Chapter 10
Designing Forms and Reports

Learning Objectives

- Explain the process of designing forms and reports and the deliverables for their creation.
- Apply the general guidelines for formatting forms and reports.
- Use color and know when color improves the usability of information.
- Format text, tables, and lists effectively.
Learning Objectives (Cont.)

✓ Explain how to assess usability and describe how variations in users, tasks, technology, and environmental characteristics influence the usability of forms and reports.
✓ Discuss guidelines for the design of forms and reports for Internet-based electronic commerce systems.

Designing Forms and Reports

FIGURE 10-1
Systems development life cycle with logical design phase highlighted
Designing Forms and Reports (Cont.)

- **Form**: a business document that contains some predefined data and may include some areas where additional data are to be filled in
  - An instance of a form is typically based on one database record.

Designing Forms and Reports (Cont.)

- **Report**: a business document that contains only predefined data
  - It is a passive document used solely for reading or viewing data.
  - A report typically contains data from many unrelated records or transactions.
Designing Forms and Reports (Cont.)

- Common Types of Reports:
  - *Scheduled*: produced at predefined time intervals for routine information needs
  - *Key-indicator*: provides summary of critical information on regular basis
  - *Exception*: highlights data outside of normal operating ranges
  - *Drill-down*: provides details behind summary of key-indicator or exception reports
  - *Ad-hoc*: responds to unplanned requests for non-routine information needs

The Process of Designing Forms and Reports

- Is user-focused activity.
- Follows a prototyping approach.
- First steps are to gain an understanding of the intended user and task objectives by collecting initial requirements during requirements determination.
The Process of Designing Forms and Reports

- Requirements determination:
  - Who will use the form or report?
  - What is the purpose of the form or report?
  - When is the report needed or used?
  - Where does the form or report need to be delivered and used?
  - How many people need to use or view the form or report?

The Process of Designing Forms and Reports (Cont.)

- Prototyping
  - Initial prototype is designed from requirements.
  - Users review prototype design and either accept the design or request changes.
  - If changes are requested, the construction-evaluation-refinement cycle is repeated until the design is accepted.
The Process of Designing Forms and Reports (Cont.)

- A coding sheet is an “old” tool for designing forms and reports, usually associated with text-based forms and reports for mainframe applications.
- Visual Basic and other development tools provide computer aided GUI form and report generation.

FIGURE 10-2
The layout of a data input form using a coding sheet
The Process of Designing Forms and Reports (Cont.)

FIGURE 10-3
A data input screen designed in Microsoft's Visual Basic .NET

Deliverables and Outcomes

- Design specifications are the major deliverables and inputs to the system implementation phase.
Deliverables and Outcomes (Cont.)

- Design specifications have three sections:
  - *Narrative overview*: characterizes users, tasks, system, and environmental factors
  - *Sample design*: image of the form (from coding sheet or form building development tool)
  - *Testing and usability assessment*: measuring test/usability results (consistency, sufficiency, accuracy, etc.)

Formatting Forms and Reports

- *Meaningful titles* — use clear, specific, version information, and current date
- *Meaningful information* — include only necessary information, with no need to modify
Formatting Forms and Reports (Cont.)

- **Balanced layout** — use adequate spacing, margins, and clear labels
- **Easy navigation system** — show how to move forward and backward, and where you are currently

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**FIGURE 10-5**
Contrasting customer information forms (Pine Valley Furniture)

(a) Poorly designed form
Formatting Forms and Reports (Cont.)

FIGURE 10-5 (continued)

(b) Improved design for form

Highlighting Information

- Notify users of errors in data entry or processing.
- Provide warnings regarding possible problems.
- Draw attention to keywords, commands, high-priority messages, unusual data values.
Highlighting Information (Cont.)

Highlighting can include use of
- upper case
- bold
- italics
- underlining
- boxing
- size and color differences
- all capital letters
- blinking
- reverse video
- audible tones
- intensity differences
- offsetting nonstandard information

FIGURE 10-6
Customer account status display using various highlighting techniques
(Pine Valley Furniture)
Color vs. No Color

Benefits of Using Color

- Soothes or strikes the eye.
- Accents an uninteresting display.
- Facilitates subtle discriminations in complex displays.
- Emphasizes the logical organization of information.
- Draws attention to warnings.
- Evokes more emotional reactions.

Problems from Using Color

- Color pairings may wash out or cause problems for some users.
- Resolution may degrade with different displays.
- Color fidelity may degrade on different displays.
- Printing or conversion to other media may not easily translate.
Displaying Text

- **Case**: mixed upper and lower case, use conventional punctuation
- **Spacing**: double spacing if possible, otherwise blank lines between paragraphs
- **Justification**: left justify text, ragged right margins
- **Hyphenation**: no hyphenated words between lines
- **Abbreviations**: only when widely understood and significantly shorter than full text

**FIGURE 10-7**
Contrasting the display of textual help information

(a) Poorly designed help screen with many violations of the general guidelines for displaying text
Displaying Text (Cont.)

FIGURE 10-7 (continued)

(b) An improved design for a help screen

Designing Tables and Lists

- **Labels**
  - All columns and rows should have meaningful labels.
  - Labels should be separated from other information by using highlighting.
  - Redisplay labels when the data extend beyond a single screen or page.
Designing Tables and Lists (Cont.)

- Formatting columns, rows and text:
  - Sort in a meaningful order.
  - Place a blank line between every five rows in long columns.
  - Similar information displayed in multiple columns should be sorted vertically.
  - Columns should have at least two spaces between them.

- Allow white space on printed reports for user to write notes.
- Use a single typeface, except for emphasis.
- Use same family of typefaces within and across displays and reports.
- Avoid overly fancy fonts.
Designing Tables and Lists (Cont.)

- Formatting numeric, textual and alphanumeric data:
  - Right justify numeric data and align columns by decimal points or other delimiter.
  - Left justify textual data. Use short line length, usually 30 to 40 characters per line.
  - Break long sequences of alphanumeric data into small groups of three to four characters each.

FIGURE 10-8
Contrasting the display of tables and lists (Pine Valley Furniture)

(a) Poorly designed form
Designing Tables and Lists (Cont.)

- Use tables for reading individual data values.
- Use graphs for:
  - Providing quick summary.
  - Displaying trends over time.
  - Comparing points and patterns of variables.
  - Forecasting activity.
  - Simple reporting of vast quantities of information.
Designing Tables and Lists (Cont.)

**FIGURE 10-9**
Tabular report illustrating numerous design guidelines
(Pine Valley Furniture)

Designing Tables and Lists (Cont.)

**FIGURE 10-10**
Graphs for comparison

(a) Line graph
(b) Bar graph
Assessing Usability

- Objective for designing forms, reports and all human-computer interactions is usability.
- There are three characteristics:
  - Speed — Can you complete a task efficiently?
  - Accuracy — Does the output provide what you expect?
  - Satisfaction — Do you like using the output?

Assessing Usability (Cont.)

- Usability: an overall evaluation of how a system performs in supporting a particular user for a particular task.
Usability Success Factors

- **Consistency** — of terminology, formatting, titles, navigation, response time
- **Efficiency** — minimize required user actions.
- **Ease** — self-explanatory outputs and labels.
- **Format** — appropriate display of data and symbols.
- **Flexibility** — maximize user options for data input according to preference.

Usability Success Factors (Cont.)

- Characteristics for consideration:
  - **User**: experience, skills, motivation, education, personality
  - **Task**: time pressure, cost of errors, work durations
  - **System**: platform
  - **Environment**: social and physical issues
Measures of Usability

- Time to learn
- Speed of performance
- Rate of errors
- Retention over time
- Subjective satisfaction
- Layout of information should be consistent, both within and across applications

Measures of Usability (Cont.)

- Layout of information should be consistent both within and across applications, whether information is delivered on screen display or on a hard-copy report.
Electronic Commerce Application: Designing Forms and Reports for Pine Valley Furniture Web Store

- General guidelines for rapid deployment of Internet Web sites have resulted
- Three possible solutions to the problem:
  - Make it possible to design reasonably usable sites without having UI experience.
  - Train more people in good Web design.
  - Live with poorly designed sites that are hard to use.

Designing Forms and Reports at Pine Valley Furniture

- PVF established the following guidelines:
  - Use lightweight graphics.
  - Establish forms and data integrity rules.
  - Use template-based HTML.
Lightweight Graphics

- **Lightweight Graphics**: the use of small, simple images to allow a Web page to more quickly be displayed
  - Quick image download
  - Quick feedback from the Web site will help to keep customers at the PVF WebStore longer

Forms and Data Integrity Rules

- All forms that request information should be clearly labeled and provide adequate room for input.
- Specific fields requiring specific information must provide a clear example.
- Must designate which fields are optional, required, and which have a range of values.
Template-Based HTML

- **Template-based HTML**: templates to display and process common attributes of higher-level, more abstract items
  - Creates an interface that is very easy to maintain
  - Advantageous to have a “few” templates that could be used for entire product line
  - Not every product needs its own page

Summary

- In this chapter you learned how to:
  - Explain the process of designing forms and reports and the deliverables for their creation.
  - Apply the general guidelines for formatting forms and reports.
  - Use color and know when color improves the usability of information.
Summary (Cont.)

✓ Format text, tables, and lists effectively.
✓ Explain how to assess usability and describe how variations in users, tasks, technology, and environmental characteristics influence the usability of forms and reports.
✓ Discuss guidelines for the design of forms and reports for Internet-based electronic commerce systems.

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