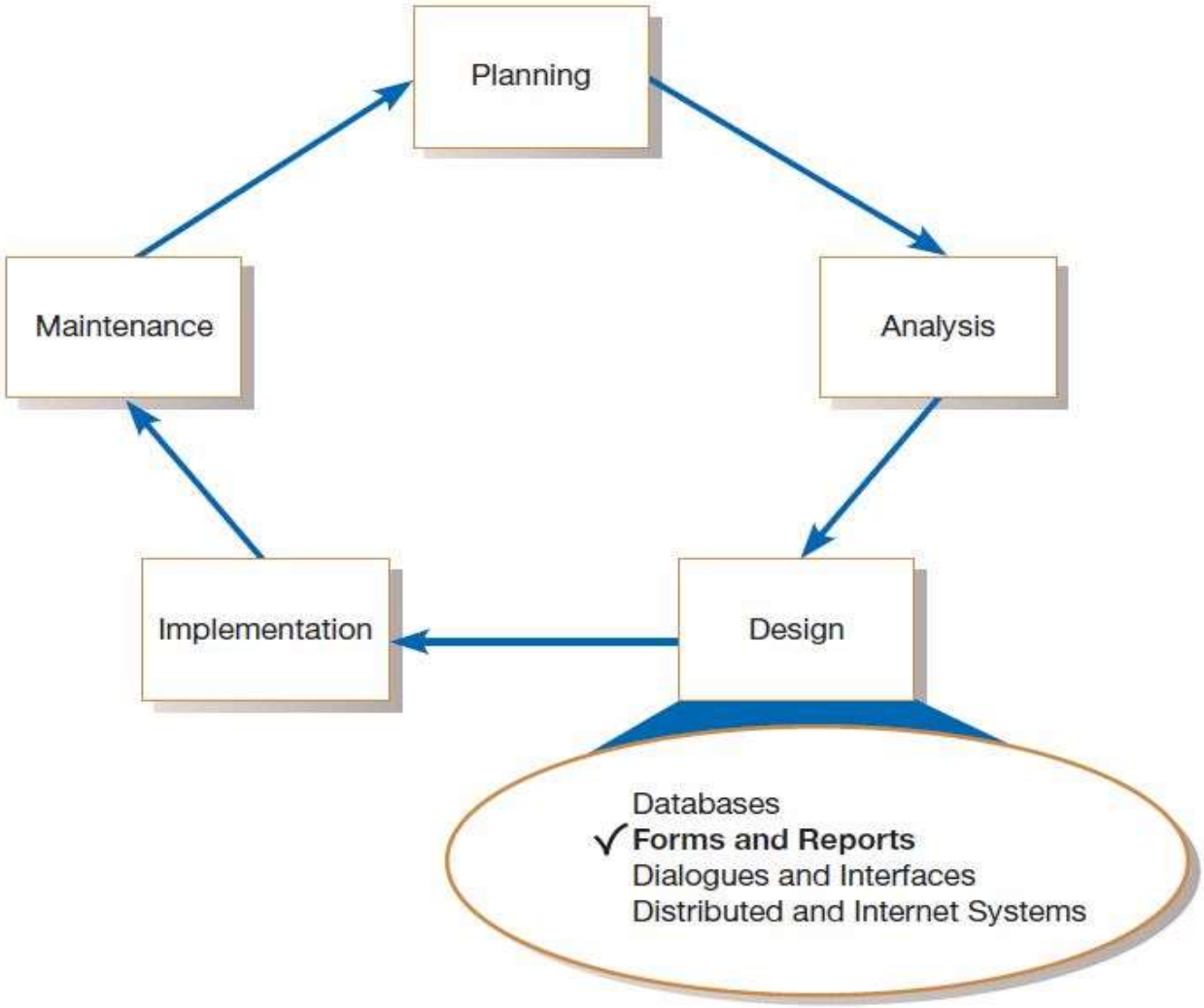
Unit 4.2 Designing Forms and Reports

Introduction; Designing Forms and Reports (Process, Deliverables and Outcomes); Formatting Forms and Reports (General Formatting Guidelines, Highlighting Information, Color vs. No-Color, Displaying Text, Designing Tables and Lists, Paper vs. Electronic Reports); Assessing Usability (Usability Success Factors, Measures of Usability)


Planning
Analysis
Design
Implementation
Maintenance
Databases
✓ Forms and Reports
Dialogues and Interfaces
Distributed and Internet Systems

- A **form** is a business document that contains some predefined data and often includes some areas where additional data are to be filled in. Most forms have a stylized format and are usually not in a simple row and column format. Examples of business forms are product order forms, employment applications, and class registration sheets.
- A **report** is a business document that contains only predefined data; it is a passive document used solely for reading or viewing. Examples of reports include invoices, weekly sales summaries by region and salesperson, or a pie chart of population by age categories.

Common Types of Business Reports

Report Name	Description
Scheduled Reports	Reports produced at predefined intervals—daily, weekly, or monthly—to support the routine informational needs of an organization.
Key-Indicator Reports	Reports that provide a summary of critical information on a recurring basis.
Exception Reports	Reports that highlight data that are out of the normal operating range.
Drill-Down Reports	Reports that provide details behind the summary values on a key-indicator or exception report.
Ad-hoc Reports	Unplanned information requests in which information is gathered to support a nonroutine decision.

The process of designing forms and reports

- Designing forms and reports is a user-centered activity that typically follows a prototyping approach. User-centered design refers to a design approach that involves an understanding of the target audience, their tasks and goals, information needs, experience levels, and so on. So, to begin, you must gain an understanding of the intended user and task objectives by collecting initial requirements during requirements determination.
- During this process, several questions must be answered. These questions attempt to answer the "who, what, when, where, and how" related to the creation of all forms or reports. Gaining an understanding of these questions is a required first step in the creation of any form or report.

Fundamental Questions When Designing Forms and Reports

1. Who will use the form or report?
2. What is the purpose of the form or report?
3. When is the form or report needed and used?
4. Where does the form or report need to be delivered and used?
5. How many people need to use or view the form or report?

- After collecting the initial requirements, you structure and refine this information into an initial prototype. Structuring and refining the requirements are completed independently of the users, although you may need to occasionally contact users in order to clarify some issue overlooked during analysis. Finally, you ask users to review and evaluate the prototype. After reviewing the prototype, users may accept the design or request that changes be made. If changes are needed, you will repeat the construction–evaluate–refinement cycle until the design is accepted. Usually, several iterations of this cycle occur during the design of a single form or report. As with any prototyping process, you should make sure that these iterations occur rapidly in order to gain the greatest benefits from this design approach.

- **Paper prototype**
  - A series of mock screens that can be used to test content, look, and feel, as well as the task flow and other usability factors.
- **Wireframe**
  - A simple design to show the placement of information elements on a screen and the space needed for each element.

- Design specifications have three sections:
  - Narrative overview
  - Sample design
  - Testing and usability assessment

General Guidelines for the Design of Forms and Reports

Meaningful Titles:

Clear and specific titles describing content and use of form or report
Revision date or code to distinguish a form or report from prior versions
Current date, which identifies when the form or report was generated
Valid date, which identifies on what date (or time) the data in the form or report were accurate

Meaningful Information:

Only needed information should be displayed
Information should be provided in a manner that is usable without modification

Balance the Layout:

Information should be balanced on the screen or page
Adequate spacing and margins should be used
All data and entry fields should be clearly labeled

Design an Easy Navigation System:

Clearly show how to move forward and backward
Clearly show where you are (e.g., page 1 of 3)
Notify user when on the last page of a multipaged sequence

Highlighting Information

- Blinking and audible tones
- Color differences
- Intensity differences
- Size differences
- Font differences
- Reverse video
- Boxing
- Underlining
- All capital letters
- Offsetting the position of nonstandard information

- There are several situations when highlighting can be a valuable technique for conveying special information:
  - Notifying users of errors in data entry or processing
  - Providing warnings to users regarding possible problems such as unusual data values or an unavailable device
  - Drawing attention to keywords, commands, high-priority messages, and data that have changed or gone outside normal operating ranges

Color vs No color

- Color is a powerful tool for the designer in influencing the usability of a system. When applied appropriately, color provides many potential benefits to forms and reports,

Benefits and Problems from Using Color

Benefits from 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 (e.g., color blindness).
Resolution may degrade with different displays.
Color fidelity may degrade on different displays.
Printing or conversion to other media may not easily translate.

(*Source:* Based on Shneiderman et al., 2009; Benbasat, Dexter, and Todd, 1986.)

Guidelines for Displaying Text

Case	Display text in mixed uppercase and lowercase and use conventional punctuation.
Spacing	Use double spacing if space permits. If not, place a blank line between paragraphs.
Justification	Left-justify text and leave a ragged-right margin.
Hyphenation	Do not hyphenate words between lines.
Abbreviations	Use abbreviations and acronyms only when they are widely understood by users and are significantly shorter than the full text.

General Guidelines for Displaying Tables and Lists

Use Meaningful 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.

Formatting Columns, Rows, and Text:

Sort in a meaningful order (e.g., ascending, descending, or alphabetic).

Place a blank line between every five rows in long columns.

Similar information displayed in multiple columns should be sorted vertically (i.e., read from top to bottom, not left to right).

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.

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 30–40 characters per line (this is what newspapers use, and it is easier to speed-read).

Break long sequences of *alphanumeric data* into small groups of three to four characters each.

Guidelines for Selecting Tables versus Graphs

- Use Tables For:
  - Reading individual data values
- Use Graphs For:
  - Providing a quick summary of data
  - Detecting trends over time
  - Comparing points and patterns of different variables
  - Forecasting activities
  - Reporting vast amounts of information when relatively simple impressions are to be drawn

Usability

- Usability means that your designs should assist, not hinder, user performance. Thus, usability refers to an overall evaluation of how a system performs in supporting a particular user for a particular task.
- There are many factors to consider when you design forms and reports. The objective for designing forms, reports, and all human–computer interactions is usability.
- Usability typically refers to the following three characteristics:
  - *Speed - Can you complete a task efficiently?*
  - *Accuracy - Does the system provide what you expect?*
  - *Satisfaction - Do you like using the system?*

Measures of Usability

- User-friendliness is a term often used, and misused, to describe system usability. Although the term is widely used, it is too vague from a design standpoint to provide adequate information because it means different things to different people.
- Consequently, most development groups use several methods for assessing usability, including the following considerations :
  - Learnability—How difficult is it for a user to perform a task for the first time?
  - Efficiency—How quickly can users perform tasks once they know how to perform them?

Measures of Usability

- Error rate—How many errors might a user encounter, and how easy it is to recover from those errors?
- Memorability—How easy is it to remember how to accomplish a task when revisiting the system after some period of time?
- Satisfaction and aesthetics—How enjoyable is the system's visual appeal and how
- enjoyable is the system to use?

General Design Guidelines for Usability of Forms and Reports

Usability Factor	Guidelines for Achievement of Usability
Consistency	Consistent use of terminology, abbreviations, formatting, titles, and navigation within and across outputs. Consistent response time each time a function is performed.
Organization	Formatting should be designed with an understanding of the task being performed and the intended user. Text and data should be aligned and sorted for efficient navigation and entry. Entry of data should be avoided where possible (e.g., computing rather than entering totals).
Clarity	Outputs should be self-explanatory and not require users to remember information from prior outputs in order to complete tasks. Labels should be extensively used, and all scales and units of measure should be clearly indicated.
Format	Information format should be consistent between entry and display. Format should distinguish each piece of data and highlight, not bury, important data. Special symbols, such as decimal places, dollar signs, and ± signs, should be used as appropriate.
Flexibility	Information should be viewed and retrieved in a manner most convenient to the user. For example, users should be given options for the sequence in which to enter or view data and for use of shortcut keystrokes, and the system should remember where the user stopped during the last use of the system.

Characteristics for Consideration When Designing Forms and Reports

Characteristic	Consideration for Form and Report Design
User	Issues related to experience, skills, motivation, education, and personality should be considered.
Task	Tasks differ in amount of information that must be obtained from or provided to the user. Task demands such as time pressure, cost of errors, and work duration (fatigue) will influence usability.
System	The platform on which the system is constructed will influence interaction styles and devices.
Environment	Social issues such as the users' status and role should be considered in addition to environmental concerns such as lighting, sound, task interruptions, temperature, and humidity. The creation of usable forms and reports may necessitate changes in the users' physical work facilities.

(*Source:* Based on Norman, 1991.)

Common Errors When Designing the Layout of Web Pages

Error	Recommendation
Nonstandard Use of GUI Widgets	Make sure that when using standard design items, they behave in accordance with major interface design standards. For example, the rules for radio buttons state that they are used to select one item among a set of items, that is, not confirmed until "OK'ed" by a user. In many websites selecting radio buttons is used as both *selection* and *action*.
Anything That Looks Like Advertising	Because research on web traffic has shown that many users have learned to stop paying attention to web advertisements, make sure that you avoid designing any legitimate information in a manner that resembles advertising (e.g., banners, animations, pop-ups).
Bleeding-Edge Technology	Make sure that users don't need the latest browsers or plug-ins to view your site.
Scrolling Test and Looping Animations	Avoid scrolling text and animations because they are both hard to read and users often equate such content with advertising.
Nonstandard Link Colors	Avoid using nonstandard colors to show links and for showing links that users have already used; nonstandard colors will confuse the user and reduce ease of use.
Outdated Information	Make sure your site is continuously updated so that users "feel" that the site is regularly maintained and updated. Outdated content is a sure way to lose credibility.
Slow Download Times	Avoid using large images, lots of images, unnecessary animations, or other time-consuming content that will slow the downloading time of a page.
Fixed-Formatted Text	Avoid fixed-formatted text that requires users to scroll horizontally to view content or links
Displaying Long Lists as Long Pages	Avoid requiring users to scroll down a page to view information, especially navigational controls. Manage information by showing only *N* items at a time, using multiple pages, or by using a scrolling container within the window.

- Lightweight graphics are small, simple images that allow a page to load as quickly as possible.
- Stylesheet-based HTML
  - A web design approach that separates content from the way in which it is formatted and presented, making ongoing maintenance easier and site-wide consistency much higher.