Abschlussvortrag Diplomarbeit

Party Jukebox: Supporting co-located music consumption in a public environment

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Agenda

- Goals
- Related work
- Project thesis „Party Jukebox“
- Concepts
- Implementation
- User Studies
- Conclusion and Future Work

Goals

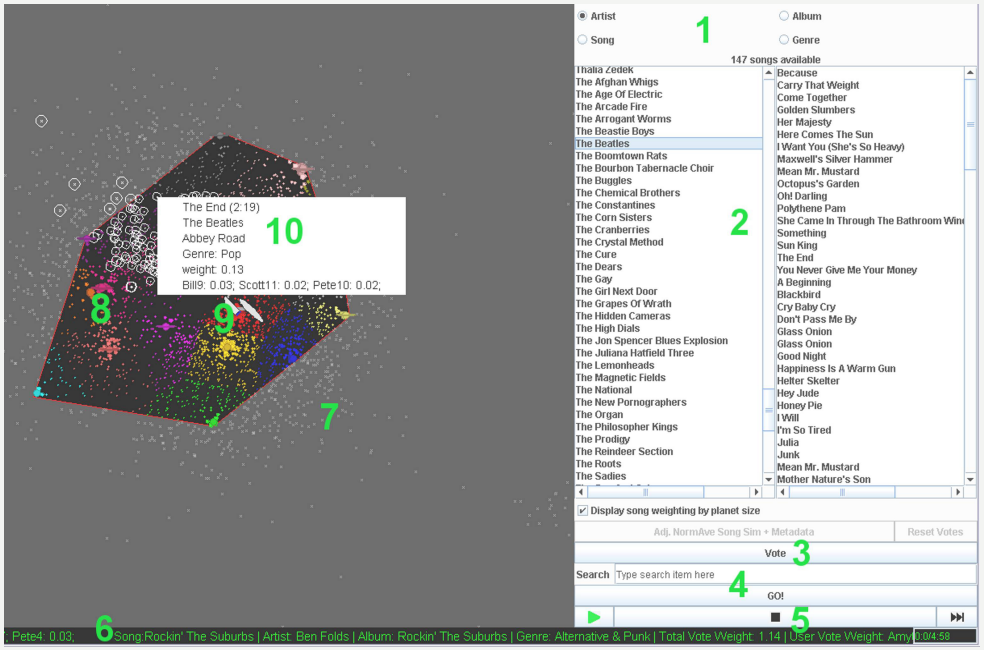
- Support group playlist generation in a public environment
- Allow interaction with mobile devices
- Intuitive, easy to understand interface and visualization
- Test under realistic conditions
  - practical environment
  - no pre-determined restrictions

Related Work

- FlyTrap
  - Music selection based on previously collected data, no user interaction needed
- MusicFX
  - Based on pre-set preferences
  - Tested in fitness center environment
- AmbientDJ
  - Separate client on users phone to determine preferences

Related Work: PartyVote

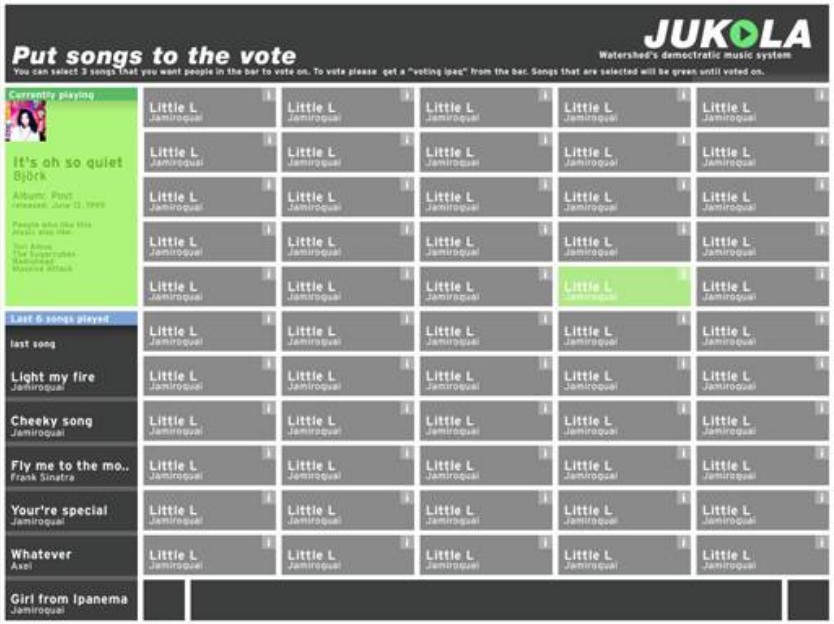
- Developed by Sprague et. al.
- Map-based interface
- No wireless access
- Unintuitive interface

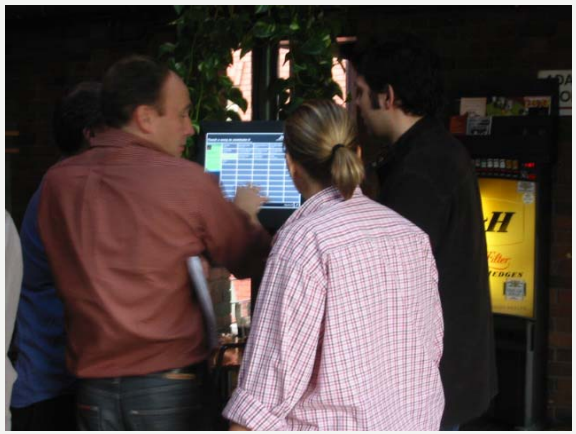


PartyVote [2]

Related Work: Jukola

- Tested in a café bar
- Uses pre-installed devices
- List-based interface



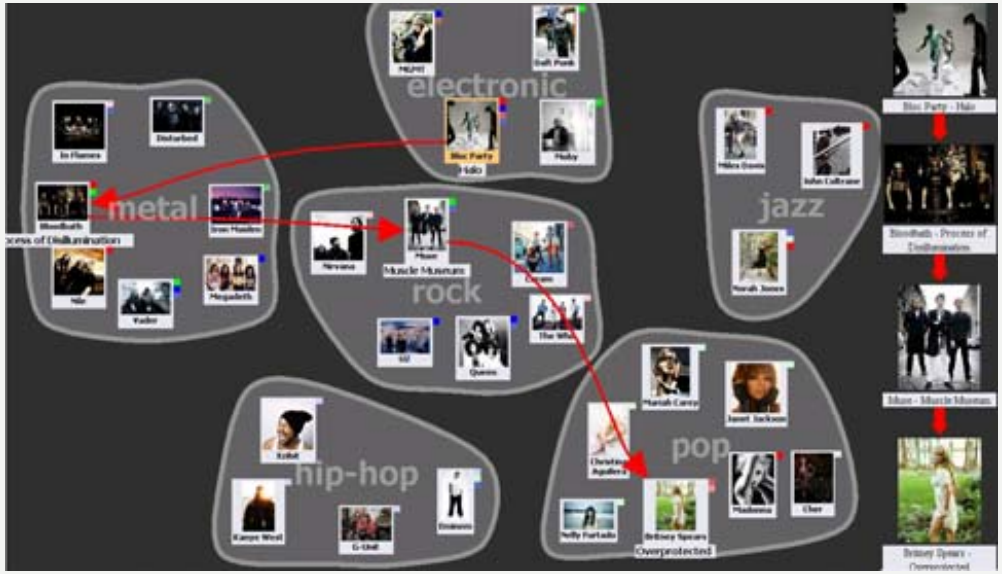


Jukola [1]

Project Thesis: Party Jukebox

- Focused on playlist generation and visualization
  - 2 different generation methods (DJ mode, voting mode)
  - visualization:

    artist map



Party Jukebox [3]

Concept development: User discussion

- Interview sessions in the Unilounge
- Open discussion with paper prototype of interaction concepts
- Results:

  → artist map visually appealing

  → usefulness of text list

  → „laid back“ interaction preferred

  → no security concerns

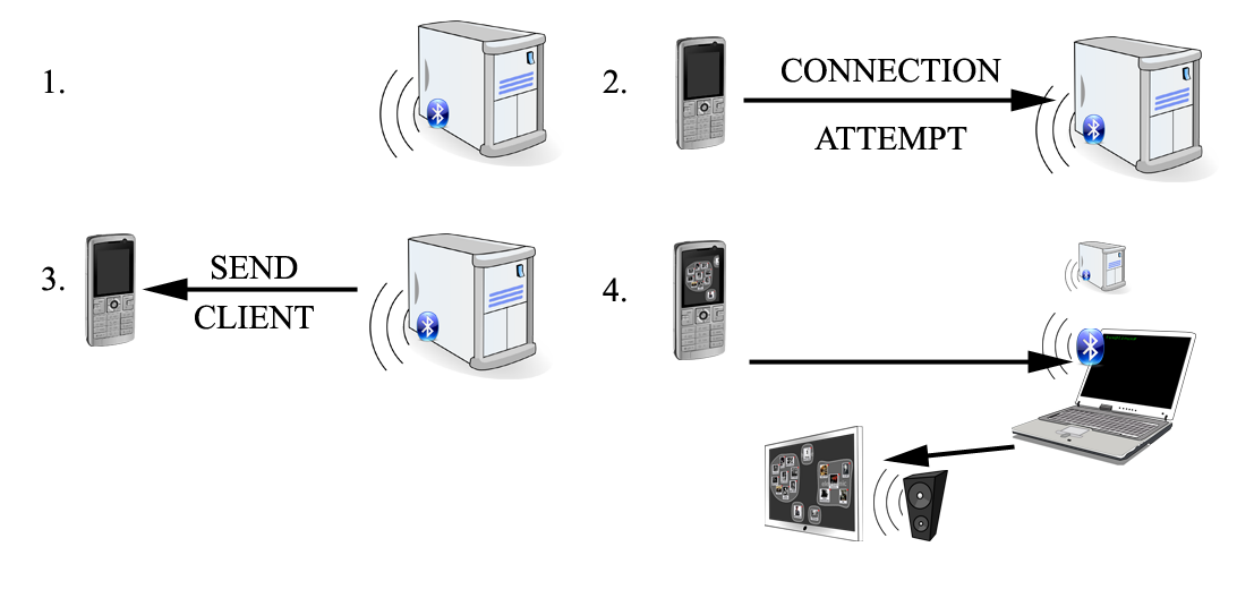
Switch to Graph View

Band:

Artist	Genre
Bill Evans	Jazz
Wynton Marsalis	Jazz
Oscar Peterson	Jazz
John Coltrane	Jazz
The Solsonics	Jazz
Wallace Rooney	Jazz
[re:jazz]	Jazz
Billie Holiday	Jazz
Django Reinhardt	Jazz
Gilles Peterson	Latin
Jamiroquai	Pop
Parov Stelar	House
Jesper Kyd	Electronic
DJ Hell	Electronic
The Cinematic Orchestra	Electronic
Global Communication	Electronic
Air	Electronic

First Concept: Separate Client, Bluetooth

- Separate client, distributed via Bluetooth server
- Client shows artist map identical to public screen



First concept: Separate client, Bluetooth

- Problems:
- Not-authorized connections only partially implemented in Bluetooth-stack
- JavaME not platform independent

  → multiple clients needed may confuse the user
- High computational cost for artist map on most phones

Second concept: WLAN, web interface

- Display web interface in mobile browsers
- Use WLAN to facilitate wireless communication

  → no incompatibilities

  → no additional client required

Implementation: WLAN / web interface 1

- Web interface:
  - HTML, images
  - no Javascript
  - has to transmit data back (→ POST)

→ A server is needed for distributing the interface and receiving data from users

Implementation: WLAN / web interface 2

- Server: only processes HEAD, GET, POST
- Data received from users has to be transmitted to Party Jukebox application

  → Implemented as part of Party Jukebox application
  - uses Java networking / socket operations
  - threaded to allow multi-user access

Implementation: changes to the original Party Jukebox application

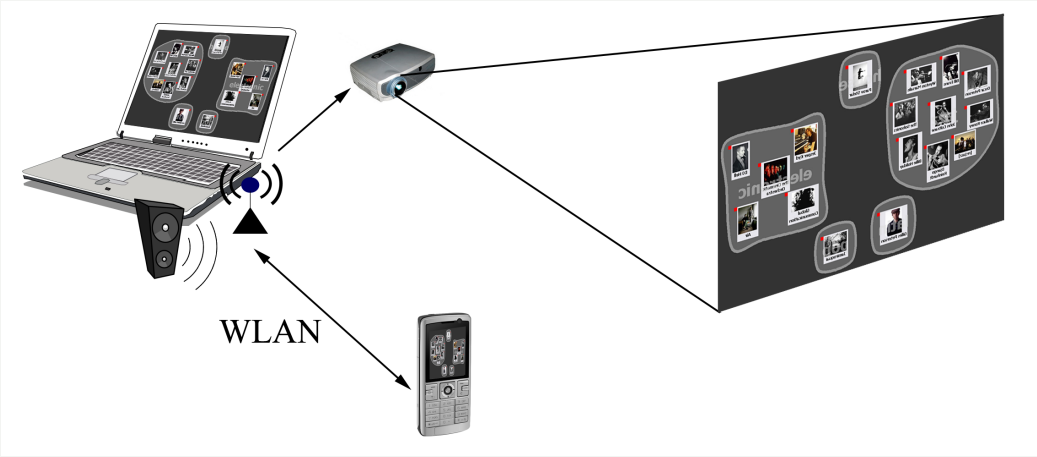
Additional changes needed:

- Reduce reliance on Last.fm API
- Include alternative to streaming media

  → Playlist generation needed to be refactored
- Allow usage of local audio files
- Use tag data to identify audio files
- Media playback

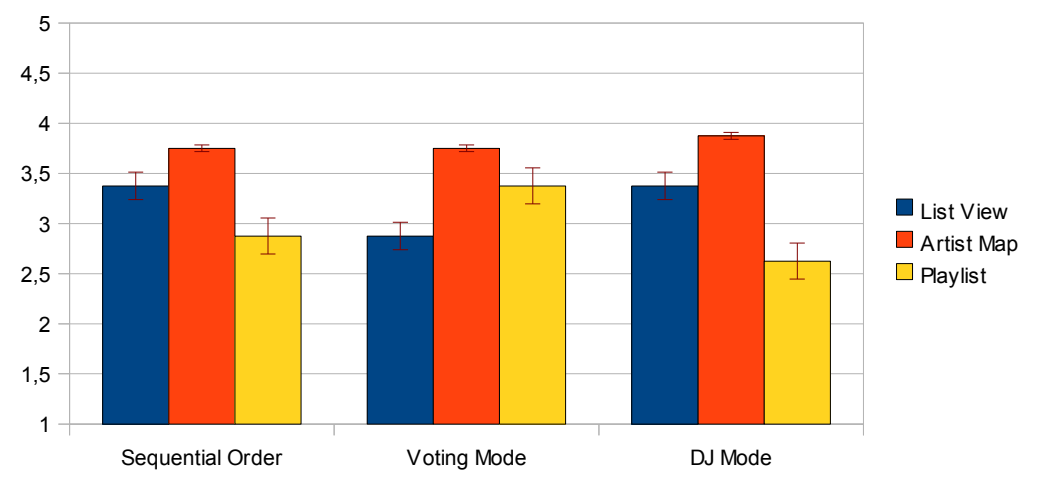
User Study: Laboratory Study

- Performed under controlled conditions
  - 8 participants
  - music collection similar to Unilounge
- Focus:
  - evaluate interface and playlist generation modes
  - evaluate system performance



Results

- Interface: generally apprectiated
- Playlist generation: sequential and voting mode preferred
- System performance:
  - internal web server unable to handle mulitple requests
  - incompatibilities with different browsers



Modification: switch to Apache Tomcat

- Internal web server replaced by an external, dedicated web server
- Data received from user is extracted and transferred to Party Jukebox application

→ Apache Tomcat servlet container

  - Servlet for extraction and transmission of data
  - Transmission of data using awt.datatransfer

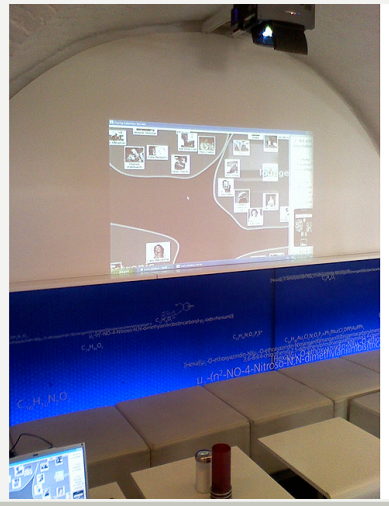
→ Improved performance

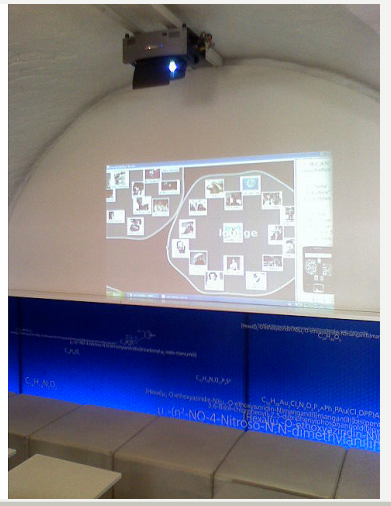
→ Easier data extraction

User Study: Unilounge test

- Realistic conditions / live environment
  - 5,5 hours
  - Music collection equal to usual playlist
  - No direct invitation to customers
- Evaluate impact and customer reception
  - Qualitative data: interviews
  - Quantitative data: logs

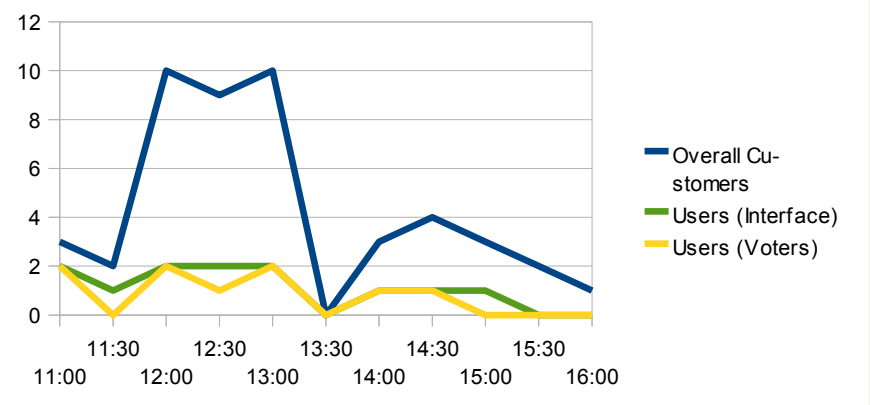
Unilounge [4]





User Study: Unilounge test

- Results:
  - About 20% of customers used the system
  - Generally well received
- Reasons for not participating:
  - Lack of WLAN device
  - Not interested in the application
  - Collection of artists (uninteresting / unknown artists)



Implications

- Overall favorable reception of the concept
- Biggest hinderance: lack of WLAN device
- Application under different circumstances may increase user participation
- Adjusting music collection may increase user participation

Conclusion and Future Work

- Development of an application to support co-located playlist generation, tested in a practical environment

- Complete transfer to web application (→ „captive portal“)
- Long-term, in-depth studies in different venues
- Privacy of user information
- Increase user awareness
- Allow different (mobile) devices

Thank you for your attention!

References

- [1]: O'Hara, Lipson, Jansen, Unger, Jeffries, Macer: Jukola: Democratic Music Choice in a Public Space
- [2]: Sprague, Wu, Tory: Music Selection Using The PartyVote Democratic Jukebox
- [3]: Berwein: Party Jukebox: Support Group Playlist Generation In A Public Environment
- [4]: Unilounge: http://www.unilounge-muenchen.de/