Playlistr

A Playlist-creation-tool for Mobile Devices and Touch-tables

LFE Media Informatics – Project Thesis
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Problem Statement

Storage-capacity rises and prices fall:

Bigger song-collection → less overview

Concept

- Solution: incorporation of a multitouch-surface
  - Bigger display with high physical resolution
  - Song-pool and current playlist on same screen
- Complementary use of both devices
  - Multitouch-Surface
    - Main display
    - Playlist organization tool
  - Mobile device
    - Hardware keyboard
    - Layout management tool

Related Work (extract)

A. Agarawala, R. Balakrishnan

Keepin' It Real: Pushing the desktop metaphor with physics, piles and the pen

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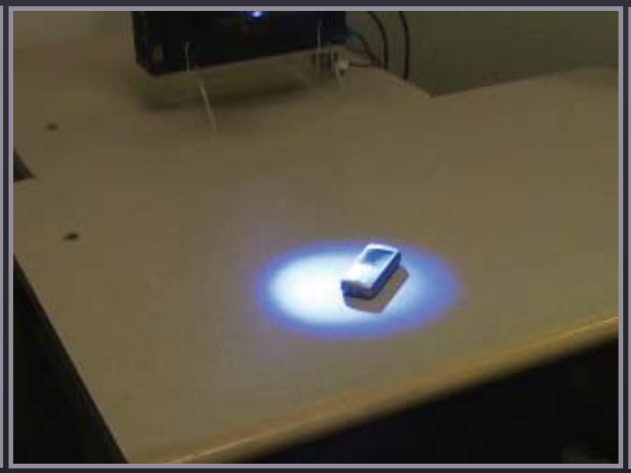
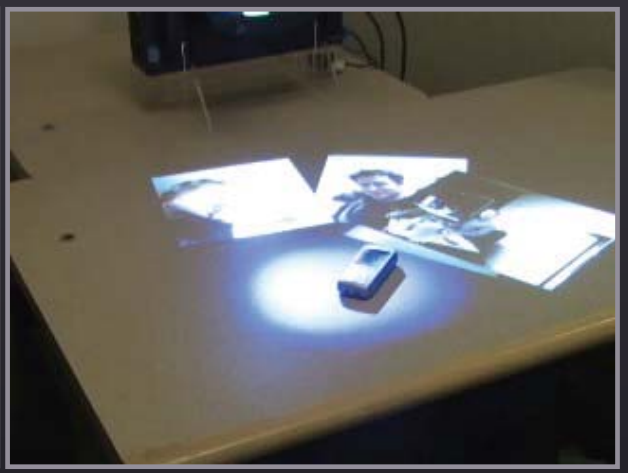
A. D. Wilson, R. Sarin

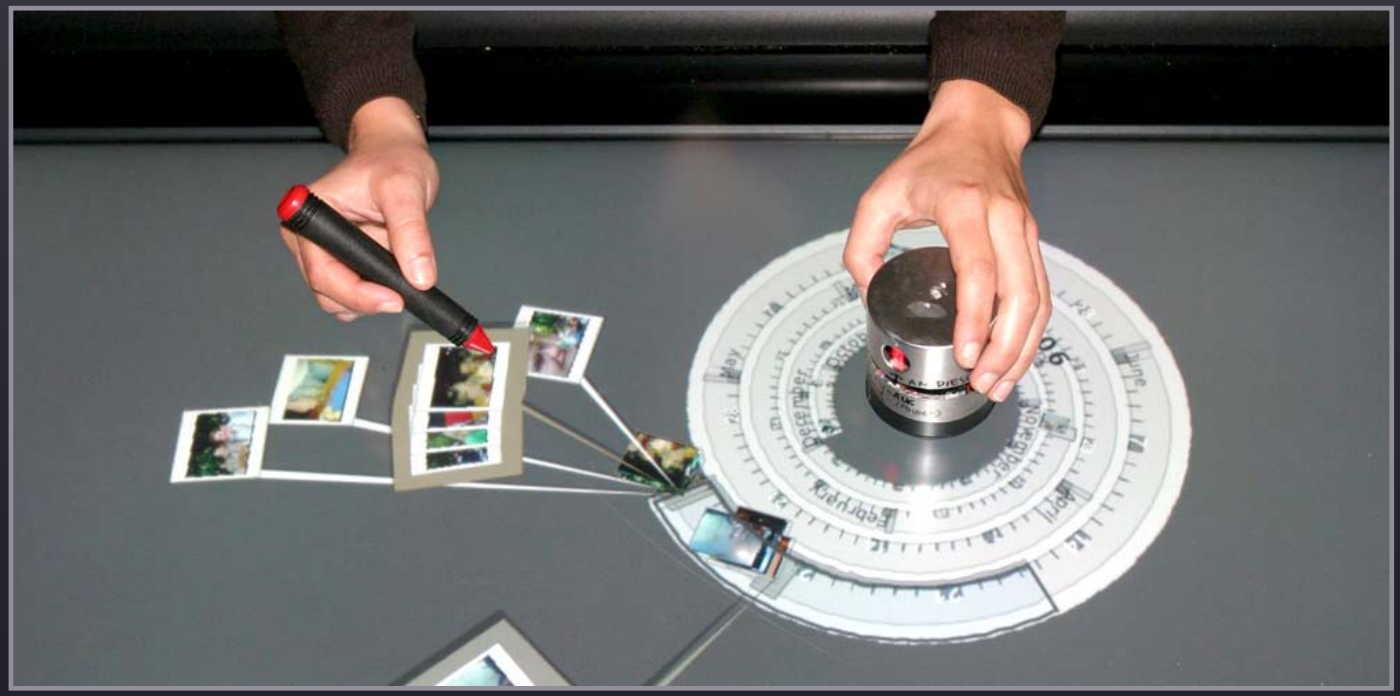
BlueTable: Connecting Wireless Mobile Devices on Interactive Surfaces Using Vision-Based Handshaking

Related Work (extract)

O. Hilliges, D. Baur, A. Butz

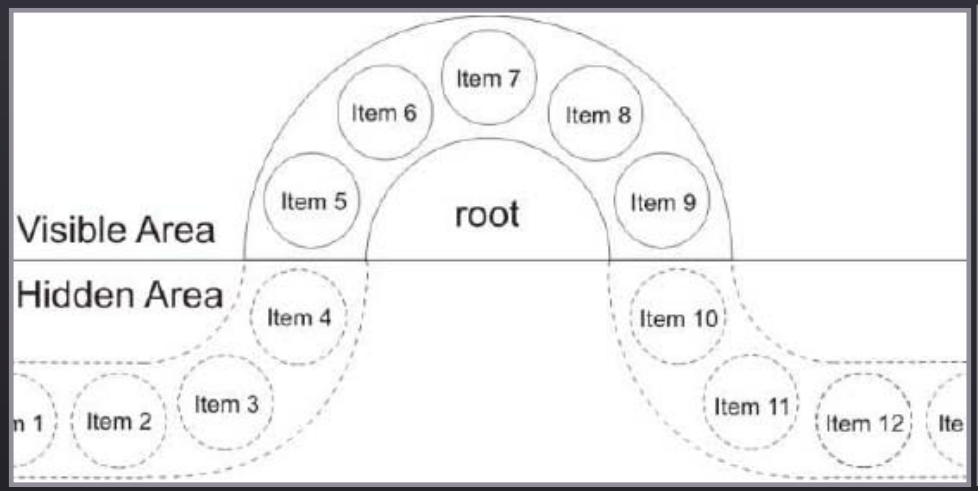
Photohelix: Browsing, sorting and sharing digital photo collections

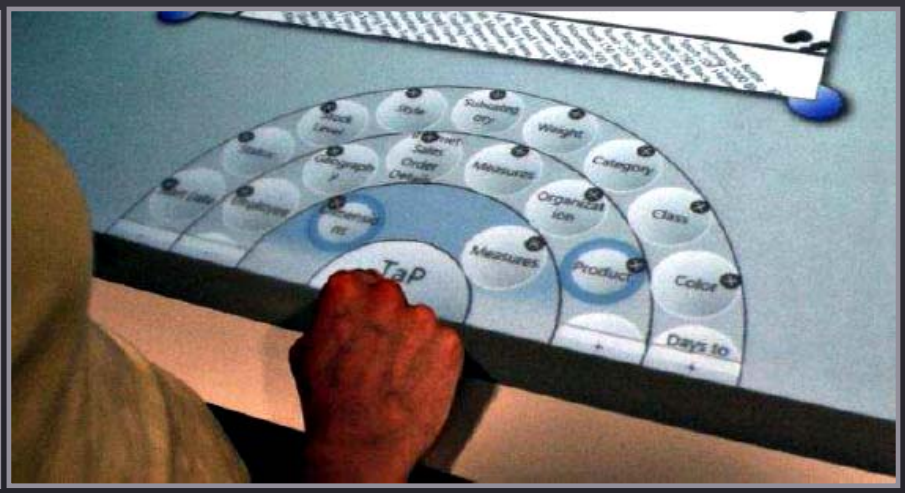


Related Work (extract)

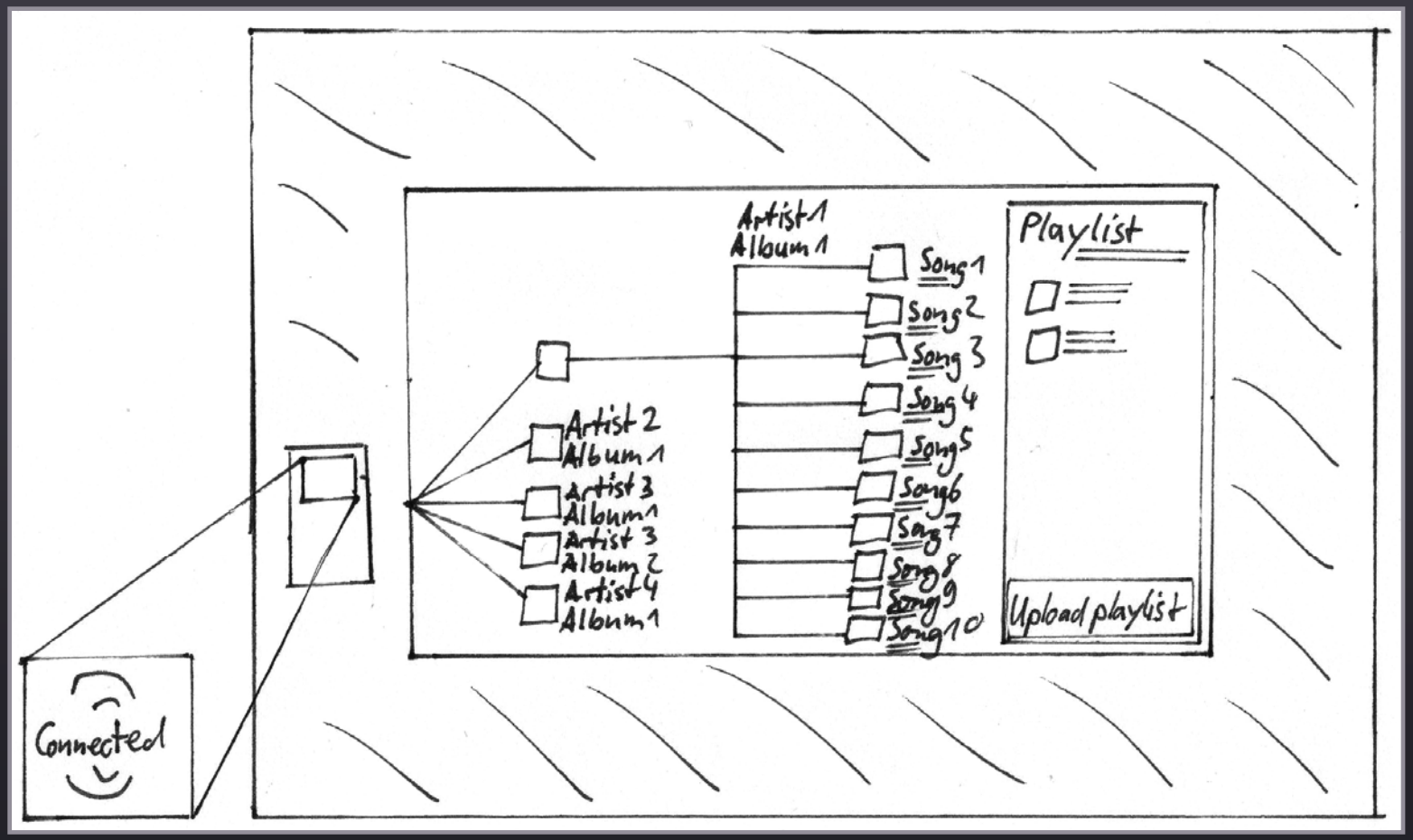
T. Hesselmann, S. Flöring, M.Schmitt

Stacked Half-Pie Menus - Navigating Nested Menus on Interactive Tabletops

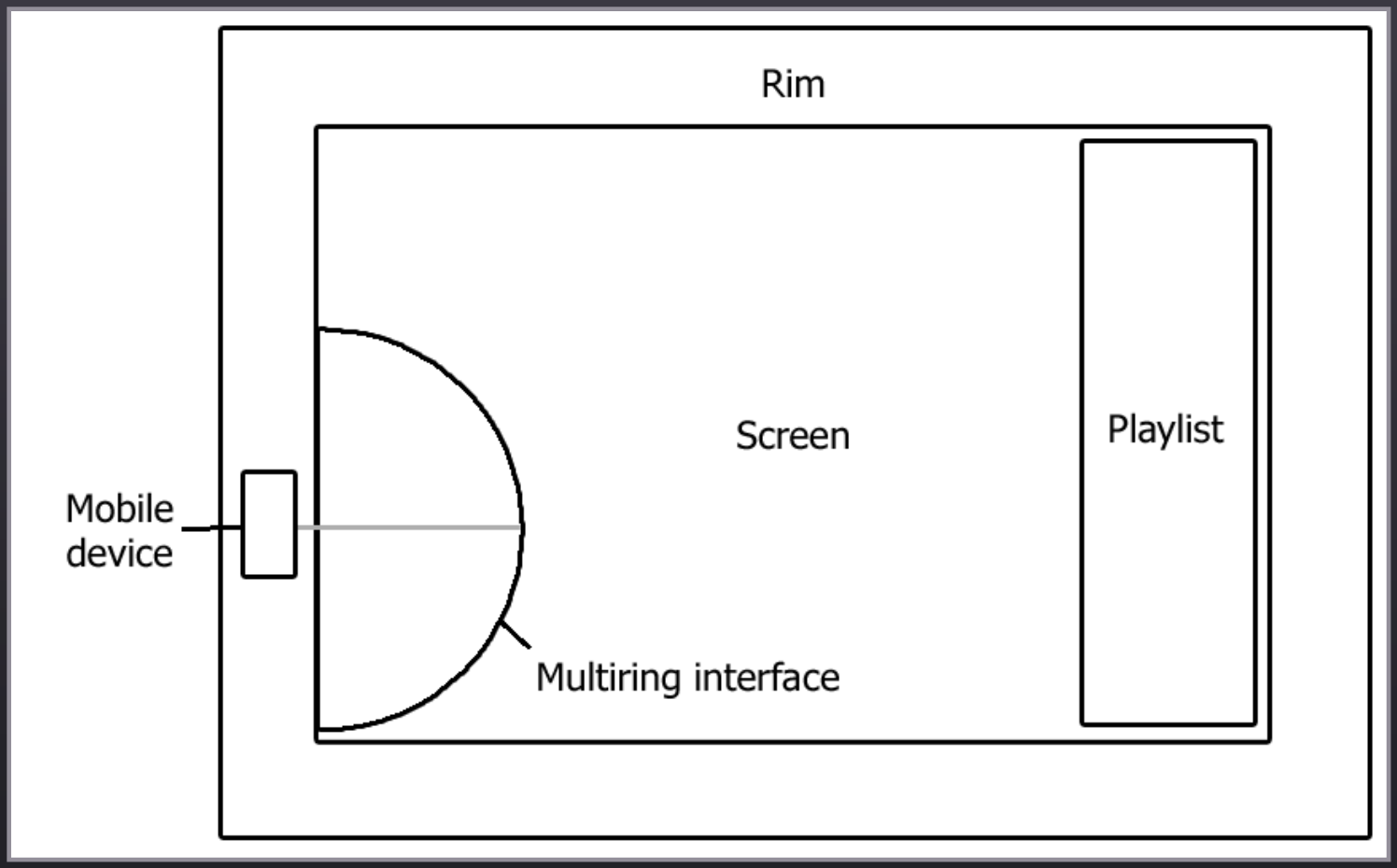




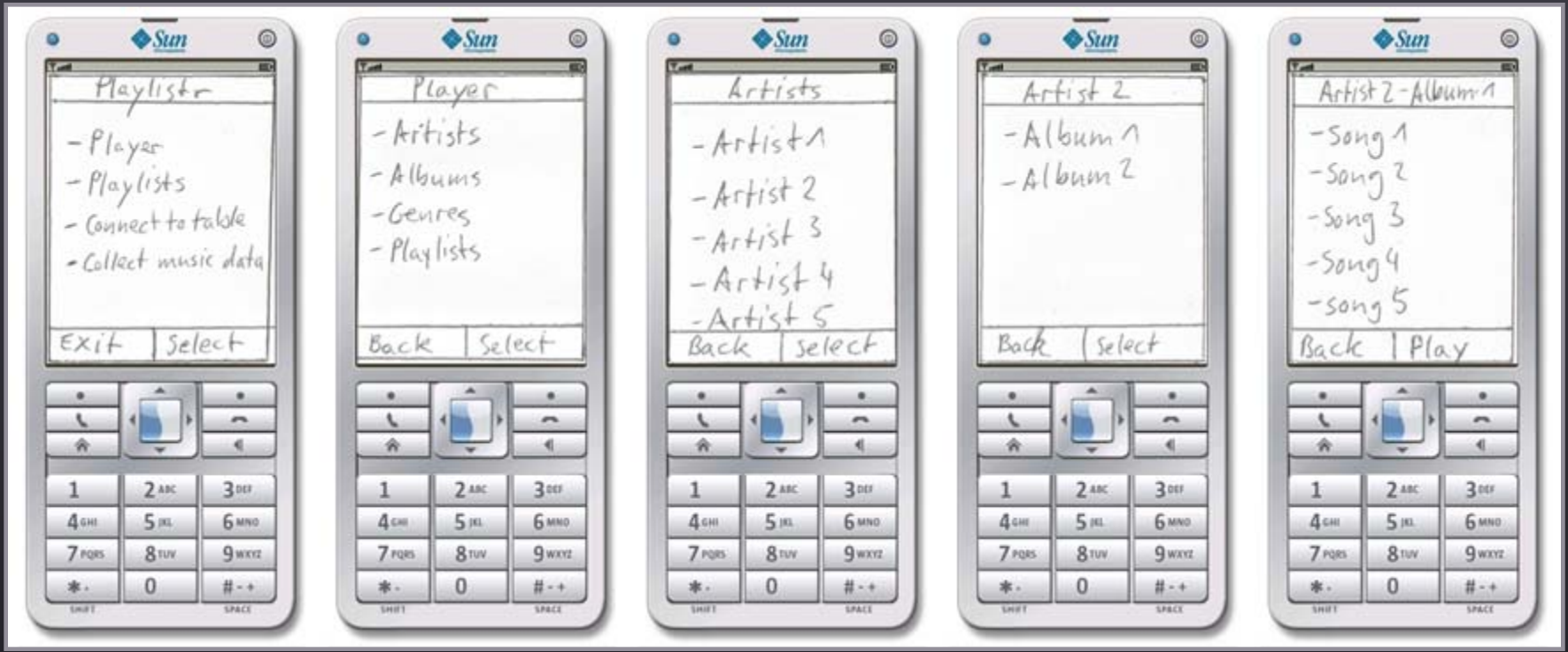
Design - Overview



Design - Multitouch-Surface



Design - Mobile Device



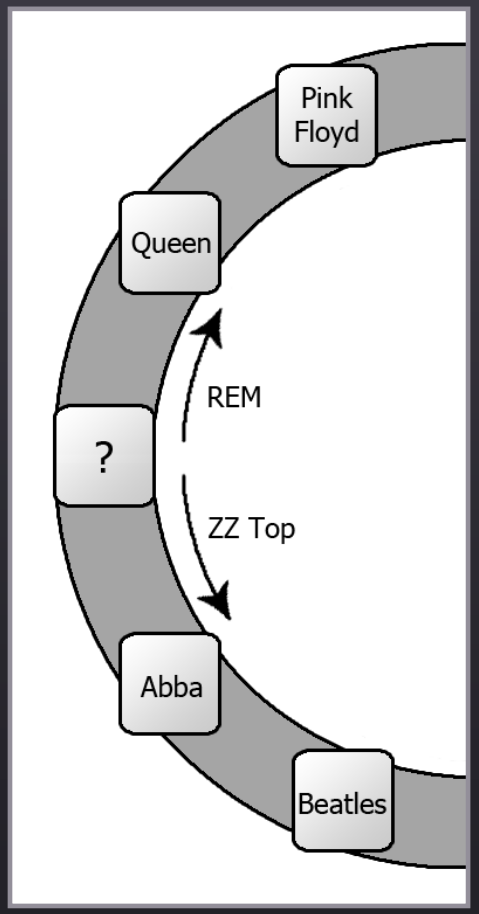
Mobile Device

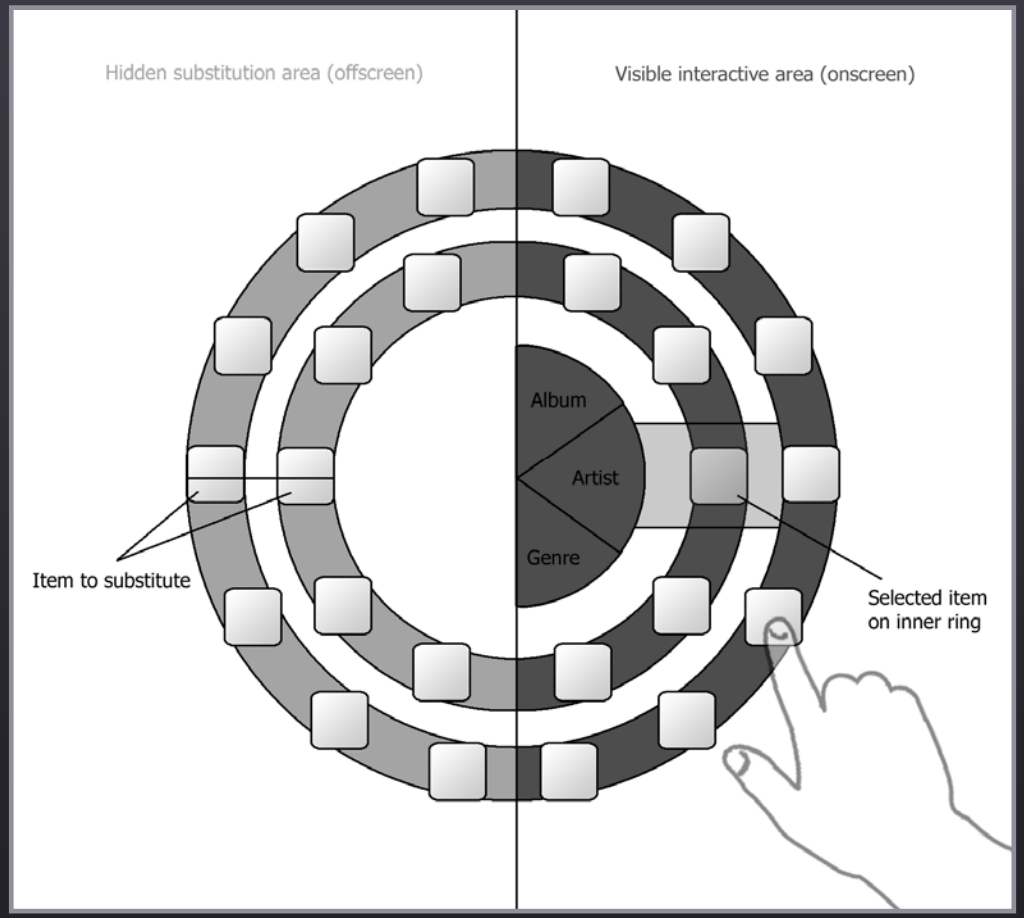
Mobile Device - Details

- Core functions
  - Gathering song-data from stored mp3-files (ID3-tags)
  - Song-pool browsing
  - Music player
  - Playlist creation and management (m3u)

- In combination with multitouch-surface
  - Song-pool sending
  - Playlist transmission
  - Text-based search-requests via hardware keyboard
  - Play song which is active on touch-table

Multitouch-Surface – Multiring-Interface





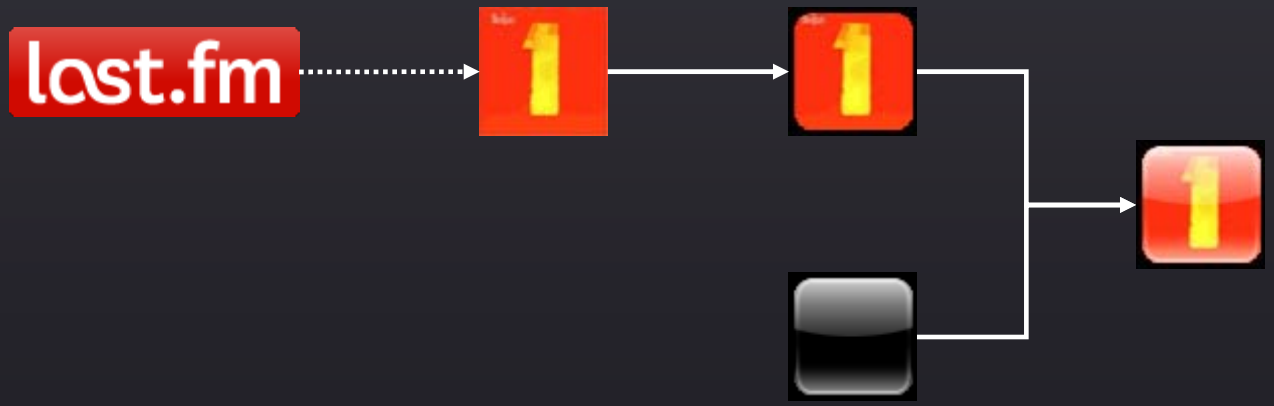
Multitouch-Surface

Multitouch-Surface - Details

- Waits for connection request of mobile device
- Switches over to interactive state if connected
- Basic Functionality
  - Song-pool receiving from mobile device (XML)
  - Playlist transmission (m3u)
  - Playlist assembly and editing
  - Tracking of mobile device location

Multitouch-Surface – Last.fm Covers

- Last.fm cover-download via Last.fm-Lib
- Important for quick recognition!
- Graphical enhancement with mask and png-overlay
- Example: The Beatles - One



Multitouch-Surface – Help service

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Conclusion

- Convenient playlist assembly for a mobile device on a multitouch-surface
- Concurrent use of both devices
  - Multitouch-surface : playlist-creation
  - Mobile device: search requests
- Permanent overview of song-pool and playlist
- Interface-alignment by mobile device location
  - Semi-multiuser szenarios
  - Left- and right-handed usage

Future Work

- Search-request for playlist-section on touch-table
- Multitouch support
  - Gestures replace interface elements
  - Gestures as shortcuts
- Extension of Playlistr-concept to other domains than playlist-creation
  - File system browsing
  - File system organization

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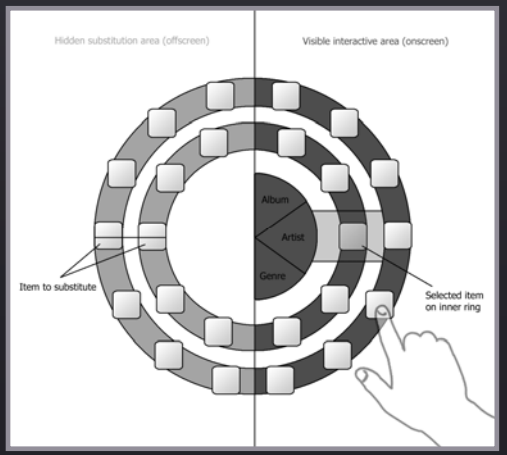
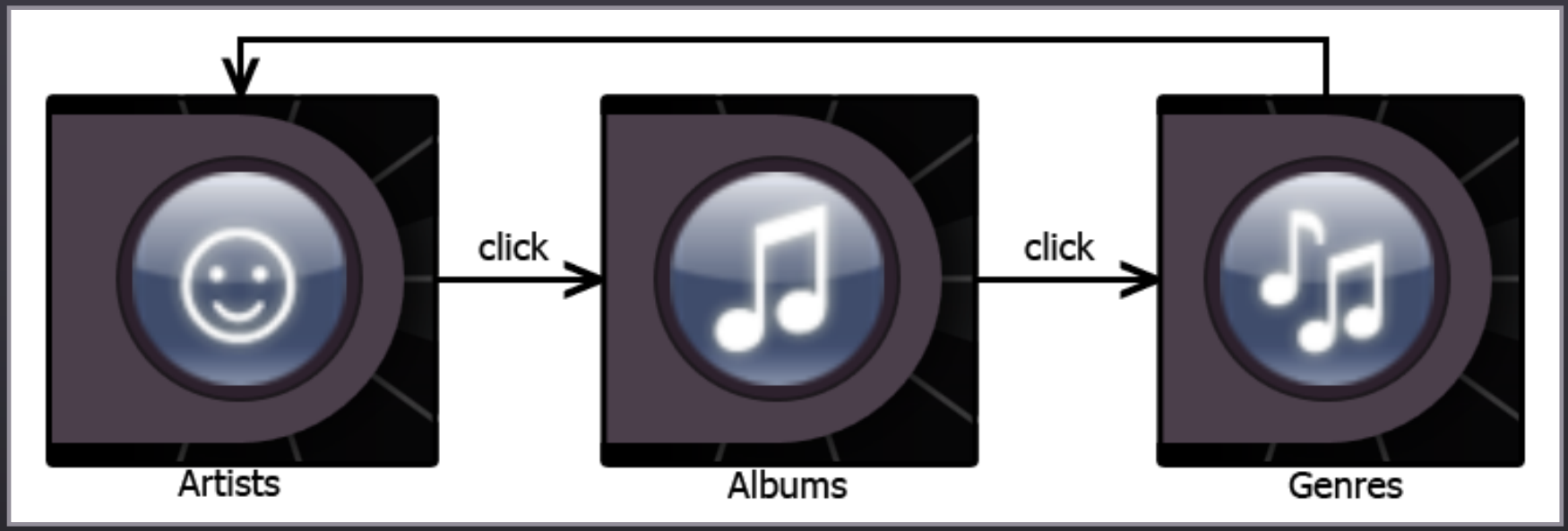
Without music life would be a mistake.

~Friedrich Wilhelm Nietzsche

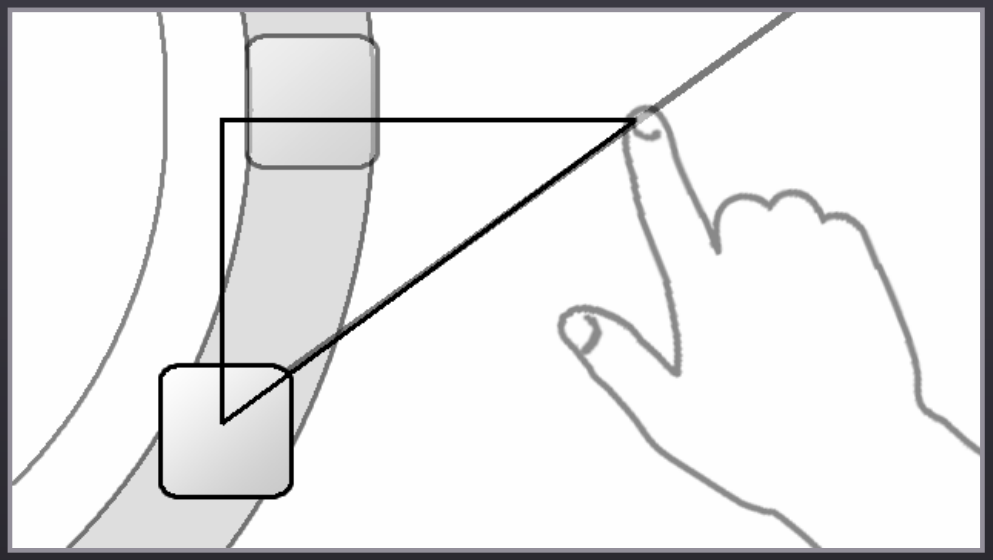


Arrangement Switching



Arrangement	First level items	Second level items
Artists	Artist name	Song title and album name
Albums	Album and artist name	Song title
Genre	Genre name	Song title, album and artist name

Drag-beam Calculation



$$\alpha = \arctan\left(\frac{x_{finger} - x_{item}}{y_{finger} - y_{item}}\right)$$

ID3v1

Byte(s)	Information
3-32	Song title
33-62	Artist name
63-93	Album name
94-96	Track-number
97-126	Length
127	Genre

XML-Songpool DTD

```
<!ELEMENT songs (song)*>
<!ELEMENT song (number, title, album, artist, length,
                                                genre, url)>
<!ELEMENT number (#PCDATA)>
<!ELEMENT title (#PCDATA)>
<!ELEMENT album (#PCDATA)>
<!ELEMENT artist (#PCDATA)>
<!ELEMENT length (#PCDATA)>
<!ELEMENT genre (#PCDATA)>
<!ELEMENT url (#PCDATA)>
```

Related Work

- A. Agarawala, R. Balakrishnan: Keepin' It Real: Pushing the desktop metaphor with physics, piles and the pen. *CHI 2006 Proceedings - Interacting with Large Surfaces*, Montréal, Québec, Canada (2006)

- F. Echtler, G. Klinker: Tracking mobile phones on interactive tabletops. *MEIS '08: Proceedings of the Workshop on Mobile and Embedded Interactive Systems*, Munich, Germany (2008)

- O. Hilliges, D. Baur, A. Butz: Photohelix: Browsing, sorting and sharing digital photo collections. *Proceedings of the second annual IEEE International Workshop on Horizontal Interactive Human-Computer Systems (Tabletop'07)*, IEEE Computer Society, pp. 87-94, Newport, Rhode Island, USA (2007)

Related Work

- U. Hinrichs, M. Hancock, C. Collins, S. Carpendale: Examination of text-entry methods for tabletop displays. *Proceedings of the second annual IEEE International Workshop on Horizontal Interactive Human-Computer Systems (Tabletop'07)*, IEEE Computer Society, pp. 105-112, Newport, Rhode Island, USA (2007)

- H. Kato, M. Billinghurst, I. Poupyrev, K. Imamoto, K. Tachibana: Virtual object manipulation on a table-top AR environment. *International Symposium on Augmented Reality*, pp. 111–119, Munich, Germany (2000)

- A. Mazalek, G. Davenport , M. Reynolds: Sharing and browsing media on a digital tabletop. *IEEE Multimedia*, Special Issue on Continuous Archival and Retrieval of Personal Experiences (2006)

Related Work

- S. Nestler, F. Echtler, A. Dippon, G. Klinker: Collaborative problem solving on mobile hand-held devices and stationary multi-touch interfaces. *PPD 08: Workshop on designing multitouch interaction techniques for coupled public and private displays*, AVI 2008, Naples, Italy (2008)

- D.R. Olsen Jr. , J. Clement, A. Pace: Spilling: Expanding hand held interaction to touch table displays. *Proceedings of the second annual IEEE International Workshop on Horizontal Interactive Human-Computer Systems (Tabletop'07)*, IEEE Computer Society, pp. 163-170, Newport, Rhode Island, USA (2007)

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- T. Hesselmann, S. Flöring, M. Schmitt: Stacked Half-Pie Menus - Navigating Nested Menus on Interactive Tabletops, *Proceedings of ITS 2009*, Banff, Canada (2009)

- D. Hopkins: The design and implementation of pie menus. *Dr. Dobb's Journal*, pp. 16-26 (1991)