User Interface Design contd..

(Chapter 11- by Roger S. Pressman)

Interface Design Steps

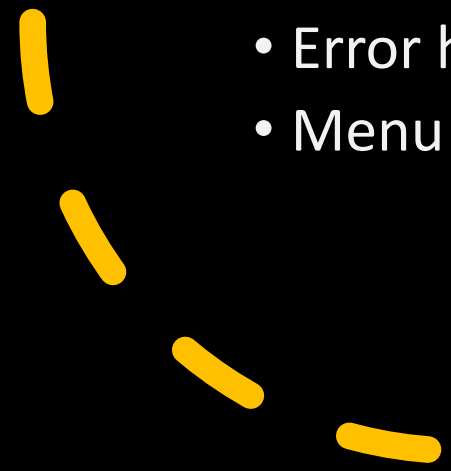
- UI Design models state that:
  - Using information developed during interface analysis, define interface objects (buttons, text fields, video etc.) and operations (tasks)
  - Define events (user actions) that will change the state of the UI.
  - Depict each interface state as it will actually look to the end-user. (accomplish using sketches).
  - Show how the user infer the System state from information provided through the interface.

Interface Design Steps

- Apply interface design steps
  - Define the use-case:
    - Create the list of objects and actions
    - These objects & actions are categorized into different type.
    - Identify which are source (e.g., printer icon), target (e.g., paper) and application objects(e.g., screen, entity/db table).
- Use UI design patterns
  - As specific deign pattern is formulated for a well bounded solution.
    - E.g., **for a calendar UI**, a Calendar Strip is created that allows to traverse in future dates, marking the current one.

Interface Design Steps

- Design Issues
  - Some of the issues are:
    - System Response time
    - Help facilities
    - Error handling
    - Menu & command labelling

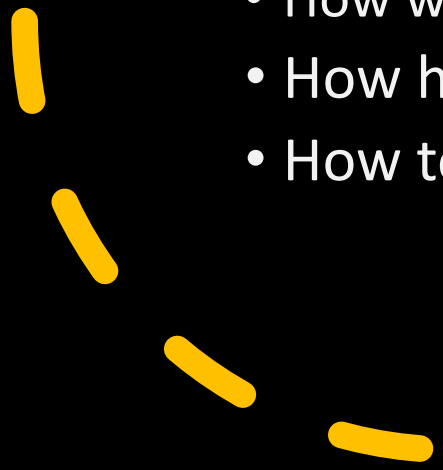


Interface Design Steps

- Design Issue 1: System Response time
  - Primary complaint for almost every interactive system
  - Two characteristics:
    - Length: longer response times are not appreciated, led to user frustration
    - Variability: varying response time led to user confusion, like whether something went wrong at backend which is leading to a different response time than average response time.

Interface Design Steps

- Design Issue 2: Help Facilitates
  - Online helpdesk
  - Detailed user manuals
  - Design issues while providing Help facilities
    - Help availability for all functionalities?
    - How will user demand help? (give menu for that or a function key mapped to that)
    - How help is presented? (via another window or a printed manual)
    - How to return to normal UI after consulting help



Interface Design Steps

- Design Issue 3: Error Handling
  - Error messages & warnings are bad news to users when something went wrong.
  - Error message must be explanatory and should include some remedies for that (via hyperlinks)
  - A good error message includes:
    - Describe problem simply
    - Provide valuable advice
    - List the negative consequences of the error
    - Message must prompt visually using a color scheme that easily categorize it as an error.

Interface Design Steps

- Design Issue 4: Menu & Command labeling
  - Different styles like command oriented arch and UI based arch.
  - Both are used frequently
  - How commands are assigned to each menu item so that it may run without UI as well.
- Design Issue 5: Application Accessibility
  - UI should cater the needs of the physically challenged persons as well (like some sort of voice inputs could be accepted to facilitate handicapped)
- Design Issue 6: internationalization
  - UI must target the global market
  - Follow global design standards & facilitate multiple languages.

Revised Interface Design Guidelines for a Web App

Anticipation	• **Application must depicts the user's expected move.** • E.g., **software installation procedures are defined in a way to predict next step for users**. They don't need to search for the next work.
Communication	• **Application must show the status of an activity initiated by user.** • E.g., **file copying shown via progress bar**
Consistency	• **The navigation controls, menu, icons, aesthetics should be consistent throughout the application** • E.g., like yellow triangle shows warning signs use them for warning messages only.
Controlled autonomy	• **Revising the golden rule that says place user in control but restrict the controls as per the user's role.** • Enforce id and password for no go options.
Efficiency	• **Design of the application must work on user's efficiency.** • e.g., **input the CNIC or hone no without space** or hyphen will lead to less processing time at user end.

Revised Interface Design Guidelines for a Web App

Focus

- **The interface should help user stay focused and give the relevant options and data first**

Fitts's law

- Law—"**The time to acquire a target is a function of the distance to the target and the size of the target**."
- In interactive systems its important to complete tasks quickly so relevant options should be easily accessible and in larger size.
- **The important buttons should be made bigger to reduce accessibility time**
- **And inter-related targets should be placed together to reduce time.**
- E.g., in Youtube, **sound controls at bottom and near to video and subscribe button bigger**

Latency reduction

- **Interface must do multitasking rather than kept user waiting for an operation to complete**
- e.g., **display a progress bar to show the progress of the task like downloading**
- Show and animated visuals to keep user focused.

Revised Interface Design Guidelines for a Web App

Learnability	• **Minimize learning time by creating simple & intuitive designs**
Maintain work product integrity	• **An interface should autosaved the user data** • e.g., **filling out long forms and loosing data in case of an error in an input field.** This leas to frustration. So the data should be saved for all the correct fields.
Readability	• **All information presented** should be **readable by all age group users**
Track state	• Cookies can be used to **track user activities** so user **may logout** any time & can **continue from the same state after logging in again**
Visible navigation	• **Obvious navigation bars mentioned on every interface of the application.**

Interface Design Workflow:

- Derive and refine information from requirements
- Develop rough layout sketch
- Map user objective to actions (like Home, Contact, booking, facililities, etc….)
- Create storyboard screen images for every interface
- Refine layouts by improving aesthetics
- Develop an activity diagram to show the design flow
- Develop state diagrams to show changes in state after transitions
- Describe interface layout for every state
- Refine & review the model.

Interface Design Evolution: