Introduction to Software Engineering

- User Interface Design

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- UI design is an iterative process involving close liaisons between users and designers.

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- The 3 core activities in this process are: — User analysis. Understand what the users will do with the system; — System prototyping. Develop a series of prototypes for experiment; — Interface evaluation. Experiment with these prototypes with users.

Four different models occur in HCI design:

1.

- The design model expresses the software design.

2.

- The user model describes the profile of the end users. (i.e., novices vs. experts, cultural background, etc.)

3.

- The user's model is the end users' perception of the system.

4.

- The system image is the external manifestation of the system (look and feel + documentation etc.) Principle
- Description

User familiarity

- Use terms and concepts familiar to the user.
- Consistency
- Comparable operations should be activated in the same way. Commands and menus should have the same format, etc.

Minimal surprise

- If a command operates in a known way, the user should be able to predict the operation of comparable commands.
- Feedback
- Provide the user with visual and auditory feedback, maintaining two-way communication.

Characteristic

- Description
- Windows
- Multiple windows allow different information to be displayed simultaneously on the user's screen.
- Icons
- Usually icons represent files (including folders and applications), but they may also stand for processes (e.g., printer drivers).
- Menus
- Menus bundle and organize commands (eliminating the need for a command language).
- Pointing
- A pointing device such as a mouse is used for command choices from a menu or indicating items of interest in a window. Graphical elements can be commands on the same

Advantages

- They are easy to learn and use. — Users without experience can learn to use the system quickly.

- The user may switch attention between tasks and applications.

- Fast, full-screen interaction is possible with immediate access to the entire screen

Problems

- A GUI is not automatically a good interface — Many software systems are never used due to poor UI design — A poorly designed UI can cause a user to make catastrophic errors

Advantages

- Users feel in control and are less likely to be intimidated by the system

- User learning time is relatively short

- Users get immediate feedback on their actions

- mistakes can be quickly detected and corrected

Problems

- Finding the right user metaphor may be difficult

- It can be hard to navigate efficiently in a large information space.

- It can be complex to program and demanding to execute

Advantages

- Users don't need to remember command names

- Typing effort is minimal

- User errors are trapped by the interface

- Context-dependent help can be provided (based on the current menu selection)

Problems

- Actions involving logical conjunction (and) or disjunction (or) are awkward to represent

- If there are many choices, some menu structuring facility must be

Scrolling menus

- The menu can be scrolled to reveal additional choices

- Not practical if there is a very large number of choices

Hierarchical menus

- Selecting a menu item causes the menu to be replaced by a sub-menu

Walking menus

- A menu selection causes another menu to be revealed

Associated control panels

- When a menu item is selected, a control panel pops-up with further options

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Per-page view

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