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USER INTERFACE DESIGN PROCESS.

1. OBSTACLES AND PITFALLS IN THE DEVELOPMENT PATH.

→ Designers need good tools and should make good tool selection

→ Even if you design the best system humanly possible, people will still make mistakes in it.

→ "Change is the Only Constant" - Making contracts to ignore change will never eliminate the need for change.

→ Nobody ever gets right the first time.

→ Development, Designing always comes with box of surprises so should be ready to accept it.

Pitfalls

→ No early analysis and understanding of the user's needs and expectations

→ Not creating design prototypes

→ No Usability testing

→ No common design team vision of user

interface design goals.

→ poor communication between members of the development team.

USABILITY

Bennett (1979) was the first to use the term usability to describe the effectiveness of human performance.

Usability assessment should begin in the early stages of the product development cycle and should be continually applied throughout the process.
The assessment should include the user's entire experience, and all the product's important components.

Common Usability problems in Web

Usability is nothing but common sense.

→ Inefficient Navigation.

→ Inefficient Operations

→ excessive or inefficient page scrolling

→ Information overload.

→ Design Inconsistency.

→ Outdated information.

→ Visual Clutter

→ Impaired Information Readability.

→ Incomprehensible components.

→ Annoying distractions

→ Confusing Navigations.

Common Usability problems in Graphical Systems

1. Ambiguous menus and icons
2. Input and direct manipulation limits.
3. Highlighting and Selection limits.
4. Unclear step sequences
5. More steps to manage the interface than to perform tasks.
6. Inadequate feedback and confirmation
7. Lack of system anticipation and intelligence.
8. Inadequate error messages, help, tutorials and documentation.

Some Objective Measures of Usability.

1. How effective is the interface? Can the required range of tasks be accomplished?
2. How learnable is the interface?

3. How flexible is the interface?

4. What are the attitudes of the users?

Design team

No one person possesses all the skills to perform all the necessary tasks. A Balanced team with very different talents must be established.

→ Development team : Define the requirements and write the software.

→ Human Factors : Specialists to define behavioral requirements and apply behavioral considerations.

→ Visual Design : Specialists in visual Design skills.

→ Documentation :

→ Usability Assessment : Skilled Testing specialist and Usability engineers.

→ Documentation : Technical and non-technical writers

→ Training : User Training Specialists.

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Know your Users or Client.

Understanding How people Interact with Computers.

Why people have Trouble with Computers.

→ Use of jargon
→ Non-obvious design.
→ Fine-distinctions.
→ Disparity in problem-solving strategies
→ Design inconsistency.

Responses to Poor Design

→ PSYCHOLOGICAL
→ PHYSICAL

PSYCHOLOGICAL

→ Confusion
→ Annoyance
→ Frustration
→ Panic or Stress
→ Boredom.

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PHYSICAL

→ Abandonment of the system.
→ Partial use of the system.
→ Indirect use of the system.
→ Modification of the task.
→ Compensatory activity.
→ Misuse of the system.
→ Direct programming.

Human Characteristics in Design.

We are complex organisms with a variety of attributes that have an important influence on interface and screen design.

→ PERCEPTION — perception is our awareness and understanding of the elements and objects of our environment through the physical sensation of our various senses including sight, smell and so forth.

perceptual characteristics.

→ Proximity
→ Similarity
→ Matching patterns
→ Succinctness
→ Closure
→ Unity
→ Continuity
→ Balance

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→ Balance
→ expectancies
→ Context
→ Signals versus noise.

Memory

→ Short term memory
→ Long term memory.

Short term memory & receives information from senses or long term memory.

Information stored within it is rationally thought to last from 10-30 seconds.

Knowledge, experience, familiarity govern the size and complexity of information that can be remembered.

Longterm memory - contains the knowledge we possess.

Information received in short-term memory is transferred to it and encoded within it, a process called learning.

Eg Active vocabulary (words that can be recalled) typically ranges from 2,000 - 3,000 words.

Passive vocabulary (words that can be recognized) about 1,00,000 words,

Power of recognition is more than the power of recall.

Sensory Storage

Sensory storage is the buffer where the automatic processing of information collected from our senses takes place.

It is an unconscious process, which acts like radar constantly scanning the environment for things that are important to pass on to higher memory.

Visual Acuity.

The capacity of the eye to resolve details is called visual acuity.

Foveal vision

is used to focus directly on something, peripheral vision senses anything in the area surrounding the location we are looking at, what is there cannot be clearly resolved because of the limitations in visual acuity as just described.

Information processing.

The information that our senses collect that is deemed important enough to do something about them has to be processed in some meaningful way.

There are two levels of information processing

Lower level processing

higher level processing

lower level processes familiar information rapidly and in parallel with higher level and without conscious effort.

higher level performing reasoning and problem solving.

Mental Models.

As a result of our experiences and culture, we develop mental models of things and people interact with of.

A mental model is simply an internal representation of a person's current understanding of something. explain things, make decisions, do something or interact with another person.

Movement Control.

Once data has been perceived and an appropriate action decided upon, a response must be made, in many cases the response is a movement.

Eg In computer systems pressing keyboard, rotating trackballs. clicking mouse.

Learning

- has been said, as the process of encoding long term memory information that is contained on short term memory. It is a complex process requiring some effort on one part.

A design developed to minimize human learning time can greatly accelerate human performance people prefer to stick with what they know & prefer to jump on and get started.

Unproductive time spent learning is something that is avoided.

Skill

The goal of human performance is to perform skillfully. to do so requires linking inputs and responses into a sequence of action. skills are hierarchical in nature and many basic skills may be integrated to form increasingly complex ones.

Individual Differences

A complicating but very advantageous human characteristic is that we all differ - in looks, feelings, motor abilities, intellectual abilities, learning abilities and speed and so on. Design must provide for the needs of all potential users.