Department of Computer Science

Institute for System Architecture, Chair for Computer Networks

Application Development for Mobile and Ubiquitous Computing

TRACKSETTER

Adaptation Concept Presentation

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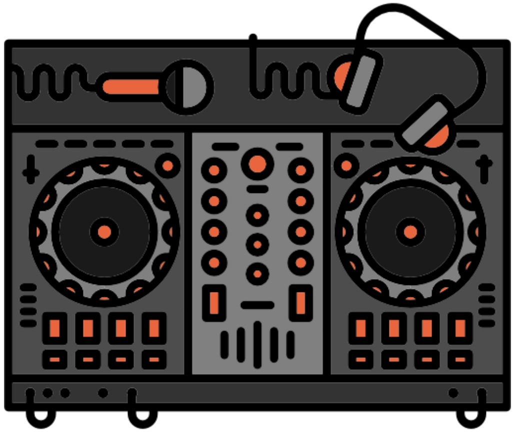
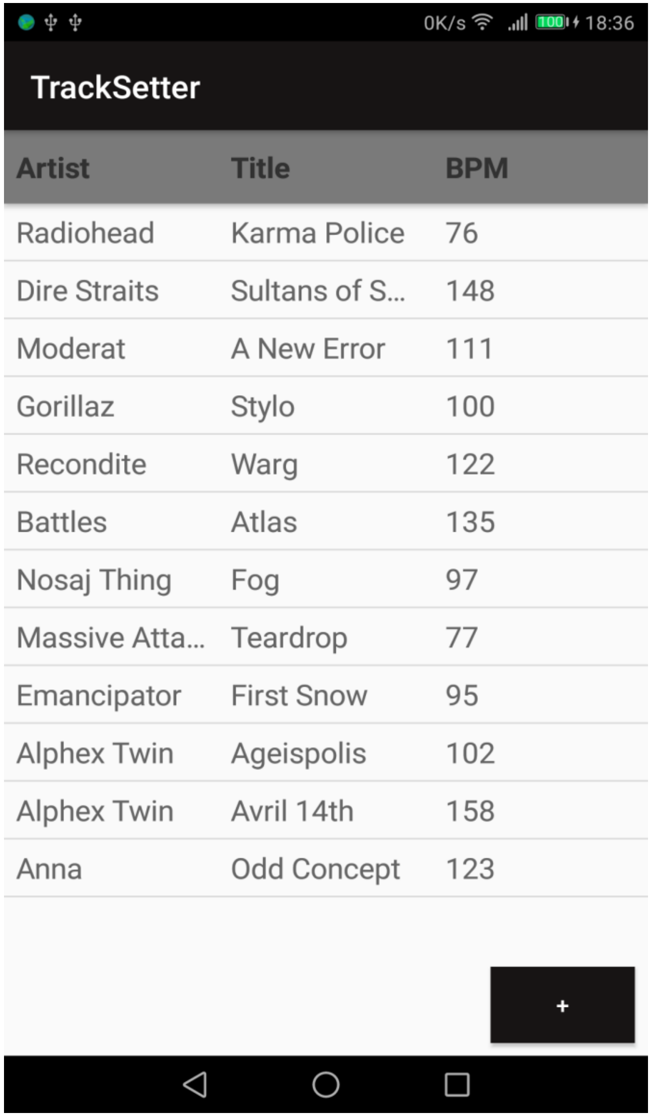
Overview

If you like spinning real vinyl as a DJ, handling your whole music library can be quite tedious:

- Did you forget a track you wanted to play?
- What next track fits BPM- and/or genre-wise?

For that we propose
the app „TrackSetter“ –
an electronic catalogue of your
music, with which you can also
create a playlist.



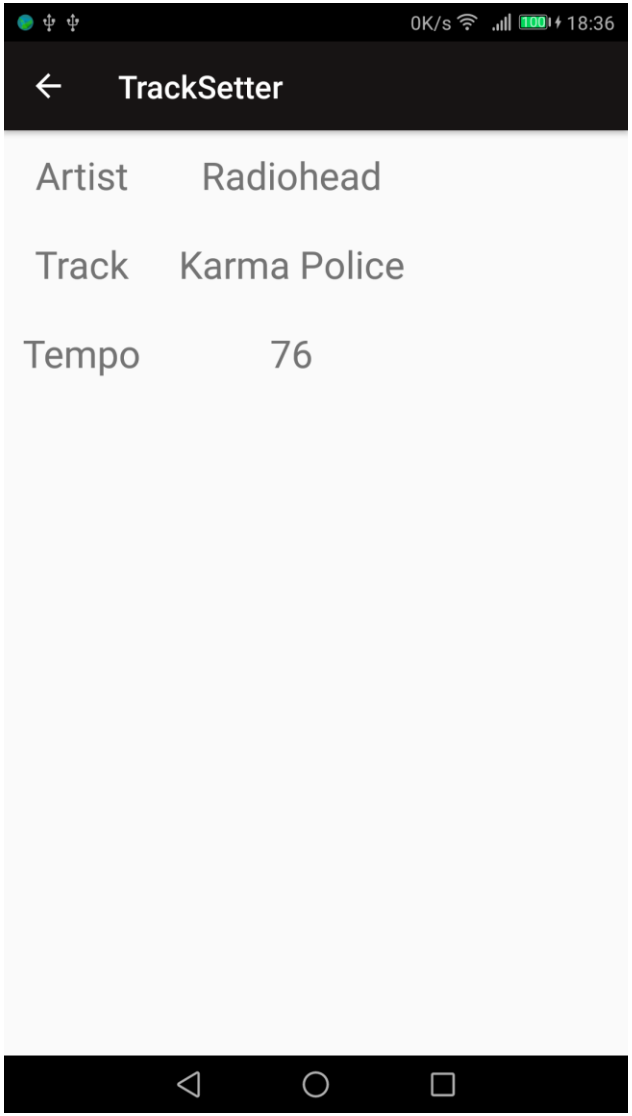


TrackSetter

Artist	Title	BPM
Radiohead	Karma Police	76
Dire Straits	Sultans of S...	148
Moderat	A New Error	111
Gorillaz	Stylo	100
Recondite	Warg	122
Battles	Atlas	135
Nosaj Thing	Fog	97
Massive Atta...	Teardrop	77
Emancipator	First Snow	95
Alphex Twin	Ageispolis	102
Alphex Twin	Avril 14th	158
Anna	Odd Concept	123

Screens 1

- You have a sortable List-View of your current library.
- In which you can also add a track.
- The track can be added via an API (Spotify Web API)
- Or manually (when offline / no track was found).
- All the info & parameters are then gonna be stored locally in a database.



Artist Radiohead

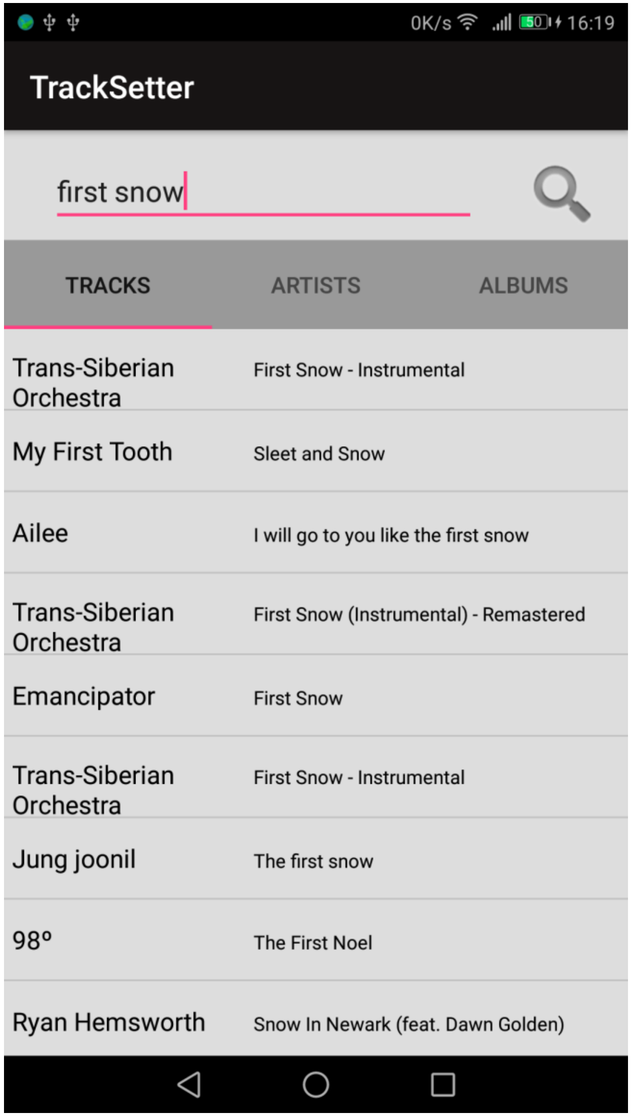
Track Karma Police

Tempo 76

Screens 2

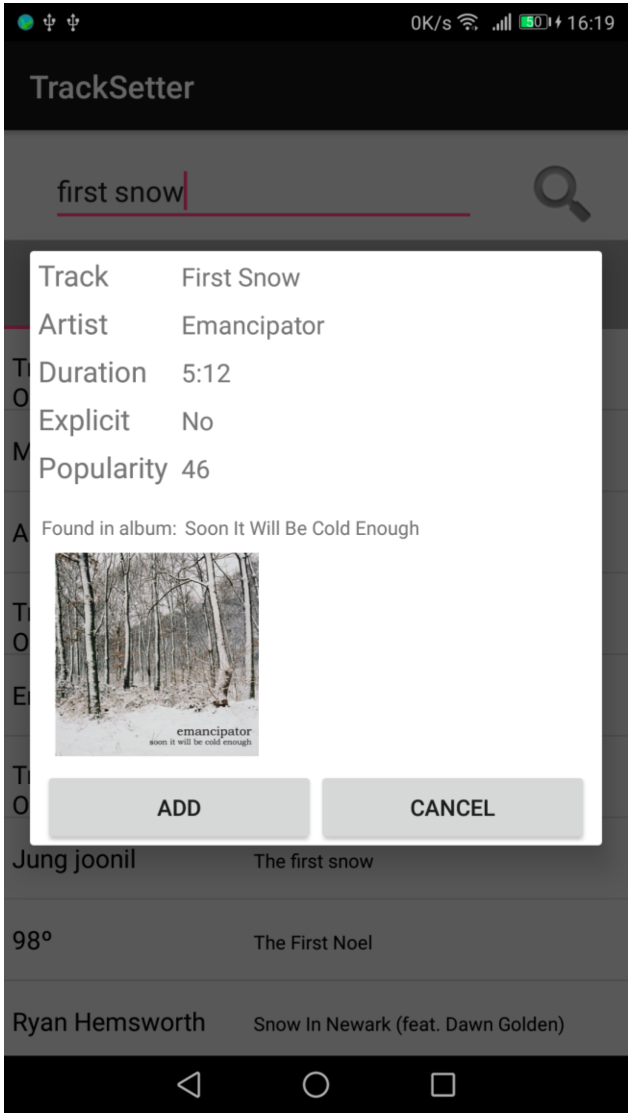
- Track detail view
- Accessible via onclick
- Only displays currently available data

Screens 3



Trans-Siberian Orchestra	First Snow - Instrumental
My First Tooth	Sleet and Snow
Ailee	I will go to you like the first snow
Trans-Siberian Orchestra	First Snow (Instrumental) - Remastered
Emancipator	First Snow
Trans-Siberian Orchestra	First Snow - Instrumental
Jung joonil	The first snow
98°	The First Noel
Ryan Hemsworth	Snow In Newark (feat. Dawn Golden)

- Search for tracks, artists, albums via Spotify API
- Click on a result to show its details



Track	First Snow
Artist	Emancipator
Duration	5:12
Explicit	No
Popularity	46

Found in album: Soon It Will Be Cold Enough

Jung joonil	The first snow
98°	The First Noel
Ryan Hemsworth	Snow In Newark (feat. Dawn Golden)

Screens 4

- Search for tracks, artists, albums via Spotify API
- Click on a result to show its details

Challenges

- **Usability Challenge:**
  - Provide an easy to use user interface:
    - color differentiation (lighter to stronger colors depending on the accumulative score that one track suits the other) for intuitive selection of suitable tracks
    - offering a filter to easily narrow down the proposed tracks to the desired main selection criteria (tempo, genre, all, etc.)
- **Offline Challenge**
  - usable in offline mode with manual insertion of track information

Adaptation Concepts

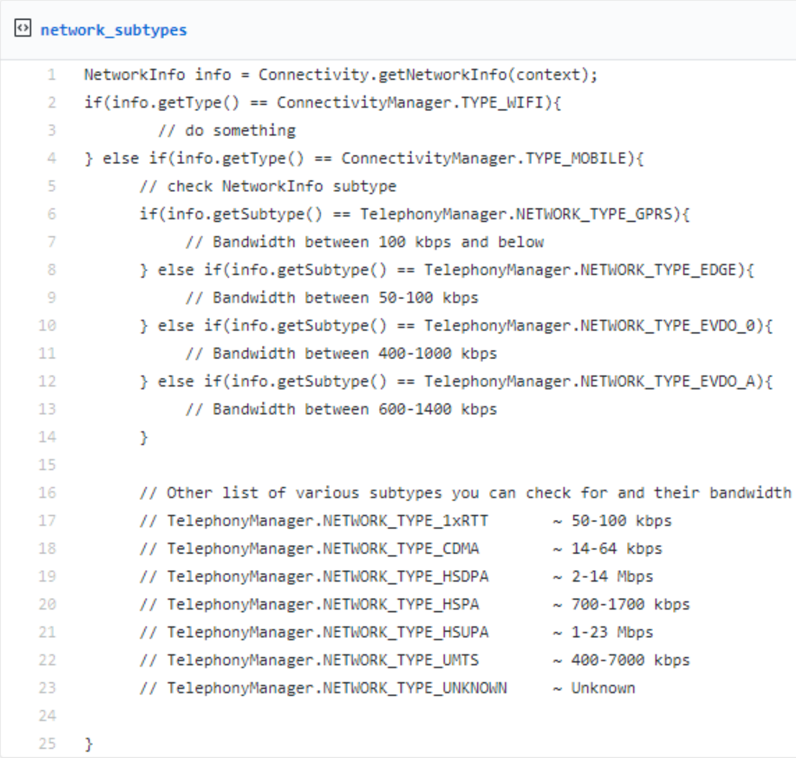
- **Offline Usage**
  - allow to add tracks manually if not online
  - automatically fill in missing information for manually added tracks when online again

Adaptation Concepts

- **Network Awareness**
  - request access token from Spotify on start -> check if online
  - use ConnectivityManager, NetworkInfo, TelephonyManager to determine network type

    -> adapt data fetching

    (only text when low bandwidth; image prefetching only over WiFi)



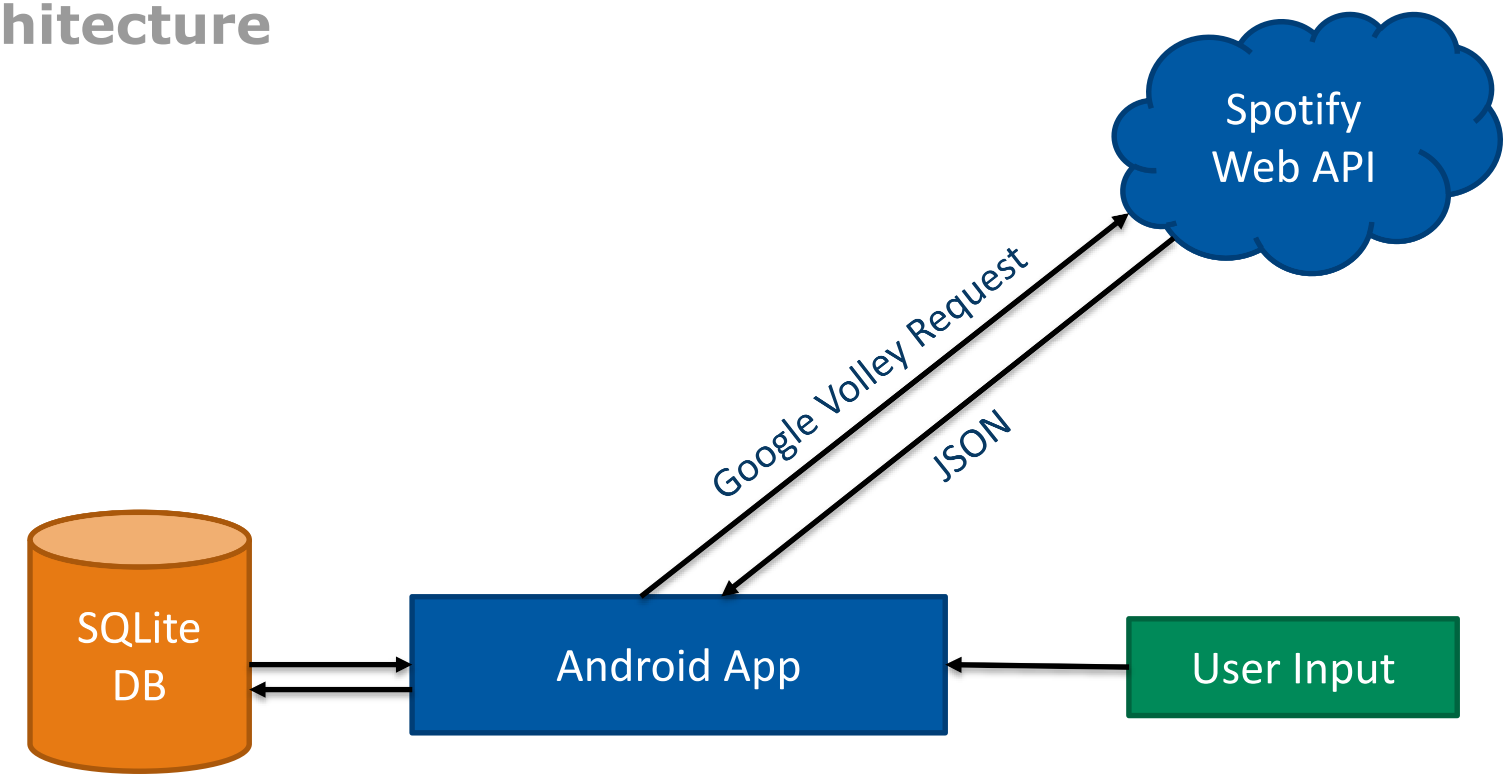
network_subtypes

```
NetworkInfo info = Connectivity.getNetworkInfo(context);
if(info.getType() == ConnectivityManager.TYPE_WIFI){
        // do something
} else if(info.getType() == ConnectivityManager.TYPE_MOBILE){
      // check NetworkInfo subtype
      if(info.getSubtype() == TelephonyManager.NETWORK_TYPE_GPRS){
           // Bandwidth between 100 kbps and below
      } else if(info.getSubtype() == TelephonyManager.NETWORK_TYPE_EDGE){
           // Bandwidth between 50-100 kbps
      } else if(info.getSubtype() == TelephonyManager.NETWORK_TYPE_EVDO_0){
           // Bandwidth between 400-1000 kbps
      } else if(info.getSubtype() == TelephonyManager.NETWORK_TYPE_EVDO_A){
           // Bandwidth between 600-1400 kbps
      }

      // Other list of various subtypes you can check for and their bandwidth
      // TelephonyManager.NETWORK_TYPE_1xRTT       ~ 50-100 kbps
      // TelephonyManager.NETWORK_TYPE_CDMA        ~ 14-64 kbps
      // TelephonyManager.NETWORK_TYPE_HSDPA       ~ 2-14 Mbps
      // TelephonyManager.NETWORK_TYPE_HSPA        ~ 700-1700 kbps
      // TelephonyManager.NETWORK_TYPE_HSUPA       ~ 1-23 Mbps
      // TelephonyManager.NETWORK_TYPE_UMTS        ~ 400-7000 kbps
      // TelephonyManager.NETWORK_TYPE_UNKNOWN     ~ Unknown

}
```

Architecture



Technologies

android
Android Volley Library
Spotify
WEB API
JSON
Simple
Android
Studio
SQLite

Timeline

- **First Presentation: today, 03.11.2017**
  - November:
    - Mockups, Setup development environment, UI Design
    - Project Prototype:
      - ∟ 15.11.2017: implement Mockup I and establish API support
      - ∟ 30.11.2017: Start with Mockup II
- **Adaptation concept presentation: 15.12.2017**
      - ∟ Mid-December: Finish Mockup II
      - ∟ End of December: testing and fine tuning
    - January: buffer, fixing the last bugs, implement additional ideas
    - Final Product
- **Final Presentation: 26.01.2018**

Thank you for your attention.

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