UNIT - 1 DATE

Human Computer Interaction.

In HCI we have to take into account every element of human from the way they perceive the world to the long history of interaction with the computers.

IMPORTANCE OF USER INTERFACE

Now users do not accept all the Designs of the products that are more uncomfortable and makes difficult to accomplish the task.

HCI :- Human Computer Interaction is the study, planning and Design of how people and computers work together so that the person's needs are satisfied in the most effective way.

User Interface Design :

is the subset of a field of study called HCI.

Factors to be considered by Designers.

(1) Users needs
(2) Users expectations
(3) Their physical limitations (disabilities age, etc)
(4) limitations of hardware and Software.

USER INTERFACE

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The User Interface is the part of a computer and its software that people can see, hear, touch, talk to or otherwise understand or direct.

User Interface components.

INPUT — To communicate their needs

OUTPUT — Computer conveys the results of its computations and requirements to the user.

IMPORTANCE OF GOOD DESIGN

A well Designed Interface and screen is terribly important to our users. It is their window to view the capabilities of the system. A screen's layout and appearance affect a person in variety of ways.

Poor Design may even chase some people away from a system permanently it will lead to frustration and stress.

Benefits of Good Design

→ Productivity : eg if a Application has good screen clarity and readability by making screens less crowded.

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time and less errors than the screens with cluttery designs.

→ Training Costs : are lowered because training time is reduced, support line costs are lowered because fewer assist calls are necessary.

→ Economical benefits : identifying and resolving problems during the design and development process also has significant economic benefits.

CHARACTERISTICS OF GRAPHICAL and WEB USER INTERFACES.

Graphical User Interface : The primary interaction mechanism is a pointing device of some kind. It is the electronic equivalent to the human hand.

- Enormous computer power and rapid improvement in the display enable the user's actions to be reacted quickly dynamically and meaningfully

→ Screen navigation happens through menu bars, pull downs, pop up radio buttons, check boxes, list boxes palettes, drop down menus.

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Advantages of GUI

→ Symbols recognized faster than text.
→ Faster learning.
→ Faster use and problem solving
→ Less errors, less anxiety.
→ More natural and more attractive.
→ Low typing requirements.

Disadvantages of GUI.

→ Created Design Complexity.
→ Learning still necessary.
→ Lack of experimentally-derived design guidelines.
→ Inconsistencies in technique and terminology

CHARACTERISTICS OF GUI

1. Sophisticated visual Presentation.
2. Pick and Click Interaction
3. Restricted set of Interface options

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Sophisticated Visual Representation : The visual aspect of the interface. Meaningful interface elements usually presented to the user in a graphical system include windows (Primary, secondary & dialog boxes)
Menus - (pull down, pop down)
Screen based - textboxes, scroll bars list boxes, radio buttons.

Pick and Click Interaction :

More activity required of a person to identify this element & proposed action commonly referred as Pick.

Signal to perform & Click.

User moves the mouse pointer to the relevant element (Pick) and the action is signalled (click)

eye, hand, mind seem to work efficiently and smoothly together.

Restricted Set of Interface options.

array of alternatives available to the user & what is presented on the screen & what may be retrieved through what is presented on the screen, nothing less, nothing more.

concept referred as WYSIWYG

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Most activity required of a person to identify this element is proposed action commonly referred as Pick.

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WEB USER INTERFACE

Web interface design is essentially the design of navigation and the presentation of information. It is about content. not data.

Proper interface design is largely a matter of balancing the structure and relationships of news content and other linked documents or graphics.

Web interface design is difficult for the number of reasons.

→ Design language HTML
→ Information Architecture and lack of law because it is not easy to standardize.

CHARACTERISTICS OF A WEB INTERFACE

→ Web interface possesses a number of characteristics, some similar to a GUI interface and has already been shown, some different.

Most significant differences

→ Devices.
→ User focus.
→ Data / information
→ User tasks.

→ In GUI design, the layout of a screen will look smoothly as specified-

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Web page look will be greatly influenced by both hardware and software.

→ In GUI - all about well defined applications and data, transactions and processes.

In Web - is all about information and navigation, people move back and forth in an unstructured way.

→ GUI is by known, trusted and reputable organizations

Web is full of unknown content typically placed by others unknown to the user.

→ In GUI - Users install, configure, personalize, start use, upgrade.

In Web - link to a site, Browse and read pages, participate in transactions download.

GUI Versus Web Design

	GUI	WEB
Devices	User Hardware variations limited	User Hardware variations enormous
User focus	Data and Applications	Information and Navigation
Information	Typically created and used by known and trusted sources	Unknown content source is not trusted
User tasks	Install, configure, personalize, start, use and upgrade programs	link to site, browse or read pages fill out forms participate in transactions download.
Presentation elements	windows, menus, controls, data, toolbars messages	2-components Browser and page. any combination of text images, audio, video
Navigation	Through menus, lists trees, dialogs, wizards	Through links, bookmarks, typed URLs
Interaction	Interactions such as clicking menu choices, pressing buttons, cut copy paste occur within program	Basic interaction is a single click. This can cause extreme changes in context which may not be

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PRINCIPLES OF USER INTERFACE DESIGN

Interface should really work just like an extension of a person. The system and the software must reflect a person's capabilities and respond to his or her specific needs. Interface should be efficient and easy to use and helpful in accomplishing ~~our~~ their objectives fast.

Interface should serve as both connector and a separator. connector in that it ties the user to the power of the computer. and separator in that it minimizes the possibility of the participants damaging one another.

Crucial Principles.

1. AESTHETICALLY PLEASING
2. CLARITY
3. COMPATIBILITY
4. COMPREHENSIBILITY
5. CONFIGURABILITY
6. CONSISTENCY
7. CONTROL
8. DIRECTNESS
9. EFFICIENCY
10. FAMILIARITY
11. FLEXIBILITY
12. FORGIVENESS
13. PREDICTABILITY
14. RECOVERY
15. RESPONSIVENESS
16. SIMPLICITY
17. TRANSPARENCY

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1. Aesthetically pleasing :- It should be visually pleasing composition, should be attractive to the eye. Visual appeal makes a computer system accessible and inviting, convey a message clearly and quickly.

eg. Create groupings
Align screen elements and groups.
use colour and graphics effectively and simply.

2. Clarity :- Interface words should be understandable, simple, unambiguous and free of computer jargon.

eg. words and text
Metaphors, functions.

3. Compatibility :- User Interface design should be a) User compatible
b) Task and job compatible
c) product compatible.

Each user has different aspirations, needs attitudes, designers should understand user's needs and adopt the user's point of view.

Task & job compatible mean the user must never be forced to navigate between applications or many user

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product compatible — the present use of the system is often the use of older systems or earlier versions of the new system. The new system, because users will make use of the things which they know and reduce the necessity for new learning.

4. COMPREHENSIBILITY

A system should be easily learned and understood, flowing in a comprehensible and meaningful order.

Eg. What to look, what to do, when to do where to do?

5. CONFIGURABILITY.

Easy personalization and customization through configuration and reconfiguration of a system enhances a sense of control

6 CONSISTENCY

A system should look, act, and operate the same throughout

Eg. same action should always yield same result, elements should not change.

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7. DIRECTNESS : Provide Direct ways to accomplish tasks.

8. EFFICIENCY : Minimize eye and hand movements and other control actions.
Navigation paths should be as short as possible.

9. FAMILIARITY : Build on the user's existing knowledge, build into the interface concepts, terminology, workflows and spatial arrangements already familiar to the user.

10. FLEXIBILITY : Flexibility is the system's ability to respond to individual differences in people. permit people to choose the method of interaction that is most appropriate to their situation.

11. FORGIVENESS : Tolerate and forgive common and unavoidable human errors.
When error occurs, provide constructive messages.

12 PREDICTABILITY : The User should be able to anticipate the natural progression of each task. all expectations should be fulfilled as rightly & completely

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RECOVERY :

- Ensure that users never lose their work as a result of error on their part, of hardware or communication

RESPONSIVENESS -

The System must rapidly respond to the user's requests.
provide immediate acknowledgement for all user actions : visual, textual and auditory.

SIMPLICITY -

provide as simple an interface as possible.
eg. minimize screen alignment points
provide defaults.

TRANSPARENCY

permit the user to focus on the task or job, without concern for the mechanics of the interface.