

OBSTACLES AND PITFALLS IN DEVELOPMENT PATH

- Nobody ever gets it right for the first time
- Development is chock full of surprises.
- Good design requires living in a sea of changes.
- Designers need good tools.
- Performance design goals
- People may make mistakes while using a good system also

COMMON PITFALLS

- No early analysis and understanding the users' needs and expectations.
- A focus on using design features or components.
- No usability testing.
- No common design team vision.
- Poor communication

COMMON USABILITY PROBLEMS

- Ambiguous menus and icons.
- Languages that permit only single direction movement through a system.
- Input and direct manipulation limits.
- Complex linkage.
- Inadequate feedback.
- Lack of system anticipation.
- Inadequate error messages.

IRRITATING CHARACTERS

- Visual clutter
- Impaired information readability
- Incomprehensible components
- Annoying distractions.
- Confusing navigation.
- Inefficient operations
- Inefficient page scrolling.
- Information overload

DESIGN TEAM

- Development
- Human factors
- Visual Design
- Usability assessment
- Documentation
- Training

HUMAN INTERACTION WITH COMPUTERS

Understanding How People Interact with Computers Characteristics of computer systems, past and present, that have caused, and are causing, people problems. We will then look at the effect these problems have –

- Why people have trouble with computers
- Responses to poor design
- People and their tasks

WHY PEOPLE HAVE TROUBLE WITH COMPUTERS

- Extensive technical knowledge but little behavioral training.
- With its extensive graphical capabilities.
- Poorly designed interfaces.
- What makes a system difficult to use in the eyes of its user?
- Use of jargon
- Non-obvious design
- Fine distinctions
- Disparity in problem-solving strategies
- an "error-preventing" strategy
- Design inconsistency

PSYCHOLOGICAL

Typical psychological responses to poor design are:

- **Confusion:** Detail overwhelms the perceived structure. Meaningful patterns are difficult to ascertain, and the conceptual model or underlying framework cannot be understood or established.
- **Annoyance:** Roadblocks that prevent a task being completed, or a need from being satisfied, promptly and efficiently lead to annoyance. Inconsistencies in design, slow computer reaction times, difficulties in quickly finding information, outdated information, and visual screen distractions are a few of the many things that may annoy users.
- **Frustration:** An overabundance of annoyances, an inability to easily convey one's intentions to the computer, or an inability to finish a task or satisfy a need can cause frustration. Frustration is heightened if an unexpected computer response cannot be undone or if what really took place cannot be determined: Inflexible and unforgiving systems are a major source of frustration.
- **Panic or stress:** Unexpectedly long delays during times of severe or unusual pressure may introduce panic or stress. Some typical causes are unavailable systems or long response times when the user is operating under a deadline or dealing with an irate customer.
- **Boredom:** Boredom results from improper computer pacing (slow response times or long download times) or overly simplistic jobs.
- These psychological responses diminish user effectiveness because they are severe blocks to concentration.

- Thoughts irrelevant to the task at hand are forced to the user's attention, and necessary concentration is impossible.
- The result, in addition to higher error rates, is poor performance, anxiety, and dissatisfaction Physical.
- Psychological responses frequently lead to, or are accompanied by, the following physical reactions.
- **Abandonment of the system:** The system is rejected and other information sources are relied upon. These sources must, of course, be available and the user must have the discretion to perform the rejection.

In business systems this is a common reaction of managerial and professional personnel. With the Web, almost all users can exercise this option.

- **Partial use of the system:** Only a portion of the system's capabilities are used, usually those operations that are easiest to perform or that provide the most benefits. Historically, this has been the most common user reaction to most computer systems. Many aspects of many systems often go unused.
- **Indirect use of the system:** An intermediary is placed between the would-be user and the computer. Again, since this requires high status and discretion, it is another typical response of managers or others with authority.
- **Modification of the task:** The task is changed to match the capabilities of the system. This is a prevalent reaction when the tools are rigid and the problem is unstructured, as in scientific problem solving.
- **Compensatory activity:** Additional actions are performed to compensate for system inadequacies. A common example is the manual reformatting of information to match the structure required by the computer. This is a reaction common to workers whose discretion is limited, such as clerical personnel.
- **Misuse of the system:** The rules are bent to shortcut operational difficulties. This requires significant knowledge of the system and may affect system integrity.
- **Direct programming:** The system is reprogrammed by its user to meet specific needs. This is a typical response of the sophisticated worker.
- These physical responses also greatly diminish user efficiency and effectiveness. They force the user to rely upon other information sources, to fail to use a system's complete capabilities, or to perform time-consuming "work-around" actions

IMPORTANT HUMAN CHARACTERISTICS IN DESIGN

Importance in design is perception, memory, visual acuity, foveal and peripheral vision, sensory storage, information processing, learning, skill, and individual differences.

- Perception
- Proximity
- Similarity
- Matching patterns

- Succinctness
- Closure
- Unity
- Continuity
- Balance
- Expectancies
- Context
- Signals versus noise

- **Memory:** Memory is not the most stable of human attributes, as anyone who has forgotten why they walked into a room, or forgotten a very important birthday, can attest.
- **Mental Models:** As a result of our experiences and culture, we develop mental models of things and people we interact with.
- A mental model is simply an internal representation of a person's current understanding of something. Usually, a person cannot describe this mental model and most often is unaware it even exists.
- Mental models are gradually developed in order to understand something, explain things, make decisions, do something, or interact with another person.
- Mental models also enable a person to predict the actions necessary to do things if the action has been forgotten or has not yet been encountered.
- **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. In computer systems, movements include such activities as pressing keyboard keys, moving the screen pointer by pushing a mouse or rotating a trackball, or clicking a mouse button