Generic UI Development

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Generic UI Development

- "**User Interface Development**" is the development of websites, web applications, mobile applications and software development.

- User Interface plays a key role in the software development life cycle [SDLC].

- Most people assume user interface development solutions are creating the websites and writing HTML, CSS and JavaScript, but User Interface goes far beyond these technical terms.

- The goal of the user interface is to make the user's interaction as simple and efficient as possible, in terms of accomplishing user goals.

❑ There are two types of interfaces that dominate computing today are Graphical User Interfaces (GUIs) and Voice User Interfaces (VUIs).

For any typical application, we need to consider the following as the elements of human factors consideration:

✔ The look and feel of the application and how the users "like" the user interface

✔ The ease of learning the interface well and becoming efficient at using the user interface, and

✔ Health issues in using the user interface.

Usability, Human Factors, and Other Considerations for Developing Stationary PC-Based User Interfaces

List of issues in IT industry:

✔ User interfaces should be intuitive

✔ Consistency: A software application should present user interface components that are consistent with each other and consistent with their operating environments

✔ Learnablility

✔ Nonintrusively Helpful: The user interface and the underlying application should provide help and hints.

✔ Accommodating Expert Users

✔ Trustable and Robustness

Example : User Interface Consistency Guidelines for a Mortgage Banking Application.

A) Guidelines by Domain:
   a. Color: Use white, black, scales of gray, and scales of blue only. These are the branding colors associated with ACME Mortgage corporation.
   b. VUI Prompts: All prompts relating to gathering information for the financial portions of the loan application should be recorded by a female voice talent. All prompts relating to gathering information for the personal sections of the loan applications should be recorded by a young male voice talent.
B) Guidelines by User Interface Components:
   a. Color: Use blue for all of the buttons. Use white for all of the backgrounds. Use black for all of the fonts. Use scales of gray for all other interface components.
   b. VUI prompts: All informative prompts must be recorded by a female voice talent. All warnings must be recorded by a male voice talent. When the user does not understand one prompt pronounced by a given voice artist twice, the voice talent should be dynamically changed to allow the user to understand the voice of another voice talent.

Additional Consideration for Mobile Applications

☐ we need to consider additional considerations to take into account the condition of the mobile user.

☐ The following list requirements on the human factor aspects of mobile application design that are related to the condition of the user:

✔ Short Transaction Cycles

✔ Expectations of Consumer Devices

✔ Lack of Focus

✔ Intermittent Network Connectivity

✔ Multi-channel User Interfaces

BUILDING GENERIC USER INTERFACES

- The idea here is to layer the different parts of the user interface, build a generic user interface, and then specialize it to a given device or type of user interface using a suitable mechanism such as XSLT.

- Extensible Stylesheet Language Transformations (XSLT), better known as XSL transformations, is a language for transforming Extensible Markup Languague (XML) documents into other structured documents.

- This is done by using a style sheet defining template rules for transforming a given input XML document into an appropriate output document with the help of an XSL processor.

<u>BUILDING GENERIC USER INTERFACES</u>

The following presents the applications that can benefit from a layered user interface approach:
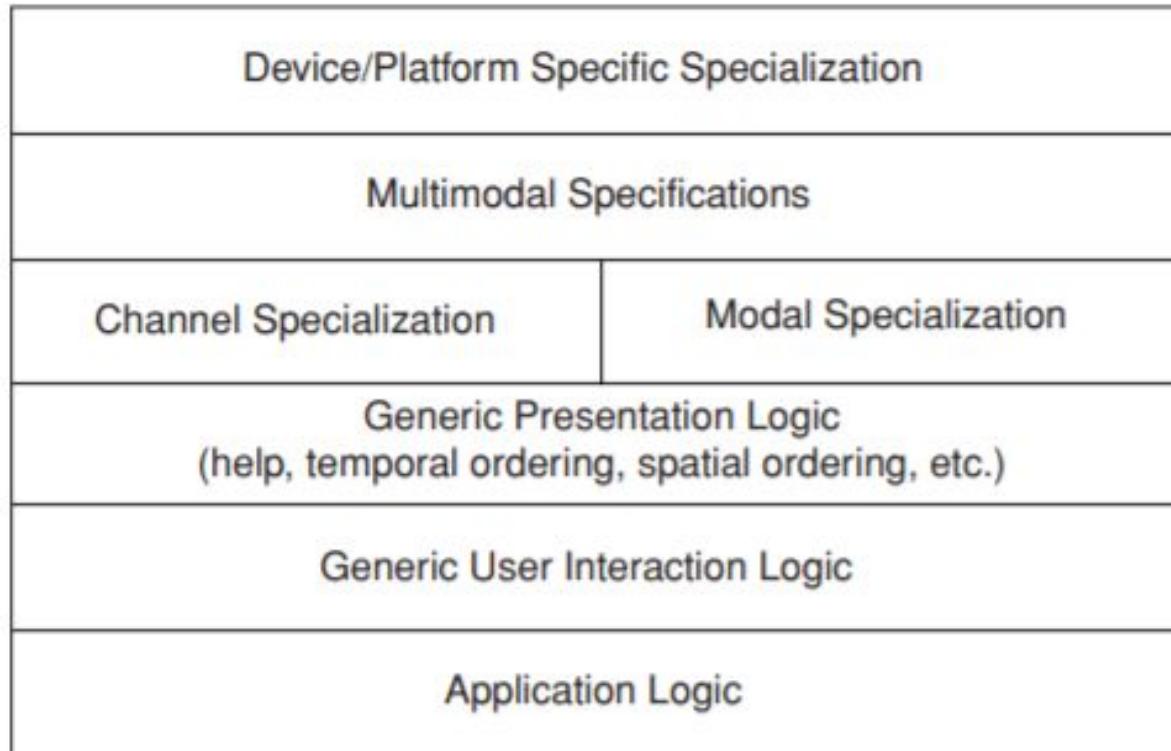
1. Applications that change frequently

2. Applications that support a wide variety of devices

3. Applications that must have many loosely coupled parts

4. Applications that offer multiple user interfaces with a range of complexity

BUILDING GENERIC USER INTERFACES

Device/Platform Specific Specialization	
Multimodal Specifications	
Channel Specialization	Modal Specialization
Generic Presentation Logic (help, temporal ordering, spatial ordering, etc.)	
Generic User Interaction Logic	
Application Logic	

Layering User Interfaces.

Binding and Specialization of Generic User Interfaces

❑It should be obvious that, at some point in the process of rendering a user interface, the generic interface has to be specialized to the specific intended user interface.

❑The specialization process could include user settings, device settings, discovery of available channels, QOS of the network, and many other factors.

❑In any case, a binding process has to take place between the components that produce the generic user interfaces and the components that specialize in the generic interfaces.

❑This binding can be done at run time for all user interfaces; alternatively, what binding is possible to do at compile time may be done then and the rest done at run time

Binding and Specialization of Generic User Interfaces

There are a number of factors that must be considered when designing a system this way:

1. Performance

2. Development Process

3. Where the Various Components Reside

An important factor to keep in mind while designing systems with generic user interfaces is the location where the specialization is done
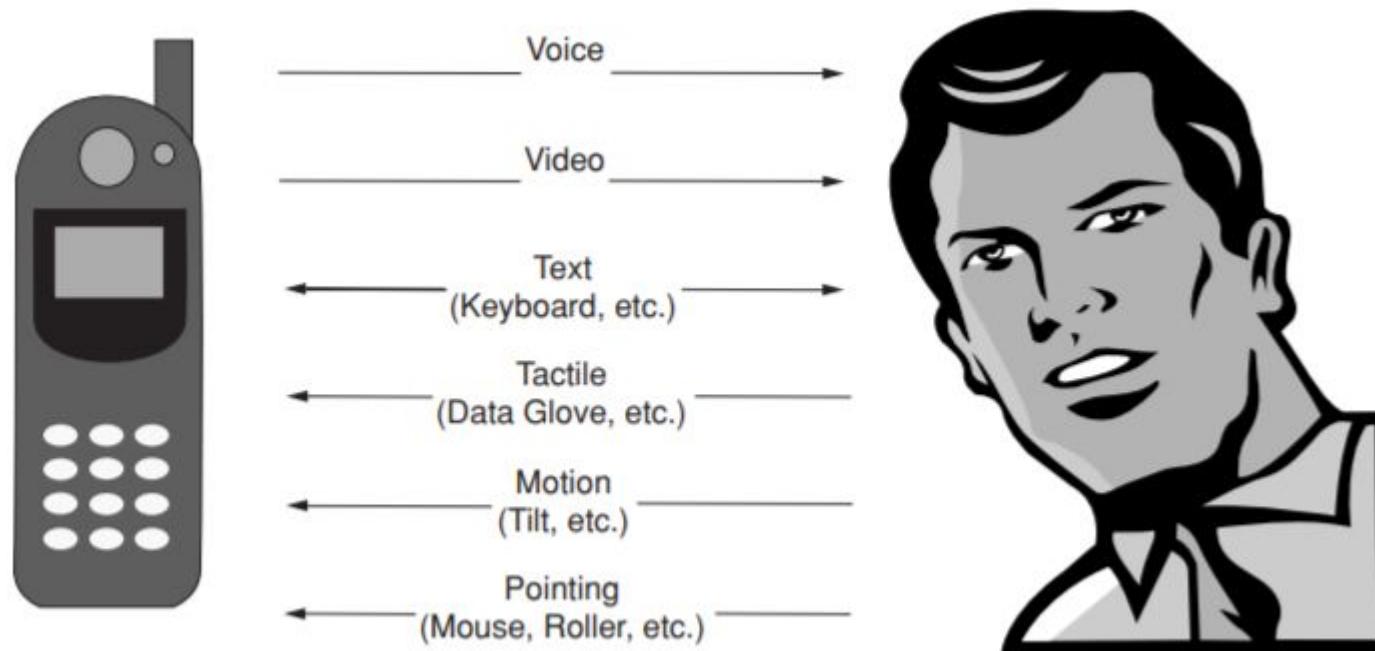
Elements of User Interface

1. Channels

Channels: Tunnels of Communication between Humans and Computers.
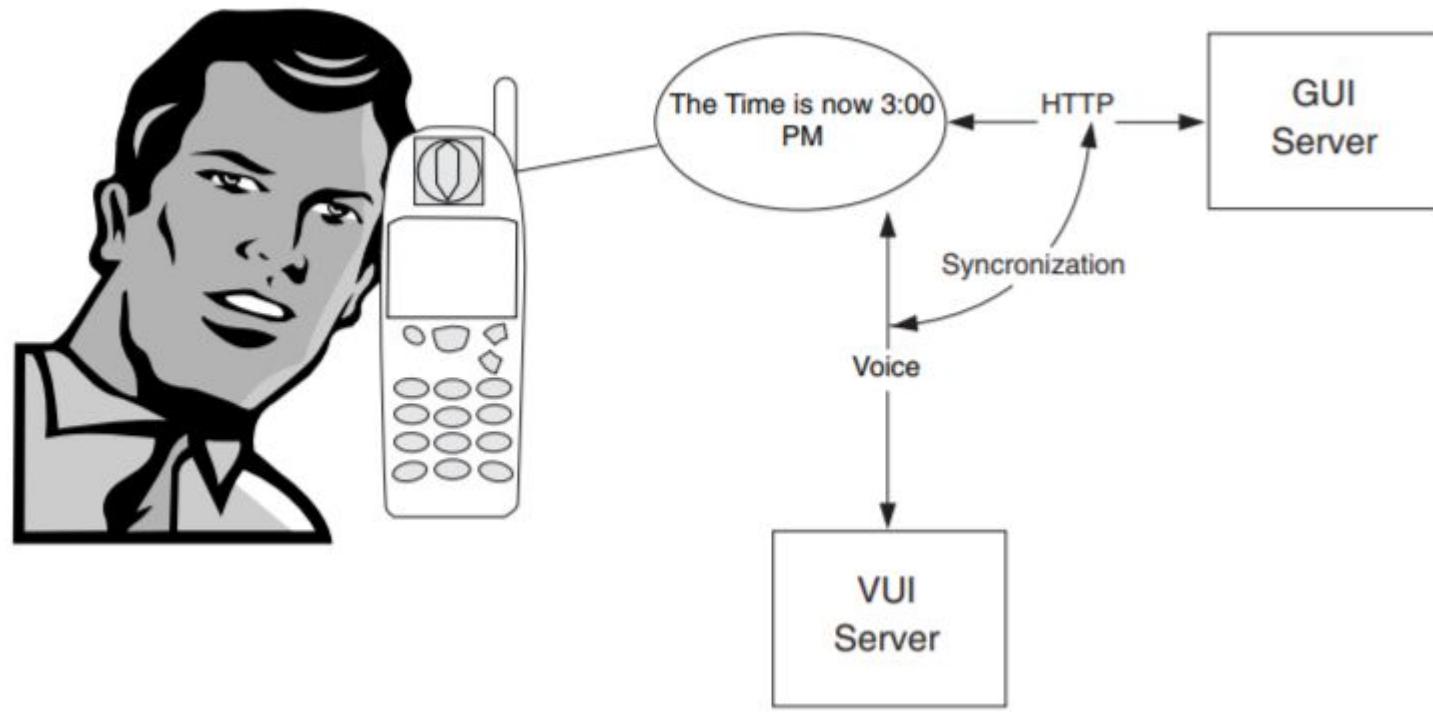
Elements of User Interface

1. Channels

Multichannel Interface Systems.

Elements of User Interface

Types of Channels

1. Keyboards and Monitors (Text Entry and GUI Display)

2. Touch-Screens (Touch Entry and GUI Display)

3. Stylus (Handwriting Recognition and Touch Entry)

4. Telephone (Voice Recognition)

5. Device Motion (Entry by Positioning)

6. Dataglove (Entry through Touch)

7. Printed Paper and Other Materials (Output Text and Graphics)

Generic UI Development

Mode of Interaction in UI

1. Voice

2. Forms

3.Prompt

4.Control Messages

5.Menu

THANK YOU