Chapter 7

User Interface Design

Topics

- Interface design as multidisciplinary activity
- From interface prototype to implementation
- Guidelines for user-centered interface design
- Interface windows
- Dependencies between windows
- Window navigation
GUI design multidisciplinary

- A team includes
  - Analyst
  - Designer
  - Technology expert
  - Graphic artist
  - Social and behavioral scientist
  - Programmer

Example 7.1 – Contact Management
Example 7.1 – Contact Management

GUI design guidelines

- User in control
- Consistency
- Personalization and customization
- Forgiveness
- Feedback
- Aesthetics and usability
User in control

- Rather “user’s perception of control”
- No mothering principle
- Feedback
Consistency

- The conformance to the GUI vendor’s standards
  - A GUI developer must not be too creative and innovative in the interface design.
- The conformance to the naming, coding and other GUI-related standards developed internally by the organization
  - This includes the naming and coding of the menus, action buttons, screen fields, etc.
  - It also includes any standards for the placement of objects on the screen and consistent use of other GUI elements across all internally developed applications.

Personalization and customization

- The GUI personalization is the customization for a personal use
  - e.g. when a user reorders and resizes columns in a row browse (grid) display and saves these changes as his/her personal preference
- The GUI customization is an administrative task of tailoring the software to different groups of users
  - e.g. when the program can operate differently for novice and advanced users
Forgiveness

- A good interface should allow the users to experiment and make mistakes in a forgiving way.
- The **forgiveness** encourages an interface exploration because the user is allowed to take erroneous routes but can be “rolled back” to the starting point if necessary.
- The forgiveness implies a multi-level undo operation.

Feedback

- The **feedback** guideline is a spin-off of the first guideline – the user in control guideline. To be in control implies to know what’s going on when the control is temporarily with the program.
- The developer should build into the system visual and/or audio cues for every user event.
- Hourglass, wait indicator…
Aesthetics and usability

- The **aesthetics** is about the visual appeal.
- The **usability** is about the ease, simplicity, efficiency, reliability and productivity in using the interface.
- The issues to consider include
  - the fixation and movement of the human eye,
  - the use of colors,
  - the sense of balance and symmetry,
  - the alignment and spacing of elements,
  - the sense of proportion,
  - the grouping of related elements, etc.
- **Simplicity** – additional and related guideline

Primary window

- Title bar icon
- Title text
- Buttons to minimize, maximize, and close window
- Menu bar
- Toolbar
- Pane
- Vertical scroll bar
- Horizontal scroll bar
- Status bar
Example 7.2 – Contact Management

Microsoft Outlook – Calendar window

(c) Addison Wesley

Example 7.2 – Contact Management

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Row browser

Multi-pane row browser
Secondary window

- Modal or modeless
- No “bars” – menu bar, toolbar, scroll bar, status bar

Kinds

- Dialog box
- Tab folder
- Drop-down list
- Message box

Dialog box

- Field prompt
- Not editable field value
- Editable field value
Example 7.3 - Contact Management

Tab folder
Example 7.4 - Contact Management

Drop-down list
Message box

No Ad Link modified by the Merge!

Document and its view
Single document interface

Multiple document interface
Stereotyping for GUI design

- Primary window
  - Pane in primary window
  - Row browser
  - Tree browser
  - Web page
- Secondary window
  - Dialog box
  - Message box
  - Tab folder
- Window data
  - Text box
  - Combo box
  - Spin box
  - Column
  - Row
  - Group of fields
**Activity stereotypes**

- Drop-down menu item
- Pop-up menu item
- Toolbar button
- Command button
- Double click
- Picklist selection
- Keyboard key
- Keyboard function key
- Keyboard accelerator key
- Scrolling button
- Window close button

**Window navigation diagram**

- Primary window: Product Browser
- Insert (toolbar button / menu item)
- Update (toolbar button / menu item / double click)
- Delete (toolbar button / menu item)
- Insert Product (dialog box)
- Update Product (dialog box)
- Delete Product (dialog box)
- OK (command button)
- Cancel (command button)
- Save (command button)
- Clear (command button)
Example 7.6 - Telemarketing

Summary

- The GUI design is a **multidisciplinary activity** requiring a combined expertise of a few professions.
- The design must adhere to the **guidelines** published by the manufacturer of a windows interface adopted in the project.
- The Microsoft Windows interface distinguishes between the **primary window** and **secondary window**
  - **Primary window** can be a row browser, tree browser or Web page.
  - **Secondary window** can be a dialog box, tab folder, drop-down list or message box.
- **Window Navigation Diagram** captures the possible navigation paths between application windows.