

HMI - Module 3 - CHAPTER 3

Graphical User Interface

GUI

- interactive visual component through which user can communicate

with computer system easily.

- used for performing actions by user and display information on screen

Popularity of graphics

- design & UI are fundamentally changed with the advent of graphics

- Older text based screen possessed 1D text oriented, form like quality, were replaced by 3D appearance graphical screen

Features of Graphical System

- User Friendly
- Reduces memory load & system learning requirement
- Require less expert knowledge to use the system
- Faster use & faster learning.

- More attractive system.
- Increase system control & predictable response
- provide easy reversal of actions
- provide consistency
- provide less typing requirements

Characteristics

- 1) Visual presentation
- 2) Pick & click interaction
- 3) Restricted set of interface options
- 4) Visualization
- 5) Object Orientation
 - data object → information
 - container object → hold object
 - device object to represent physical world
- 6) Actions

Principles of UI Design

- 1) Familiarity
- 2) Consistency
- 3) Minimal surprise
- 4) Recoverability

- 5) User guidance
- 6) User diversity

Direct Manipulation

- Schneiderman, 1982
- system portrayed as extension of real world.
- continuous visibility of object

- & actions
- actions are rapid & incremental with visible of result
- incremental actions are easily reversible
- ex: driving a car
- when driver takes the right side, the whole scene in front of

him changed.

Indirect manipulation

- Direct manipulation of all screen objects and actions may not be feasible.
- Operations may be difficult to conceptualize

- Graphic capability of system may be limited
- ⇒ Indirect manipulation is provided
- replaces word/text with pull down or pop up menus for symbols
- Most window systems are combined of direct & indirect manipulation.



User focus

Data & Application

HW

Limited

Variations

User Tasks

Install, configure, personalize, start, use, upgrade

Presentat Elements

Windows, menus, controls, data, toolbars

Navigation

Through menu, list, trees, dialogs, wizards

Interaction

Clicking menu choices, pressing buttons, selecting list choice

Response Time

Nearly instantaneous

User's Conceptual Space

Controlled & constrained by program

Context

Sense of context is neatly manipulated

Task Efficiency

Target toward specific audience with specific task

Web page

Information & Navigation

Enormous

Link to a site, browse or read page, fill out forms

browse & page

through links, bookmarks & typed URLs

Basic interaction is single click

Depends on transmission speed & page content

Infinite & generally unorganized

Sense of context is poorly manipulated

often intended for anyone & everyone