Application Development for Mobile and Ubiquitous Computing

Seminar Task - Adaptation Concept Presentation
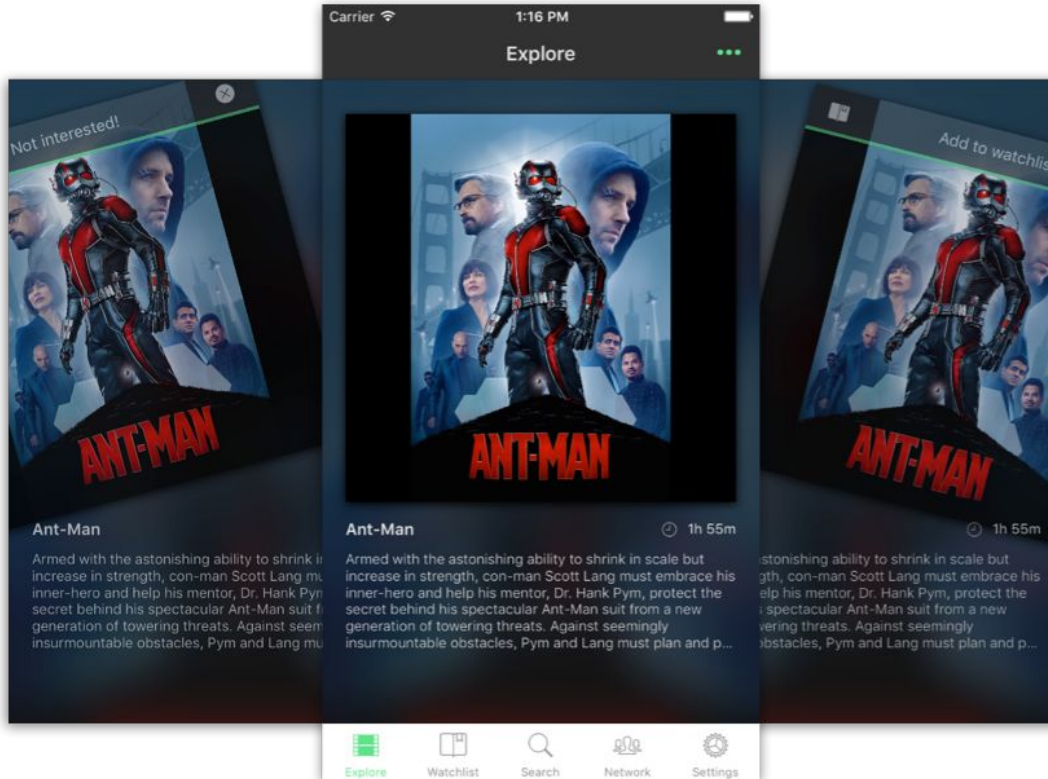
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DRESDEN
concept
Exzellenz aus
Wissenschaft
und Kultur

- FilmFriends
  - film discovery application
  - browse through recent and popular films
  - search for particular films
  - create a watchlist of films you want to watch
  - build a network of friends
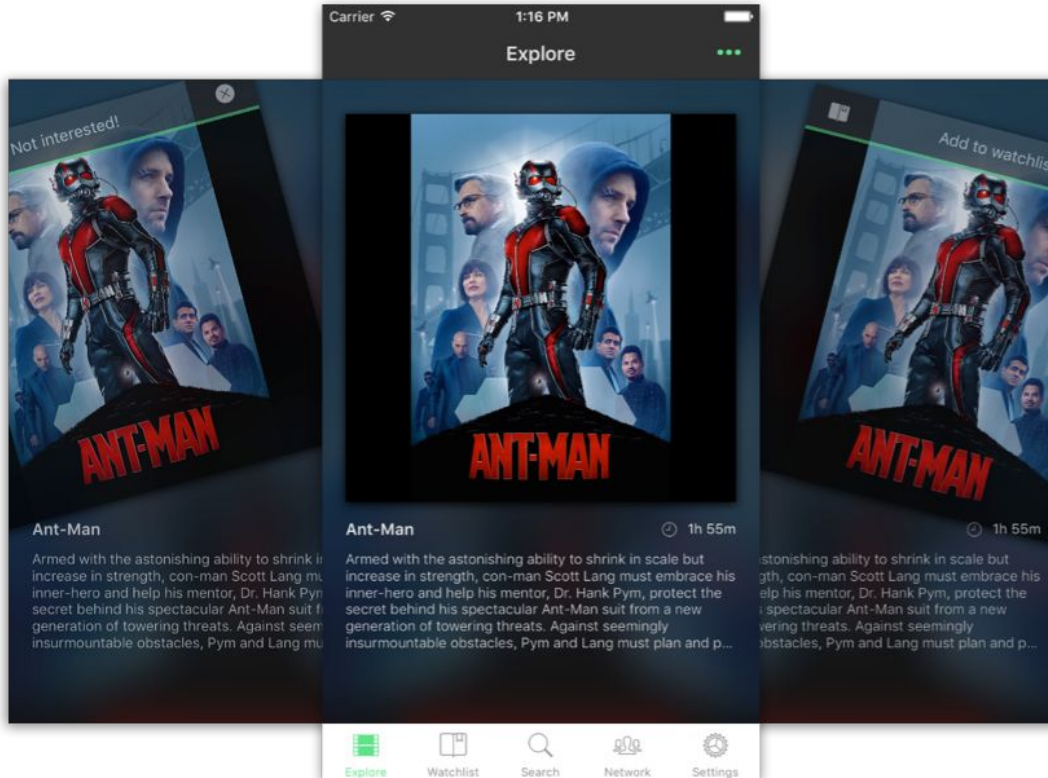 - receive notifcations about activities in your network
    - pokes
    - matches

1. **Call server API with AJAX**

popular/1/1/hd

(explore page, user ID, page number, quality preference)

2. **Server calls TMDB API or uses prefetched items from the MySQL database**

movie/popular/?api_key={key}&page=1

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3. **The PHP backend server sorts and filters the items and sends them to the client in the HTTP response**

4. **The client receives the items from the AJAX call and creates the first film card**

5. **The user is now able to swipe through the fetched films**

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- Connectivity Challenge (Reduce traffic, Faster load times)
    - 3 main quality settings (SD, HQ, HD)
    - The setting is being evaluated automatically on the client side based on the client's connection
        - GPRS, Edge: SD
        - 3G: HQ
        - LTE, Wifi: HD
    - API calls to the backend server contain information about the current quality setting
    - The server responds with appropriate image links
    - The client starts to fetch the image files

- Form Factor Challenge
  - flexbox inspired grid layout adapts to different resoultions and screen sizes
  - custom layout calculations for detailed views
- Offline Challenge
  - save downloaded images in a cache
  - store responses from the server API in a local storage
  - use local data in case of no connectivity
  - store actions and changes of the client
  - sync up with the server as soon as an internet connection is established
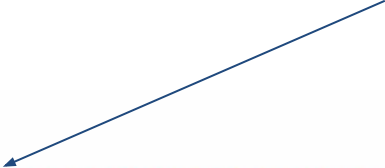
- placement: Server
  - fetches movies from TMDB API, filters necessary information and store them in own DB
  - for latest and popular movies informations will be updated once per day in own DB to reduce traffic between own server and TMDB server (prefetching)
  - each requested (f.e. added to watchlist) movie will be stored in own DB (caching, next time its stored in own DB)
- effect:
  - reduces amount of data and information
  - reduces number of requests to get all necessary data
  - reduces time to fetch data at the client
  - selection of poster resolution based on parameter and generation of the right URL

- example original response from TMDB:

```
{
  "page": 1
 -"results": [20]
   -0:  {
       "poster_path": "/D6e8RJf2qUstnfkTslTXNTUAlT.jpg"
       "adult": false
       "overview": "Armed with the astonishing ability to shrink in scale but increase in strength, con-man Scott Lang must embrace his inner-hero and help his
       mentor, Dr. Hank Pym, protect the secret behind his spectacular Ant-Man suit from a new generation of towering threats. Against seemingly insurmountable
       obstacles, Pym and Lang must plan and pull off a heist that will save the world."
       "release_date": "2015-07-17"
      -"genre_ids": [3]
          0:  878
          1:  28
          2:  12
       "id": 102899
       "original_title": "Ant-Man"
       "original_language": "en"
       "title": "Ant-Man"
       "backdrop_path": "/kvXLZqY0Ngl1XSw7EaMQO0C1CCj.jpg"
       "popularity": 56.773971
       "vote_count": 1867
       "video": false
       "vote_average": 6.91
    }
```
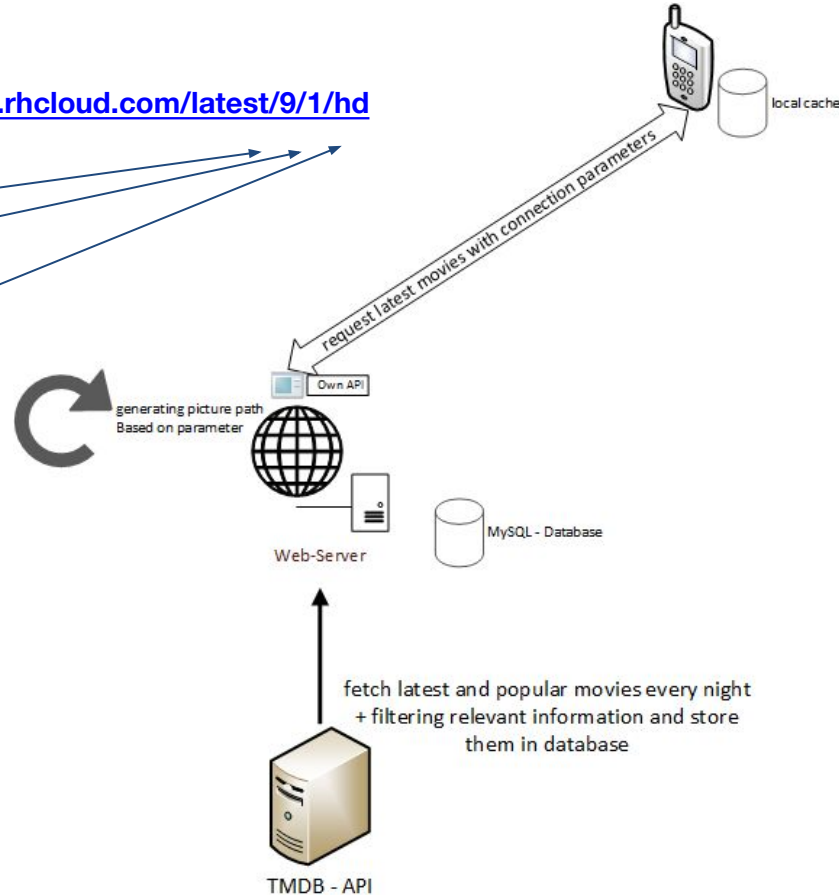
- example response from own server with parameter "HD" (LTE, WLAN):

```
-0: {
    "movie_id": 102899
    "title": "Ant-Man"
    "cover": "https://image.tmdb.org/t/p/w780/D6e8RJf2qUstnfkTslTXNTUAlT.jpg"
    "plot": "Armed with the astonishing ability to shrink in scale but increase in strength, con-man Scott Lang must embrace his inner-hero and help his mentor, Dr.
    Hank Pym, protect the secret behind his spectacular Ant-Man suit from a new generation of towering threats. Against seemingly insurmountable obstacles, Pym and
    Lang must plan and pull off a heist that will save the world."
    "releaseDate": "2015-07-17"
    "vote": 6.91
    "language": "en"
-"genre": [3]
        0:  "Science Fiction"
        1:  "Action"
        2:  "Adventure"
```

- example: latest movies
  - **GET → https://api-filmfriends.rhcloud.com/latest/9/1/hd**

  - **user ID**
  - **page**
    (20 p. page)
  - **picture resolution**

request latest movies with connection parameters

local cache

Own API

generating picture path
Based on parameter

Web-Server

MySQL - Database

fetch latest and popular movies every night
+ filtering relevant information and store
them in database

TMDB - API

- Open tasks
  - Sync up local changes with the server (Offline Challenge)
  - Improve responsiveness of the views
    - Dynamic font sizes based on the screen size
  - Push notifications for new activities in the network