M4 L1 Notes

Introduction to Human Computer Interaction

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Eight Golden Rulesof User Interface Design attributed to Ben Shneiderman.

Key Words:

Shniderman; Eight Golden rules ; Consistency; Universal Usability; Reversal of actions,

Introduction

Ben Shniderman consolidated known tacit knowledge and practice guidelines used by Graphic Interfacedesigners into a set of eight general guidelines for the use of computer science specialist who were being introduced to Visual Graphic designers'work ofinteractive interface for any software program. There is ample empirical evidence published in HCI literature which collaborates and consolidates the applicability of the eight guide norms. These are more guidelines rather than ' rules'. . Words like 'Principles', 'Rules' have later got added on while describing these general axioms. They are very useful for designers as well as software engineersinvolved in design of interfaces. Using these eight points it is possible to distinguish a good interface design from a bad one especially from the Human- Computer interaction point of view. These have been put forth in a concise and understandable manner by Ben Shneiderman.

It needs to be noted that apart from these eight there are many more similar useful pointers available in HCI and Usability literature. While merely or blindly applying these eight guidelines is not necessarily going to grantee a good interface design , they are useful in heuristic evaluation to identify GUIs that fall out of normal ' pattern' and rate them as good or bad.

The Eight 'rules' in point form reproduced from published literature are as follows.

1. Strive for Consistency
2. Cater to Universal Usability
3. Offer Informative feedback
4. Design Dialogs to yield closure
5. Prevent Errors
6. Permit easy reversal of actions
7. Support internal locus of control
8. Reduce short term memory

Explanations & Examples

1. Strive for Consistency

Users need to be able to do the same thing the same way that they have been doing.- every time.

Interfaces need toexhibit ‘consistent’ quality across screens/ applications both visually as well as behaviorally.

Consistency leads to a pattern which is easier to handle cognitively.

Consistency such as ‘similar sequence of actions in similar situations’ makesit easy to learn.

Consistency can be achieved through graphical elements such as fonts, colour, shape, position being consistently same in all menus&screens, across, categories. For a particular software.

For example is the ON button is on the right in the first screen and moves to middle in the third screen then positional inconsistency has occurred.

GUI designers use a background grid to place interactive elements in a consistent and orderly way so as to make them appear both physically as well a visually at the same place across the entire softwarepackage.

In case certain exceptions are required to be made, they should be comprehensible, distinct and limited in number.

(Illustrations)

2. Cater to wide range& type of Users

Universal designstrives to cater to as wide a range of human users of different characteristics (age, culture, educational level, disability) with a single design.

While this may not be feasible or possible in all contexts,Shniderman's rule none the less needs to be followed so as not to leave out taking into consideration a section of users, otherwise competent, who cannot use the interface due to no fault of theirs.

Users are classified as Novice, Intermediate and Experts. Experts tend to use lesser interactions at a faster pace. Abrivations short cuts keys etc are some of the techniques usewd. Interfacses need to cater to all levels of users novice to experts.

3. Offer Informative feedback

Interfaces need tonot just be to communicate but also inform the 'user 'in terms of learning & feed -back which tells them that they are proceeding in the right direction. For every action of the user there needs to be a feedback – only then ' interaction' (in HCI) is said to take place. Specific error messages composed in a appositive tone give affirmative feedback without having to feel punitive.

Unless the user gets a feed- back he/she cannot proceed or is unsure of the correctness of the action.

4. Design Dialogs to yield closure

In an interaction - dialogue needs to have a closure which is recognized by the user as end of an action. Sequence of actions need to proceed in a dialogue by engaging the user in a step by step manner. Like in a mathematical expression, every enclosing bracket needs a corresponding closing bracket. So also subsequence of actions needs to be grouped with intermittent closing of each sub group followed finally by a closer action of the group.

Ex: A message at the end og a sequence of events. Of sending a SMS**.**

Example:

Press ON button

- Look at the green lamp.
- If greenglows press push button and yellow lamp will glow.
- Push 3rd button and continue till green lamp stops glowing.
  End of task.

  Notice the yellow lamp feed back being not closed?
  What happens to it. Did it stop glowing? When or why is it glowing when the task is over ?
  Are some of the questions that may arise due to non closure of dialogues.

A closed dialogue:

- Look at the green lamp.
- If greenglows press 2nd push button and yellow lamp will glow.
- Press 3rd button and continue with other 3 buttons till green lamp stops glowing.

5. Prevent Errors

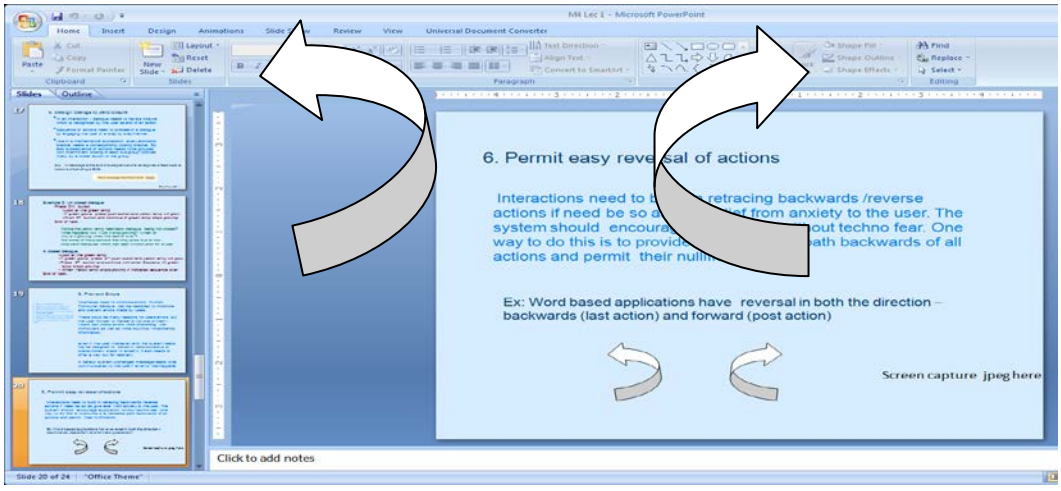
Interfaces need to minimize errors. Human Computer dialogue can be designed to minimize and prevent errors made by users . There cloud be many reasons for users errors but the user himself or herself is not one of them. Users can make errors while interacting with computers as well as while inputting information.

Even if the user makes an error the system needs top be designed to detect it, take corrective or precautionary steps to arrest it. It also needs to offer a way out for recovery. A default system unchanged message needs to be communicated to the user if an error has happened .

6. Permit easy reversal of actions

Interactions need to build in retracing backwards /reverse actions if need be so as give relief from anxiety to the user. The system should encourage exploration without techno fear. One way to do this is to provide a re traceable path backwards of all actions and permit their nullification.

Ex: Word based applications have reversal in both the direction – backwards (last action) and forward (post action)



7. Support internal locus of control

Make aware and allow user to always feel in control of the system and of the situation. User should believe that they are controlling the system and not the other way around. . The bearing of where the user presently is helps the user to orient or reorient the interaction. The user should never allow feeling lost.

8. Reduce short term memory

Care not load the cognitive short term memory of the user by expecting user to remember several sequences , actions and their consequences at a time. Means loading their short term memory while interacting. Millers 7 chunks of information is often prescribed as a solution to limit short term memory. In psychological experiments it has been found that the short term memory can hold 7 +- 2 bits called chunks of information. Long sequential actins requiring more than 7 chunks need to be broken down into smaller chunks.

Example:

Assignment

Choose any common software interface. Analyze its interfaces by navigating to find out if it adheres to the eight Shneiderman Rules .

Use a Novice User as your reference.

Example: Excel Sheet .User: 10th standard student.

Present your findings in terms of number of violations per rule for the chosen software.

References

1.Shneiderman. B. ; Designing the user interface: Strategies for effective Human Computer Interaction; Addsion-Wesley Publishers Treading MA. 2004.)

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