

#### Postures & Patterns

Jörg Cassens

SoSe 2019

#### Contextual Design of Interactive Systems



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Desktop

References

## Desktop



# Xerox Star (1981)

- Schreibtisch-Metapher: vertrautes konzeptuelles Modell
- Icons: erkennen und zeigen statt erinnern und tippen
- Direkte Manipulation (Shneiderman 1983)
- WYSIWYG: what you see is what you get  $\rightarrow$  PageMaker (DTP)
- Engelbarts Mouse als Zeigeinstrument
- endgültige Trennung von Applikation und Interface
- Folge f
  ür Nutzer:
  - Computer zugänglicher für Nichtprogrammierer
  - Nutzer wollen immer komplexere Dinge tun
  - Selten überblickt die Nutzer alle Möglichkeiten
- Erstes System, bei dem Usability Engineering eingesetzt wird:
  - aufwendige Nutzungsanalyse und Paper Prototyping
  - Nutzertests mit potentiellen Benutzern
  - iterative Verfeinerung des Interfaces



#### Desktop

Handheld

References



#### Xerox Star Interface (1981)

Xerox Star Interface



#### Desktop Handhel

Xerox Star (contd.)

- Kommerzieller Flop:
  - USD 15.000
  - beschränkte Funktionalität, z.B. keine Tabellenkalkulation
  - geschlossene Architektur: andere Firmen können keine Anwendungen dafür anbieten



☞ www.thocp.net



Desktop Handheld Reference

# Apple Lisa (1983)

- basiert auf den Star Interface
- etwas billiger (USD 10.000), aber auch kommerzieller Flop



www.obsoletecomputermuseum.org



# Apple Macintosh (1984)

- Preis: USD 2.500
- Ideen ausgereift, Markt bereit
- ermutigt andere Anbieter, Software dafür anzubieten
- Interface Richtlinien ermöglichen Konsistenz zwischen verschiedenen Anwendungen
- exzellente Graphik und erschwinglicher Laserdrucker ermöglichen Desktop Publishing



🖙 www.at-mix.de



#### Posture

Desktop Handheld References

- Two primary types of desktop interfaces: sovereign and transient
- majority of actual work that gets done on desktop applications is done in sovereign applications
- Transients exist in supporting roles for brief, intermittent, or largely background tasks



# Primary and secondary windows

- The primary window contains your application's content, typically expressed in the form of documents that can be created, edited, and shared
  - Primary windows often are divided into panes that contain content, a means of navigating between different content objects, and sets of frequently used functions for manipulating or controlling the content
  - Primary windows typically are designed to assume sovereign posture, filling most of the screen and supporting full- screen modes
- Secondary windows support the primary window, providing access to less frequently used properties and functions, typically in the form of dialogs
  - If your application allows panes located in the primary window to be detached and manipulated separately, these floating panels or palettes also take on a role as secondary windows



# Primary window structure

- Menus and toolbars are collections of related actions the user can instruct the application to perform, such as "close this document" or "invert the colors of the current selection."
- **Content panes** form the primary work area within most desktop applications, whether it is the editable view of a form or document or (as in the case of a software music synthesizer, for example) a complex control panel
- Index panes provide navigation and access to documents or objects that ultimately appear in the content view(s) for editing or configuration
- Tool palettes allow the user to rapidly switch between the application's modes of operation by selecting one tool from a set of tools
- **Sidebars** most often allow object or document properties to be manipulated without the need to resort to modal or modeless dialogs
- Question: What are ribbons?



## Windows on the Desktop

- Overlapping windows
- Tiled windows
- Virtual desktop spaces
- Full-screen applications
- Multipaned applications



## Multipaned

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### Window states

- Minimized windows get collapsed into icons on the desktop or into the taskbar (Windows) or the Dock (OS X)
- Maximized windows fill the entire screen, covering whatever is beneath them
- The pluralized state is that in-between condition where the window is neither an icon nor maximized to cover the entire screen



## MDI vs SDI

- Multiple document interface, or MDI.
  - multiple windows reside under a single parent window.
- Tabbed document interface, or TDI
  - allows multiple documents or panels to be contained within a single window.
- Single document interface, or SDI.
  - all windows are independent of each other.



#### Unnecessary rooms

Secondary windows containing functions that should really be integrated into panes or other surfaces within the primary window.



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References









#### Necessary rooms

- When users perform a function outside their normal sequence of events, it's usually desirable to provide a special place in which to perform it.
- For example, purging a database is not a normal activity.
  - It involves setting up and using features and facilities that are not part of the normal operation of the database application



### Menu

- Drop-down, pop-up
- Toolbars and direct-manipulation idioms can be too inscrutable for a first-time user to understand, but the textual nature of the menus explains the functions
- For an infrequent user who is somewhat familiar with an application, the menu's main task is as an index to known tools: a place to look when he knows there is a function but he can't remember where it is or what it's called.
- For a frequent user, menus provide a stable physical location at which to access one of hundreds of possible commands, or a quick reminder about keyboard shortcuts.



#### Menus II

Desktop Handheld References

- Disabled menu items
- Check mark menu items
- Icons on menus



## Accelerators and Mnemonics

- Accelerators or keyboard shortcuts provide an easy way to invoke functions from the keyboard.
  - These are commonly function keys (such as F9) or combinations involving modifier keys (Ctrl, Alt, Option, and Command).
- Access keys or mnemonics are another Windows standard (they are also seen in some UNIX GUIs) for adding keystroke commands in parallel to the direct manipulation of menus and dialogs
  - Mnemonics are accessed using the Alt key, arrow keys, and the underlined letter in a menu item or title.



## **Cascading Menus**

- Desktop
- References





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# Toolbars, Palettes, and Sidebars



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## Toolbars and menus

- Toolbars work together with menus to satisfy user needs as they mature
- Whereas menus are complete toolsets with the main purpose of teaching inexperienced users and organizing seldom-used advanced functions, toolbars are for frequently used commands and cater to perpetual intermediates
- They complement each other perfectly, addressing different user needs at different times
- Toolbars are modeless, but they don't introduce the conundrums that modeless dialogs do
- Toolbar button, or icon button
- ToolTips



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# Movable and Overflow toolbars





#### Desktop

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## Movable and Overflow toolbars





#### Ribbons

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#### **Docked Palettes**





# Sidebars, task panes, and drawers





## Pointing

- The mouse is a "relative" pointing device:
- Tablets and slates are usually "absolute" pointing devices
- Touchscreens on Laptops/Desktops?



### Scrollbars





## Mouse buttons and controls

- In general, the left mouse button is used for all the primary direct-manipulation functions, such as triggering controls, making selections, drawing, and so on
- The right mouse button enables direct access to properties and other context-specific actions on objects and functions via the ubiquitous context menu
- Rolling the wheel forward scrolls the window up, and rolling it backwards scrolls the window down, Pressing it acts like a third mouse button
- Using modifier keys in conjunction with the mouse can extend direct-manipulation idioms
- Metakeys include Ctrl, Alt, Command (on Apple computers), and Shift



## Point & Click

- Clicking and dragging
  - selecting, reshaping, repositioning, drawing, and dragging and dropping
- Double-clicking
  - Double-clicking means single-clicking plus action
- Chord-clicking
  - ???
- Double-clicking and dragging

???



### Selection

Desktop Handheld References

- Command ordering and selection
- Verb-object ordering is consistent with how commands are formed in English
  - "rm file" in Unix
  - Problem: termination
- With an object-verb command order, we don't need to worry about termination
  - Select object, do something


Desktop Handheld References

# Drag and drop

- drag-and-drop operation: clicking and holding the button while moving an object across the screen and releasing it in a meaningful location
- Surprisingly, drag and drop isn't used as widely as we'd like to think, and it certainly hasn't lived up to its full potential.
- Drop candidates must visually indicate their receptivity.
- The drag cursor must visually identify the source object.



# Autoscoll

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**Desktop** Handheld References

# 2D object manipulation

- Repositioning
  - demands the click-and-drag action, making it unavailable for other purposes
- Resizing and reshaping
  - resize handles
- Connecting
  - clicks and drags from one object to another



Desktop Handheld References

# 2D object manipulation

- Display issues and idioms
  - Multiple viewpoints
  - Baseline grids, depthcueing, shadows, and poles
  - Wireframes and bounding boxes
- Drag thresholds
- The picking problem
- Object rotation, camera movement, rotation, and zoom



### Handheld

Mobile Tablet Mini-tablet

Control

References

## Handheld



- Handheld
- Mobile
- Mini-tablet
- Navigation, Conten
- References

# Anatomy of a Mobile App

- While the posture of desktop applications is most often sovereign, mobile apps, by contrast, are by their very nature transient
- context-driven nature of the majority of mobile apps (games perhaps being the exception, but the interaction design of games in general is a unique topic in itself) dictates a transient stance, especially on handheld mobile devices
- The fact that these transient apps take up their host device's entire screen makes them no less transient



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## Mobile

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# Orientation and layout







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# Tablet format apps

- Desktop
- Handhel Mobile
- Tablet
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- References

- Tablet format apps have considerably more breathing room than handheld-format apps as far as screen real estate is concerned
- The iPad's 4:3 aspect ratio and large screen size ensures plenty of room for navigational and functional controls, but Windows and Android tablets also manage quite serviceably with the movie-like 16:9 aspect ratios



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# Mobile versus desktop-like layout





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# Hardware-like control layout





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## Mini-tablet

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- Handheld
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- Mini-tablet

Navigation, Content, Control

References

# Mini-tablet format apps

- Adjacent panes
  - Generally not a good idea on full-sized tablets in portrait orientation, adjacent panes are usually far too cramped to consider on mini-tablets
  - In landscape, at most two adjacent panes can be supported

### Tool bars

- In portrait view, these can feel distant from the action due to the tall, narrow form factor and increased screen size over handhelds
- In landscape orientation, tool bars stacked with navigation bars leave little vertical space for content
- Lists
  - Single-column lists tend to look out of proportion on mini-tablets, even in portrait
  - Grid, swimlane, and card approaches tend to work better
- Pop-up versus full-screen dialogs
  - Mini-tablets are big enough that using phone-style full-screen idioms for menus and dialogs won't work; these should be implemented as pop-up dialogs



Mobile Tablet Mini-tablet

Navigation, Content, Control

References

# Navigation, Content, Control



## Lists

Desktop

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Navigation, Content Control

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Grids

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# Grids





Frozen (Original... Various Artists





Iggy Azalea 15 songs EXPLICIT

Honest Future 18 songs EXPLICIT



15 songs EXPLICIT







-

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Camera Roll

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Select





# Grids

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# Content carousels





## Swimlanes

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# Cards



(Cooper et al., 2014)

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# Cards

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## Tab Bars

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Tom Perham + 18 hours ago Going skydiving with Phil this weekend - must remember to take parachute instead of picnic. Q3 comments 101 like Tom Perham + 21 hours ago I've got a spare ticket for the gig tonight, who wants to come? E3 comments 1 like Tom Perham + .... 0 (2)



## Tab Bars

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More ... Controls





# Tab Carousel

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# Nav Bars & Action Bars

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# Vertical tool bars and palettes





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(Cooper et al., 2014)



# Drawers

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## Drawers

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(Cooper et al., 2014)



#### Desktop

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(Cooper et al., 2014)



## **Direct Manipulation**

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(Cooper et al., 2014)



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