Session 1

Introduction to User Interface Design

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Learning Objectives

- Define User Interface (UI) and UI design
- List and explain different elements of UI Design
- Describe the principles of UI Design
- Describe the types of UI Design
- Explain the UI Design process
- Describe the models in UI Design
- Define Mobile UI
- Explain Color Theory
- Understand the concepts of Design Thinking
- Use the best practices in UI Design

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What is User Interface (UI)?

Means by which user and computer interact.

Comprises software and hardware.

UI comprises:

- Textual, graphical, and auditory information.
- Control sequences.

Example of a most common UI: Automatic Teller Machine (ATM)

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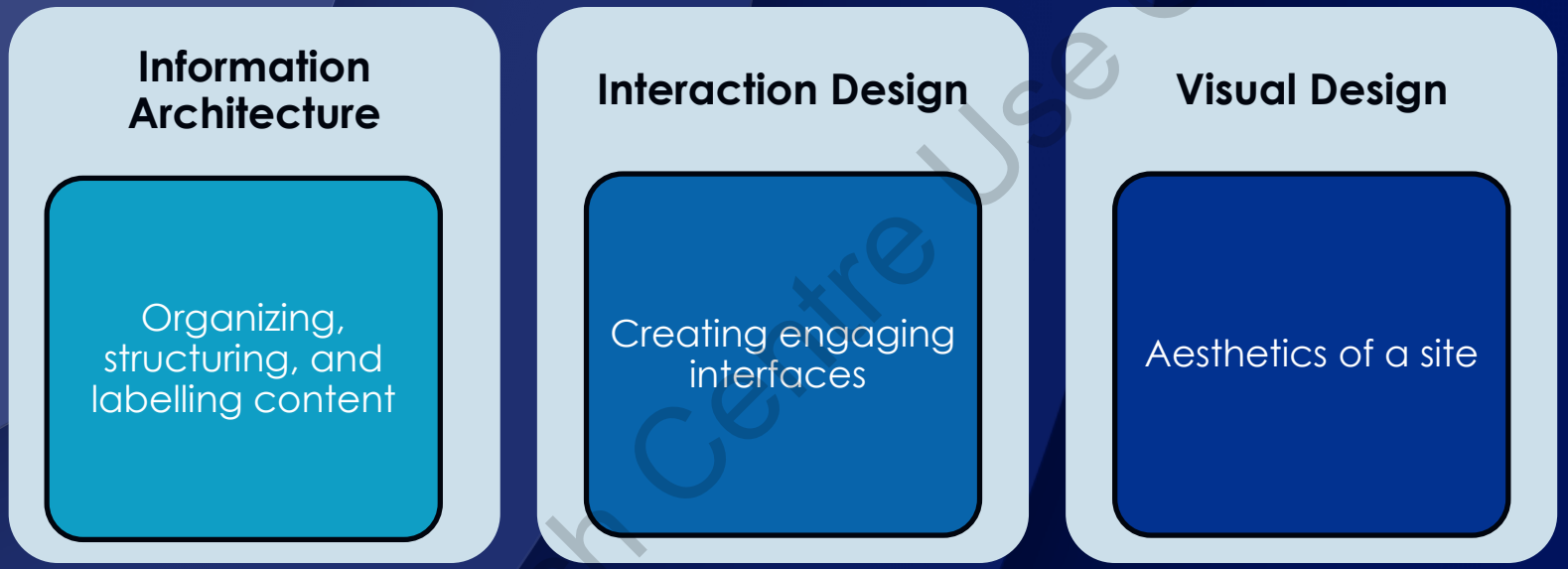
What is User Interface Design (UXD)?



- The overall goal of the UXD is to make the user's experience and interaction as simple and efficient as possible.

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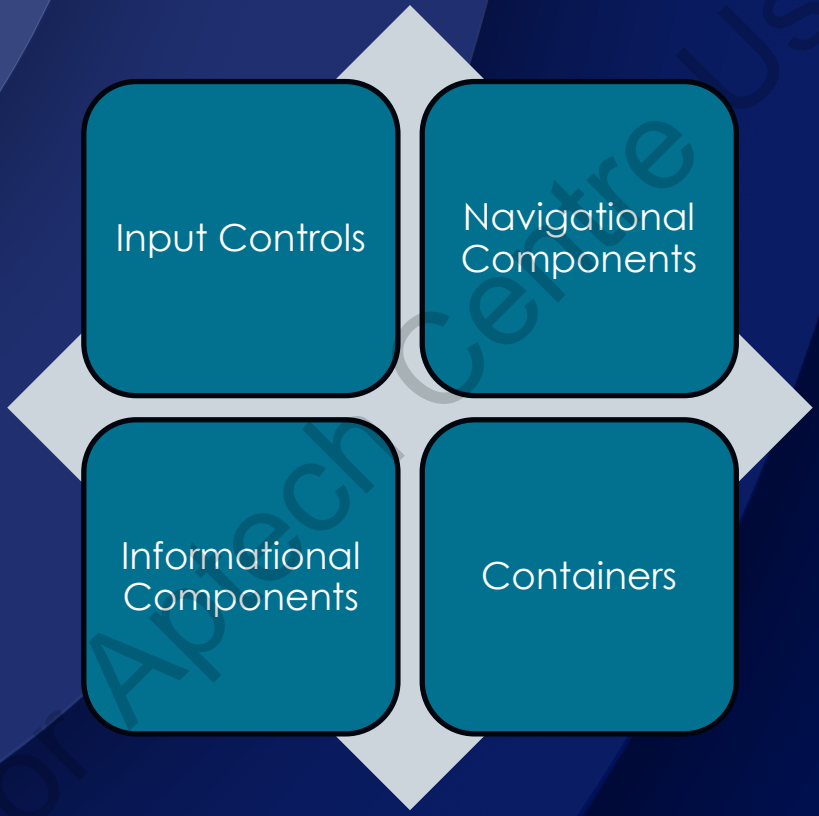
Parts of User Interface Design

- Fundamental parts of most user interfaces are as follows:



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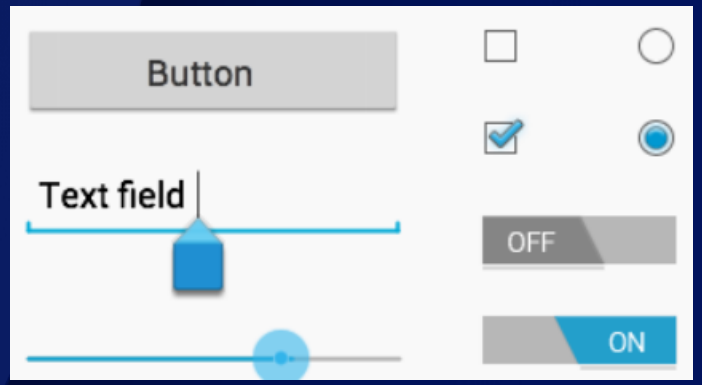
Parts of User Interface Design

- **Input Controls:**

Element	Description
Button	Clicking performs an action.
Radio button	Selects one item from a set.
Checkbox	Selects one or more options from a set.



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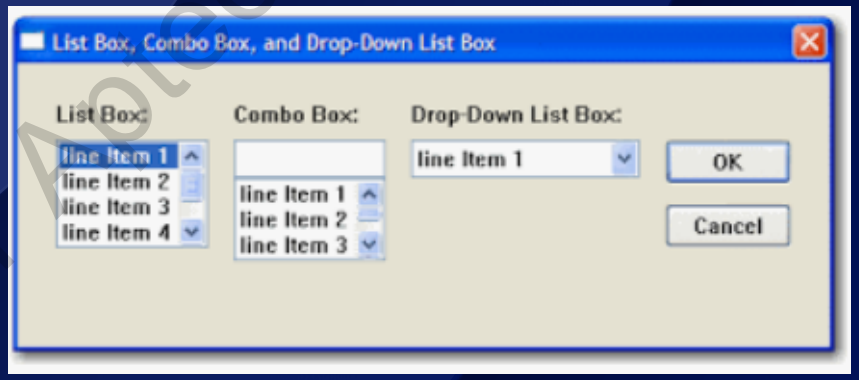
Parts of User Interface Design

Elements	Description
Dropdown list	Select one item at a time; similar to radio buttons, but more compact.
Dropdown button	Displays a dropdown list of exclusive items.
List box	Contains a list of options that user can select.
Text field	A basic text control for entering text.



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Parts of User Interface Design

- **Navigational Components:**

Element	Description
Search Field	Uses the keyword to return the results.
Breadcrumb	Tracks location within programs.
Pagination	Divides content between pages.
Tags	Find content in the same category.
Icons	An intuitive symbol to help users navigate the system.
Image Carousel	Allows user to browse and select items.

Image Carousel

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Parts of User Interface Design

- **Informational Components:**

Elements	Description
Tooltip	Used in conjunction with a cursor, usually a pointer.
Notification	Update messages.
Progress Bar	Indicates where a user is as they advance through a series of steps in a process.
Message Box	Informs users to take action so that they can move forward.
Modal Window (pop-up)	A child window that requires users to interact with it before it can return to operating the parent application.

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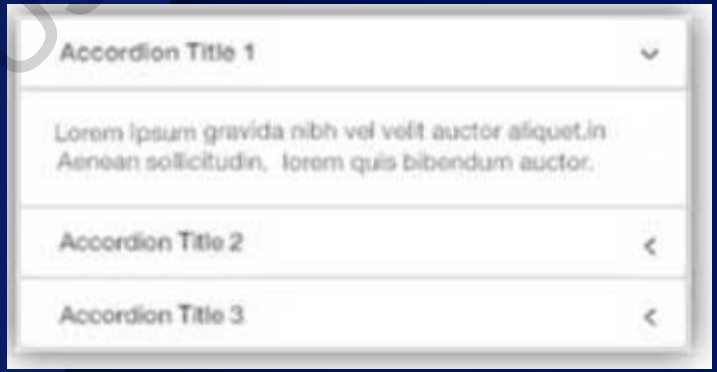
Parts of User Interface Design

- **Containers:**

Element	Description
Accordion	A vertically stacked list of items that utilizes show/hide functionality



Accordion Example

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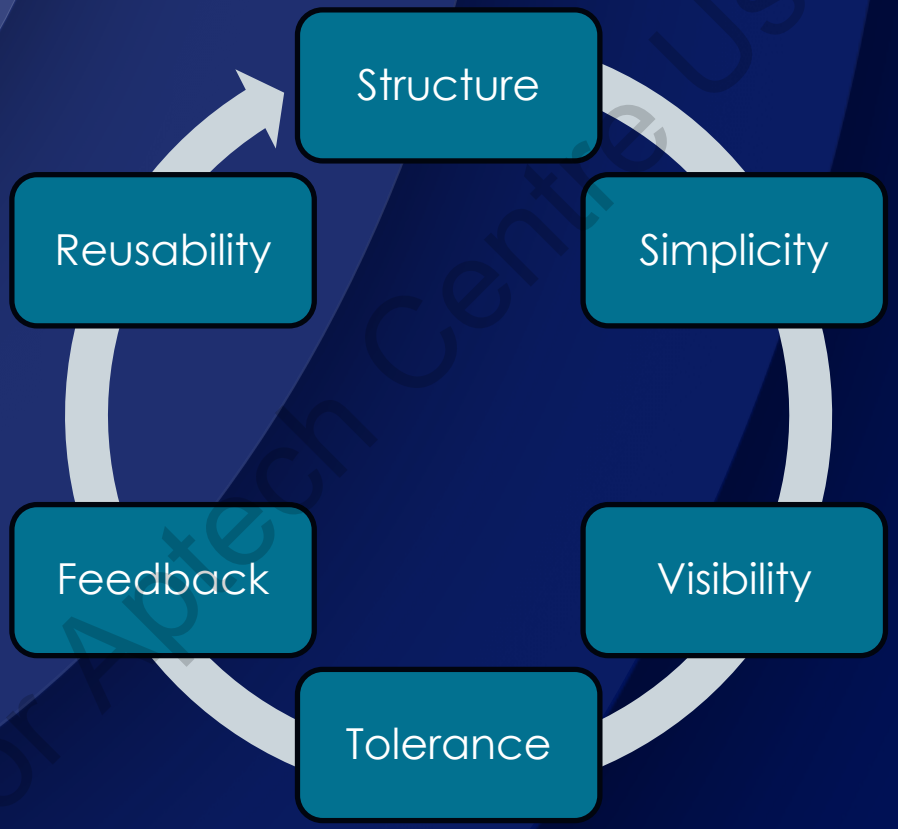
Dialogues/Principles and Attributes of User Interface Design

- The UI design principles include:



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Dialogues/Principles and Attributes of User Interface Design

- **Structure Principle**
  - About overall UI architecture.
  - Design should be clear: visually, theoretically, linguistically.
  - Must provide paths to useful information.

Example of a clearly structured UI
Image Courtesy: https://www.amazon.com

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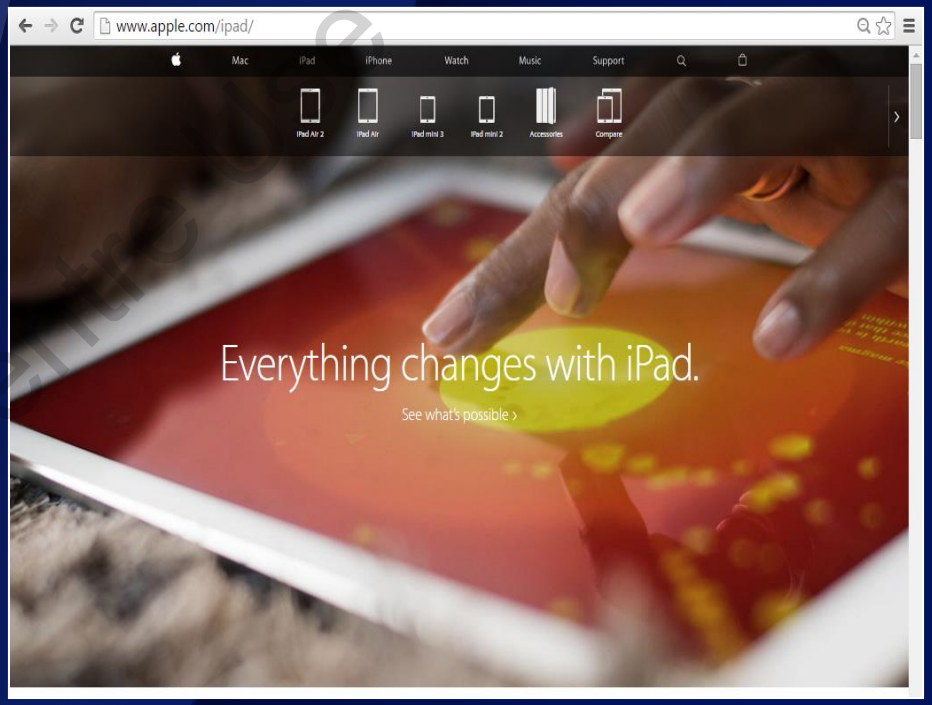
Dialogues/Principles and Attributes of User Interface Design

- **Simplicity Principle**
  - Simple to learn and simple to use design.
  - Include only important elements.
  - Make common tasks easy.
  - Provide shortcuts to longer procedures.



Example of a simple UI
Image Courtesy: http://www.apple.com/ipad/

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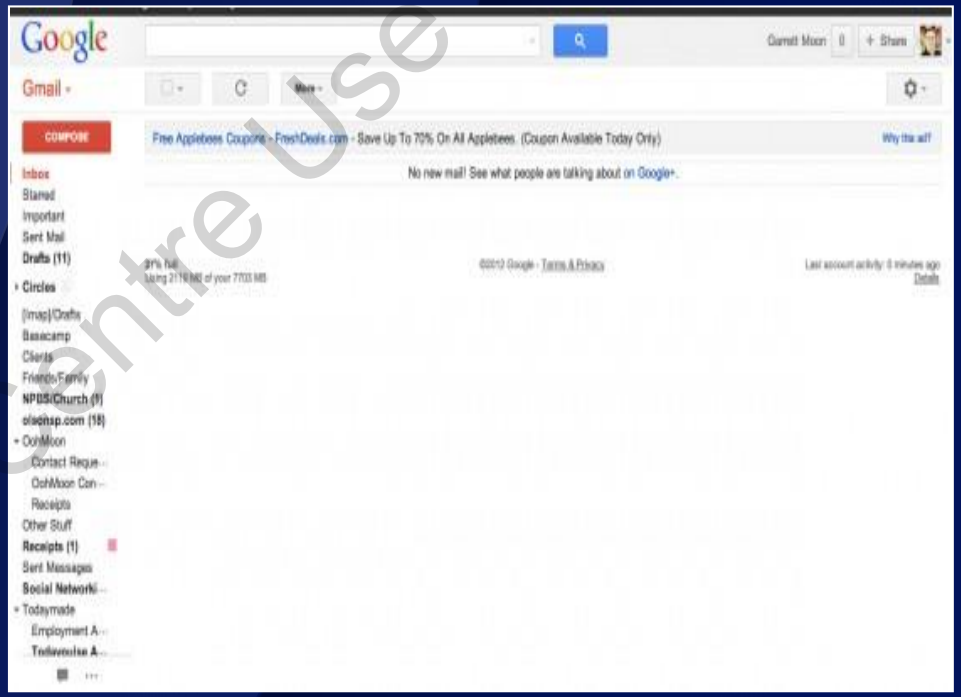
Dialogues/Principles and Attributes of User Interface Design

- **Visibility Principle**
  - All tasks must be visible.
  - Avoid confusing the user with superfluous information.
  - Use straight forward interface for easy navigation.



Example of a clearly visible UI
Image Courtesy: https://www.gmail.com

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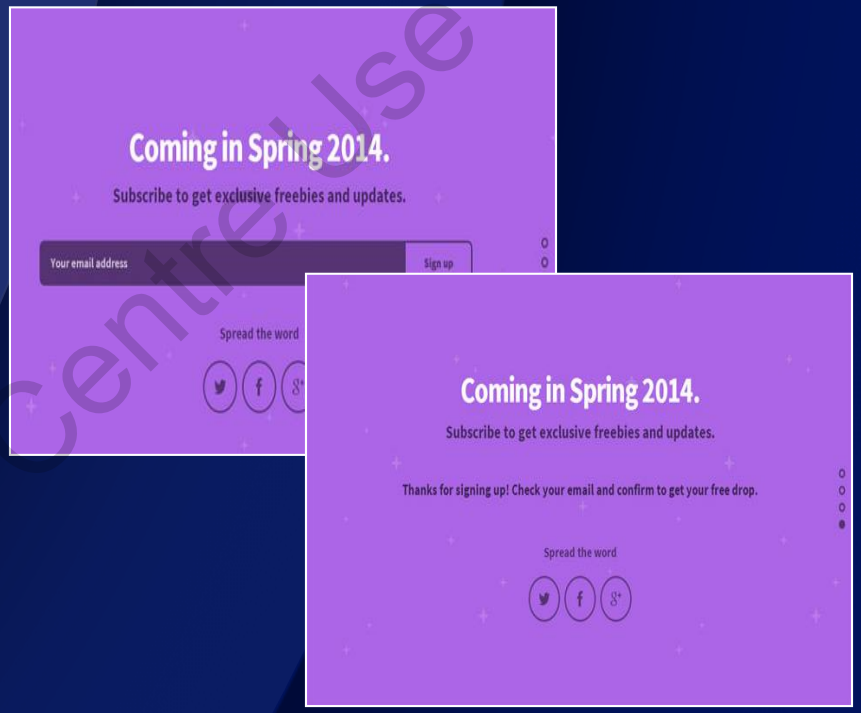
Dialogues/Principles and Attributes of User Interface Design

- **Feedback Principle**
  - Inform users what is going on.
  - Display the result of actions.
  - Inform users about actions, changes of state or condition, and errors or exceptions.



Example of UI displaying feedback
Image Courtesy: Kickdrop.me

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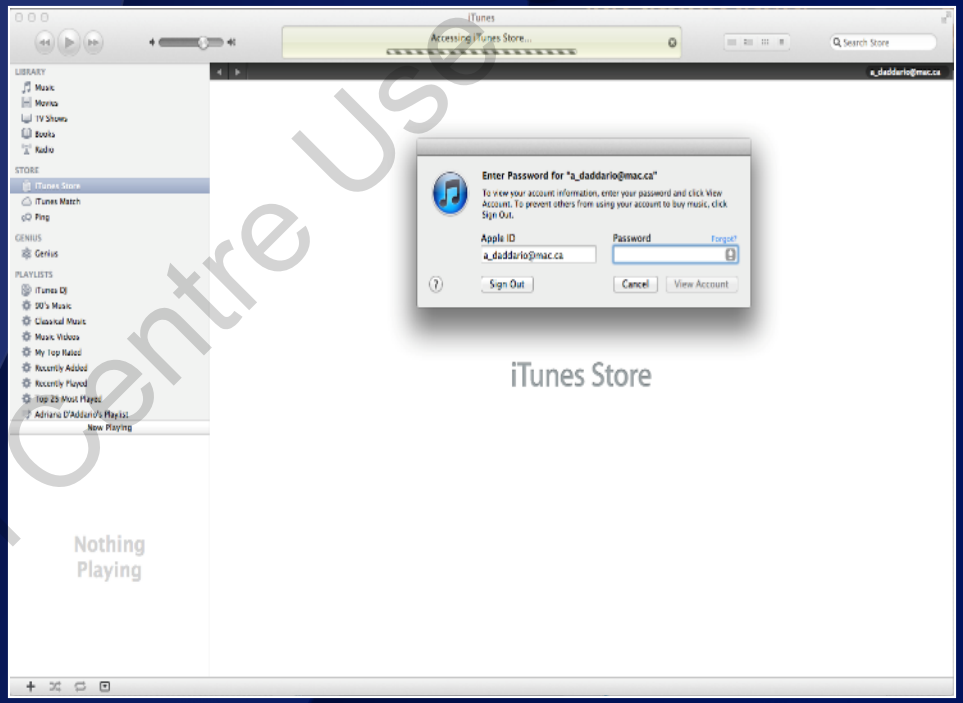
Dialogues/Principles and Attributes of User Interface Design

- **Tolerance Principle**
  - Design prevents users from making errors.
  - Allows user to learn how to use the site.
  - Informs about errors.



Example of a tolerant UI
Image Courtesy: https://adaddario16.wordpress.com

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Dialogues/Principles and Attributes of User Interface Design

- **Reuse Principle**
  - The UI design should reuse internal and external components and behaviors to maintain consistency with purpose.

Example of a reusable UI
Image Courtesy: http://www.ebay.in/

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Types of User Interfaces

Command Language-based Interface	Menu-based Interface	Natural Language Interface
Touch Sensitive Interface	Web-based Interface	Graphical User Interface (GUI)

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Types of User Interfaces

- **Command Language-based Interface:**
  - User issues commands in text form.
  - Example: MS-DOS.
- **Menu-based Interface:**
  - User accesses command through menu.
  - Examples: Cashpoint machines, iPods, mobile phones.
- **Natural Language Interface:**
  - User speaks to interact with system.
  - Example: Speech recognition software.

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Types of User Interfaces

- **Touch Sensitive Interface**
  - Uses touchscreen display as input and output device.
  - Examples: Smartphones and POS machines.
- **Web-based Interface**
  - Accepts input from keyboard and mouse.
  - Provides output by generating Web pages transmitted via Internet.
  - Web pages are viewed using Web browser program.

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Types of User Interfaces

- **Graphical User Interface (GUI)**
  - Accepts input through keyboard and mouse.
  - Displays output on screen.
  - Common elements include:
    - Window
    - Menu
    - Icons
    - Pointer/Cursor

Elements of a Graphical User Interface (GUI)
Image courtesy: http://infonativesolutions.com/

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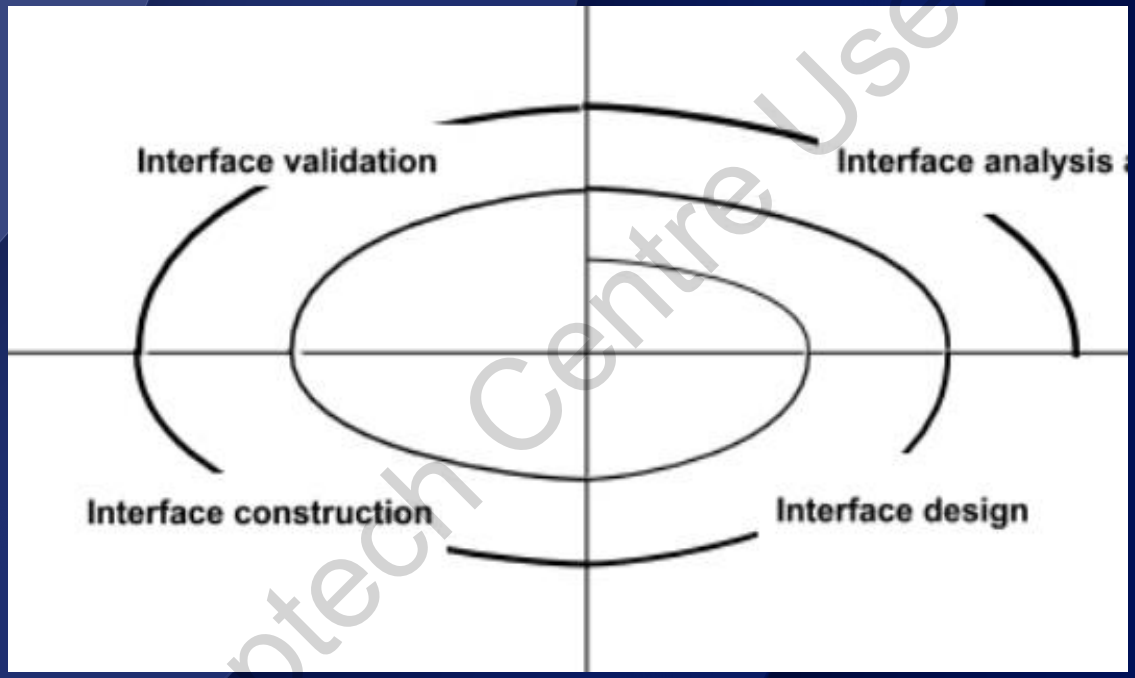
Processes in User Interface Design



User Interface Design Process

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Processes in User Interface Design

Interface Analysis

Interface Design

Interface Construction / Implementation

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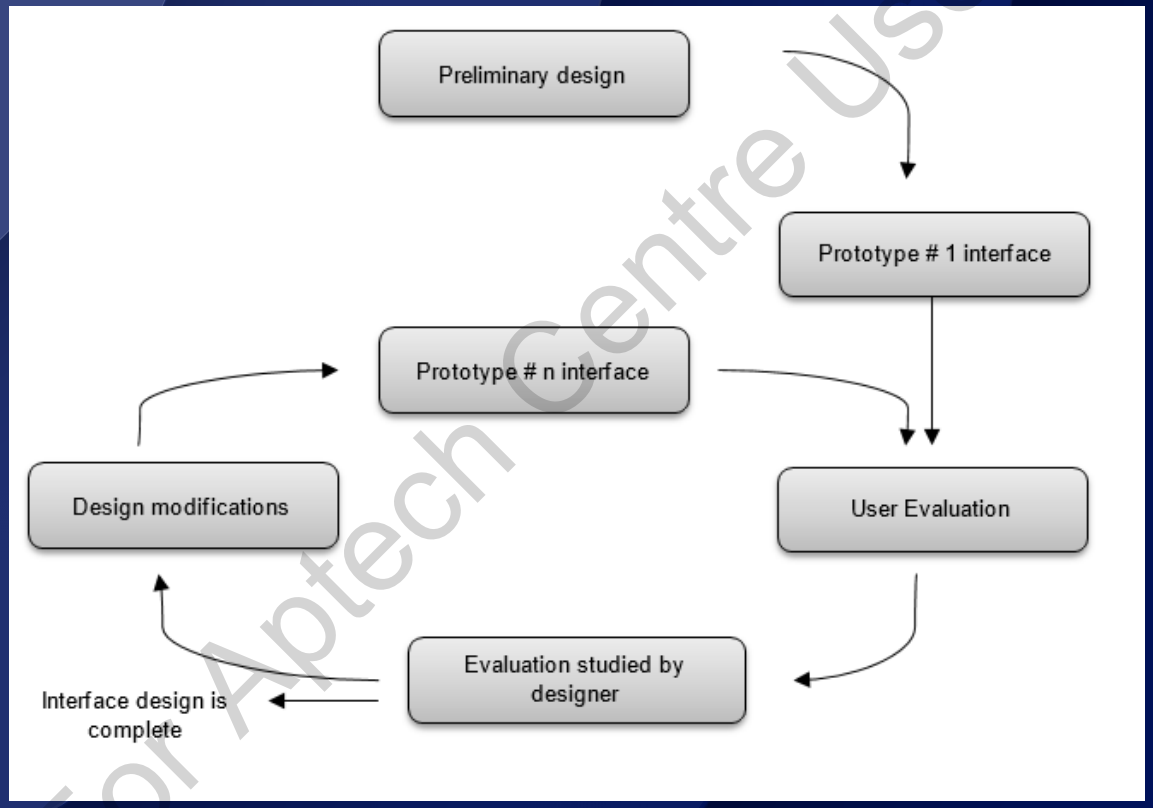
Processes in User Interface Design

Fourth Step – Interface Evaluation



Design Evaluation Cycle

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Models in User Interface Design

User Model	• Syntactic and semantic knowledge of user.
Mental Model	• Developed by user while interacting with system.
Design Model	• Result of requirements analysis phase.
Implementation Model	• Representation of how a system works.

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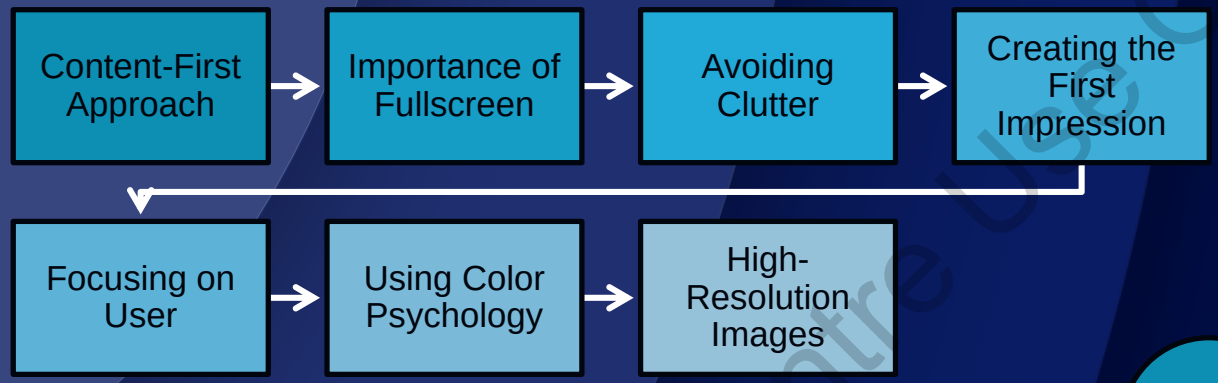
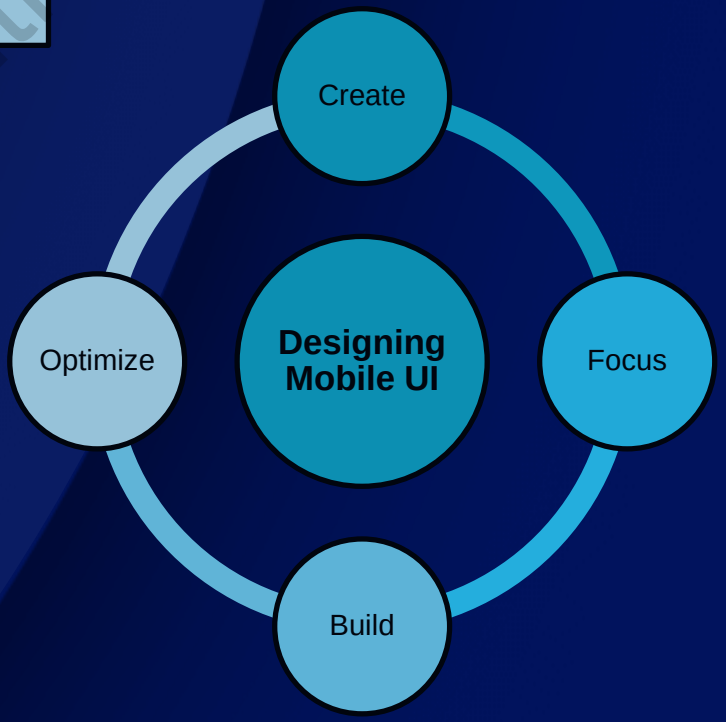
Principles of Mobile User Interface Design



- An app must work on a range of devices.
- Create flexible user interfaces.
- Follow best practices.



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Color Theory

Traditional Color Theory

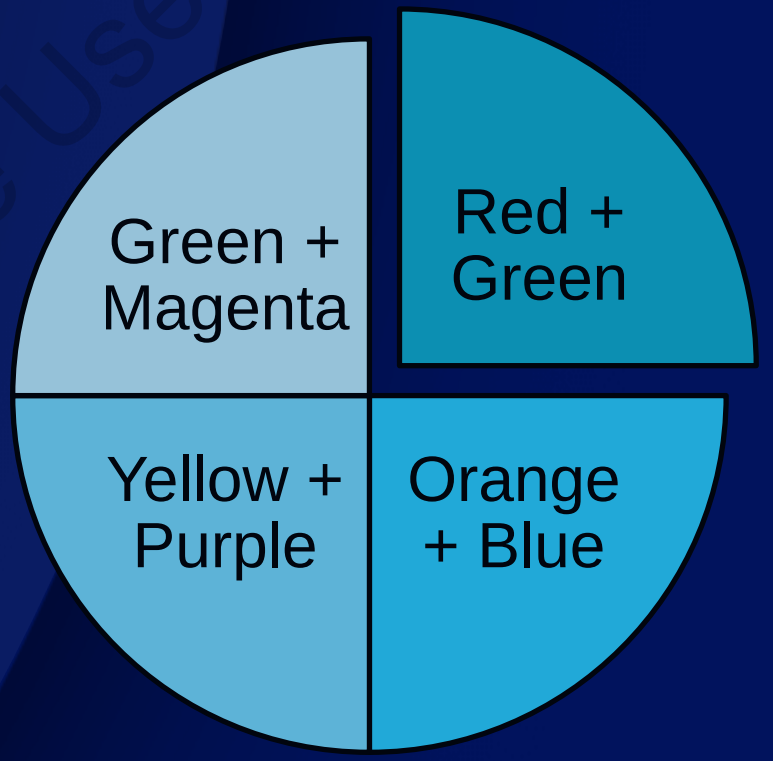
- Scientific way to ascertain complementary colors.

Modern Color Theory

- Mixing colors by adding/subtracting base colors.

Subtractive Theory

- When mixing colors, some are absorbed and some reflected.



Color Combinations

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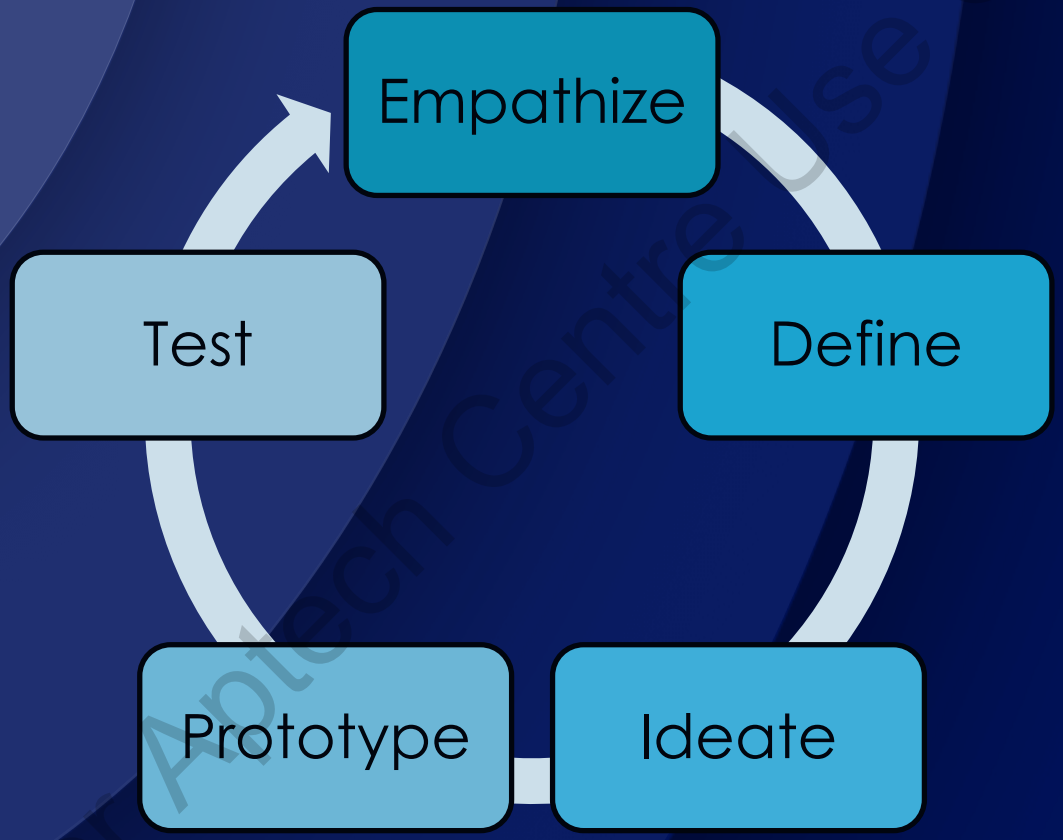
Design Thinking



Design Thinking Model

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Best Practices in UI Design

- Consistency
- Patterns
- Visual Hierarchy
- User Control

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Summary

- A user interface is the means by which a user and a computer system interacts.
- The fundamental parts of most user interfaces include Input Controls, Navigational Components, Informational Components, and Containers.
- The six important UI design principles are the Structure principle, Simplicity principle, Visibility principle, Feedback principle, Tolerance principle, and Reusability principle.
- The four model types especially important in designing a user interface are User model, Design model, Mental model, and Implementation model.
- Color theory is a scientific way to ascertain which colors complement each other.
- Design Thinking is a problem-solving or solution-based approach that is specific to design problems.

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