Interaction styles

Michel Beaudouin-Lafon
Université Paris-Sud
mbl@lri.fr

Interaction styles

Conversational
- Command language
- Dialog imposed by the system

Menus, forms
- The system guides the user
- Dialog controlled by the system

Direct manipulation

Four principles
1. Continuous representation of the objects of interest
2. Physical actions rather than complex syntax
3. Quick, incremental, reversible operations whose effect on the objects of interest is immediately visible
4. Layered approach to facilitate learning

Navigation
- Nodes, anchors and links
  - “lost in hyperspace”

Direct manipulation
- Physical, “direct” actions on (representations of) the objects
  - Inspires all current “first person” interfaces

Shneiderman (1983)
Direct manipulation

Document editing
Interaction controlled by the user

WYSIWYG
What
You
See
Is
What
You
Get

Direct manipulation

Iconic interaction
Generic interface
Metaphorical approach
Drag-and-drop

WIMP interfaces: the current standard

Presentation
Windows
Icons (and other graphical representations)

Interaction
Menus,
Dialog boxes, Input fields, Scrollbars, etc.

Input
Pointing, Selection, Gestures

WIMP interfaces
### Interaction styles: gesture-based interaction

<table>
<thead>
<tr>
<th>Pen-based</th>
<th>Touch-based</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDA (Palm Zire)</td>
<td>PLATO (Buxton, 1972)</td>
</tr>
<tr>
<td>TabletPC (HP)</td>
<td>Multitouch (Jiff Han)</td>
</tr>
<tr>
<td>Whiteboard (Smart)</td>
<td>iPad (Apple)</td>
</tr>
</tbody>
</table>

### Interaction styles: 3D gestures

- VideoPlace (Krueger, 1983)
- Charade (Baudel, 1993)
- Kinect (Microsoft)

### Interaction styles: multimodal interaction

Combine speech + gesture

- Put-tha-there (Bolt, 1980)
- Minority Report (movie)

### Interaction styles: Virtual reality

Immersion of the user

- CAVE (Cybermind)
- Sutherland (1968)
- Cybermind (Sutherland)
**Interaction styles: mixed and augmented reality**

Augmented reality (later renamed Mixed reality):
  - Augment physical object with computational capabilities
Tangible interaction:
  - Use physical objects for interaction

![Digital Desk](image1)
Digital Desk
Pierre Wellner

![Marble answering machine](image2)
Marble answering machine
Dunell Bishop

![A-book](image3)
A-book
Wendy Mackay

**What next?**

- Brain-computer interfaces?
- Emotional agents
- Robots
- Your idea?