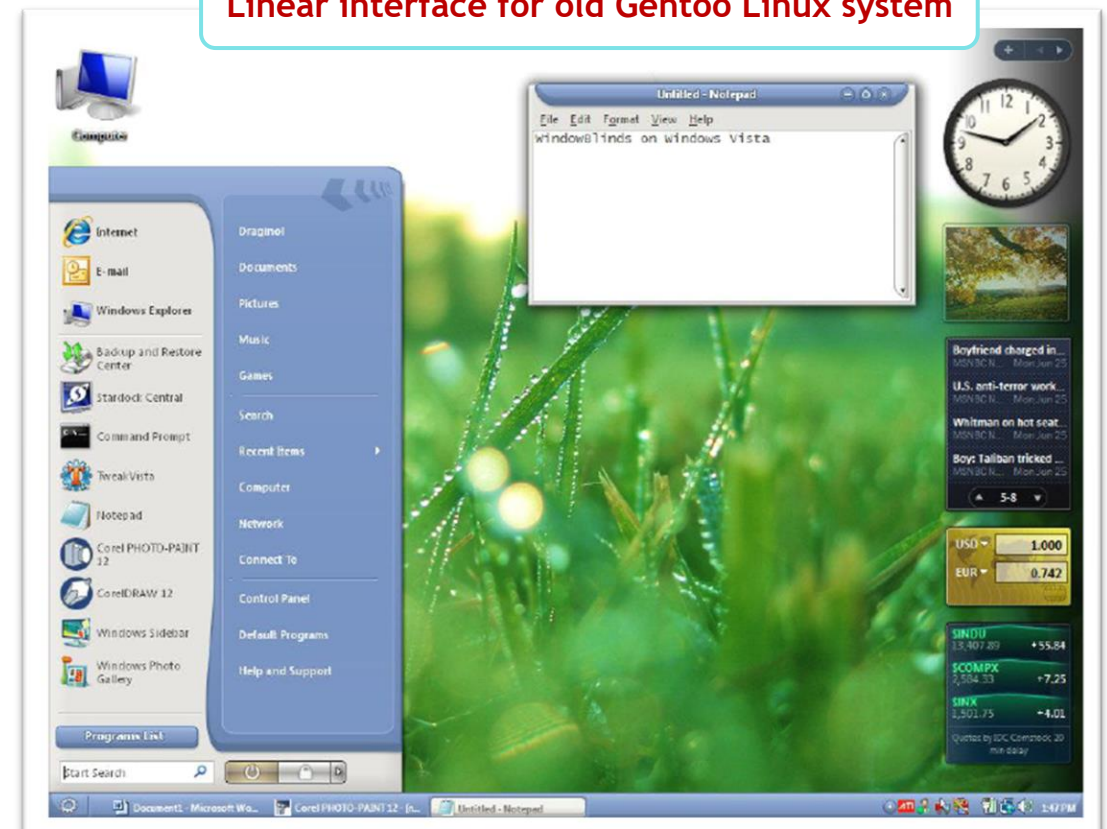
Types of User Interfaces

3

Graphical User Interface (GUI):

- The user deals with small graphics called Icons icons through which the user commands the computer by clicking mouse on any of these icons to do the job they want.
- This interface has made user interaction with the computer easy and convenient.
 - For example, when a button-shaped icon appears in front of the user and something like yes, OK, or exit is written on this button, it won't hesitate to immediately click on one of these buttons to make an impact or execute a particular order.
- When an error occurs, an SMS explaining the problem will appear on the screen, and sometimes the message contains information telling him what to do to solve the problem.

Linear interface for old Gentoo Linux system

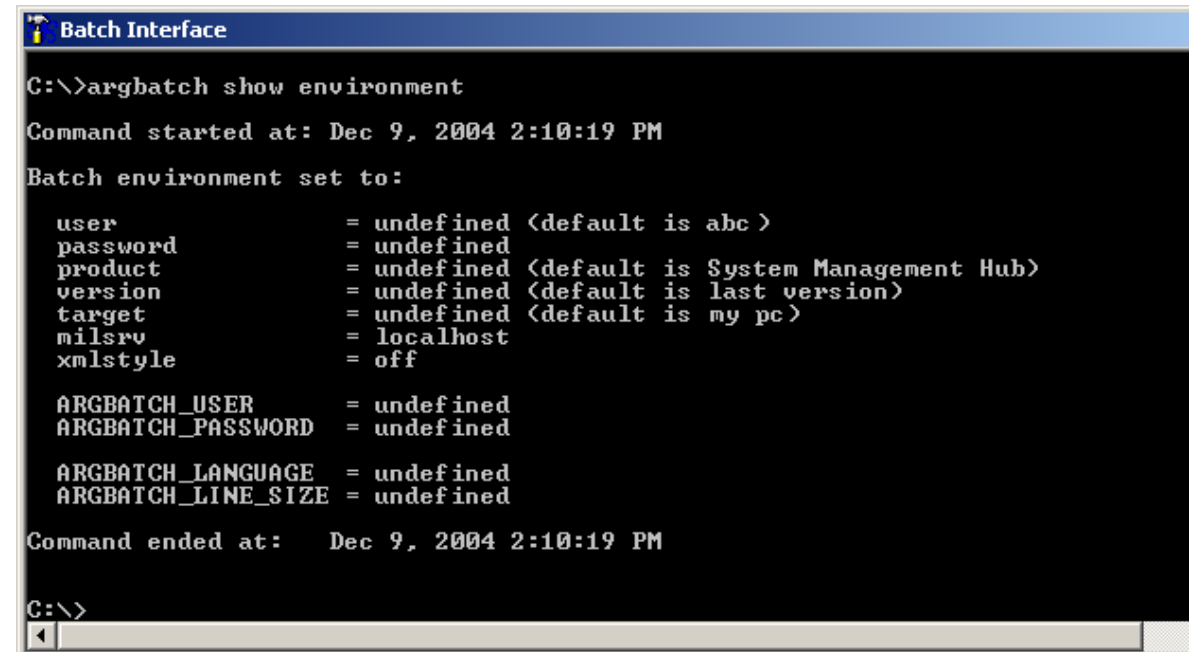


Types of User Interfaces

4

Batch Interface:

- This interface is used in batch system.
- It is a non-interactive interface, because the user:
 - Selects all details of the sequence of operations before the execution process begins.
 - He won't be able to enter any additional data after you start implementing.
 - You must wait until the execution is over to make any adjustments.
 - Results and outputs are obtained only after the implementation process is completed.



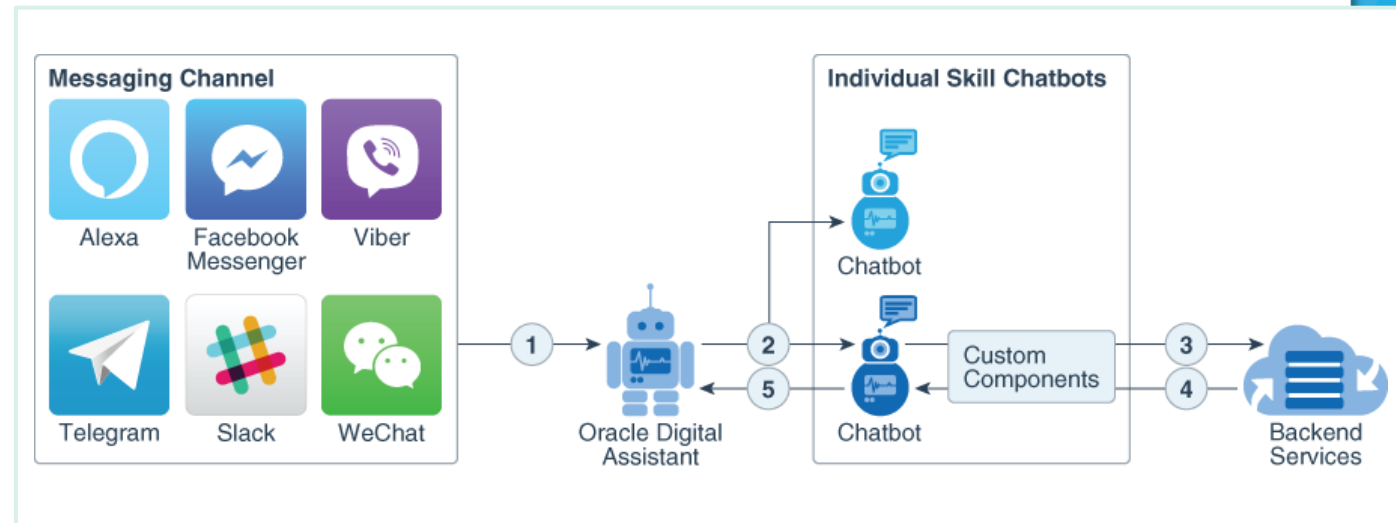
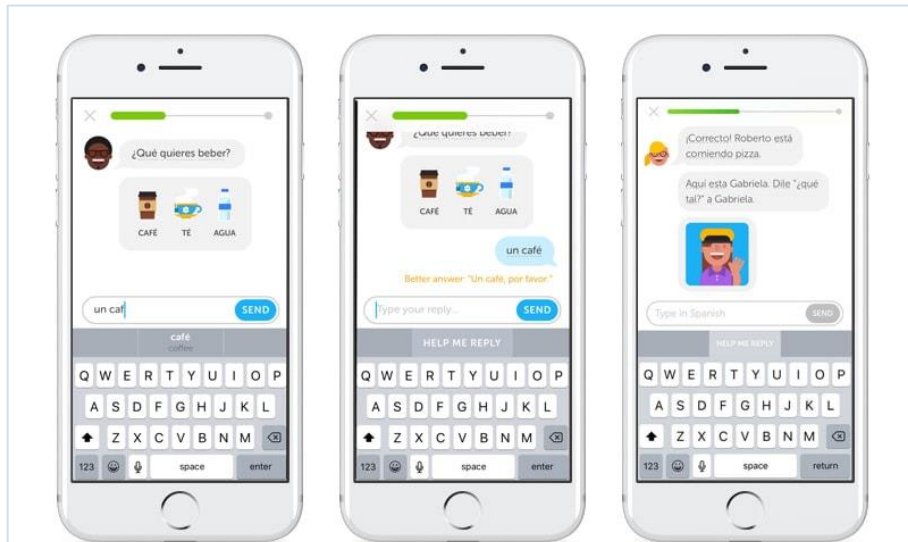
```
Batch Interface
C:\>argbatch show environment
Command started at: Dec 9, 2004 2:10:19 PM
Batch environment set to:
user           = undefined (default is abc )
password       = undefined
product        = undefined (default is System Management Hub)
version        = undefined (default is last version)
target         = undefined (default is my pc)
milsrv         = localhost
xmlstyle       = off
ARGBATC_USER   = undefined
ARGBATC_PASSWORD = undefined
ARGBATC_LANGUAGE = undefined
ARGBATC_LINE_SIZE = undefined
Command ended at: Dec 9, 2004 2:10:19 PM
C:\>
```

Types of User Interfaces

5

Conversational Interface Agents:

- Used in some interactive systems such as Robot and similar systems.
- Try to find interaction with these systems by talking and talking so that data is entered and the system is directed mainly by voice commands.
- Outputs are in the form of sounds.



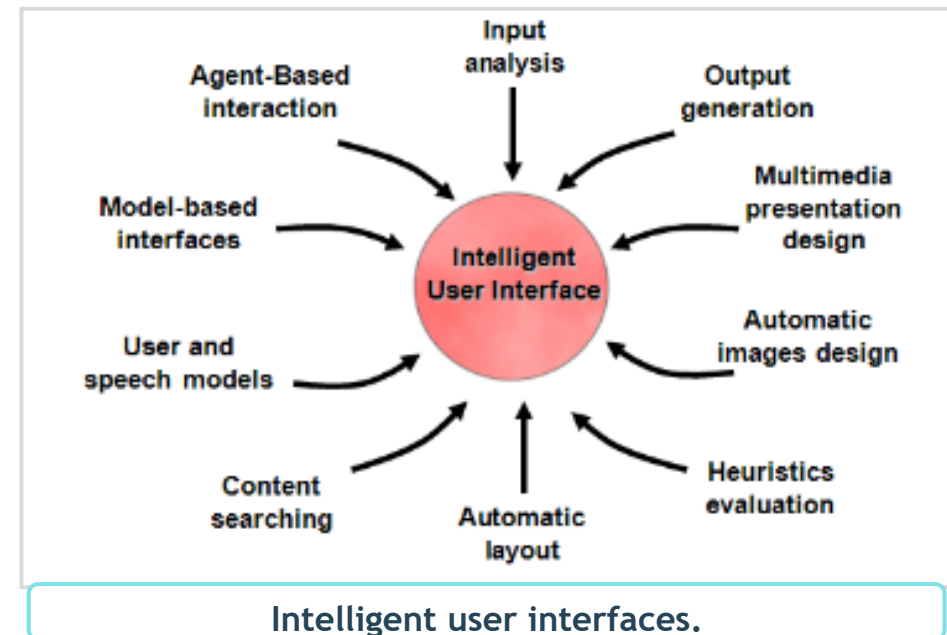
Types of User Interfaces

6

Intelligent User Interfaces:

- It is a "smart" interface through which computer-user interaction is more efficient.
- In this interface, means are found, and elements are added to the interface that make the interface do a lot of burdens instead of being done directly by the user.

The overall picture of applications that are very successful in the smartphone application market now is that they have an easy and innovative interface, and these features do not appear in applications automatically, but rely on two key factors in the programming of smartphone applications: user interface -UI and user experience - UX.



Types of User Interfaces

6

Intelligent User Interfaces:

- It is a "smart" interface through which computer-user interaction is more efficient.
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7

Live User Interface:

- Are the kind of interfaces that are used to influence the user.
- These interfaces are located on some websites where they guide the user by displaying photos, maps and videos in order to promote the marketing of goods and provide different services directly over the Internet.

8

Multi-screen Interface:

- Used to reach a more flexible interaction with the user.
 - For example, games in which the user interacts with several screens in one interface at the same time.

Types of User Interfaces

9

Noncommand User Interface:

- These interfaces are one of the most advanced types where commands are not used to guide the computer as is common.
- The system monitors and follows the user and then concludes what services the user wants or what their needs are from the system without the user formulating these needs in the form of explicit and clear commands.

10

Reflexive User Interface :

- The user controls the entire system with only one interface.
- This interface is rich in elements that make the user able to control all processes performed by the system.

11

Tangible User Interface:

- Data entry is done by influencing the interface by touch or by other physical tools.

Types of User Interfaces

12

Voice User Interface:

- These interfaces accept inputs that are in the form of sounds.
- Used to provide services over the phone and other networks where data can be entered by pressing the buttons of the phone panel and getting audio outputs in the same way.

13

Natural-Language Interface:

- These interfaces are mainly used in online search engines where the user enters a question or query and then waits for an answer.

14

Zero-Input Interface:

- Data is entered in the form of signals through sensors.

15

Zooming Interface:

- They are graphical interfaces on which items are represented as icons, and when you click on these icons, more detailed information is displayed.

Virtual Reality (VR)

Virtual Reality (VR)

Virtual Reality (VR):

- It is a form of **interaction between man and computer** in a 3D environment that simulates reality in image, sound and touch or through visual presentations that include 3D images displayed on two small screens in a device installed on the head with a technique that simulates sound and touch in an integrated system, giving the recipient a sense that he or she lives within an imaginary or virtual world that allows him to control some of its components.
- **More recently**, interest in VR applications has begun, especially after the significant progress that has taken place in:
 - The Internet.
 - Information Superhighway.
 - Multimedia distribution in the PC work environment.



Virtual Reality (VR) واجهات الواقع الافتراضي

Thank you