TECHNISCHE UNIVERSITÄT DRESDEN

Department of Computer Science Institute for System Architecture, Chair for Computer Networks

Application Development for Mobile and Ubiquitous Computing

HandHirer
Adaptation concept presentation
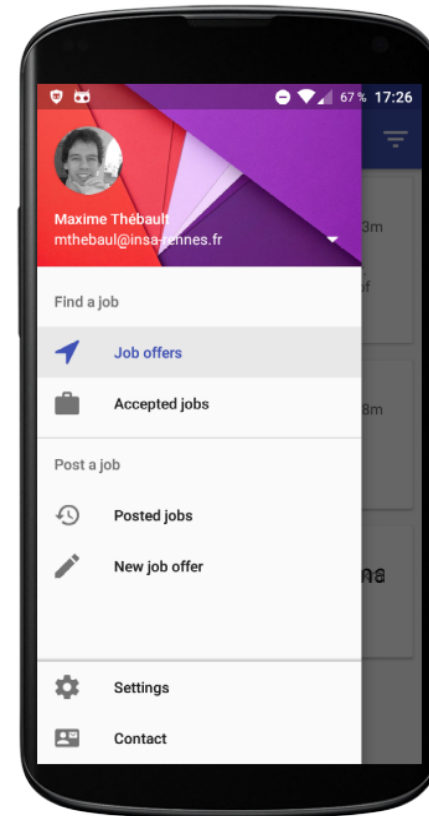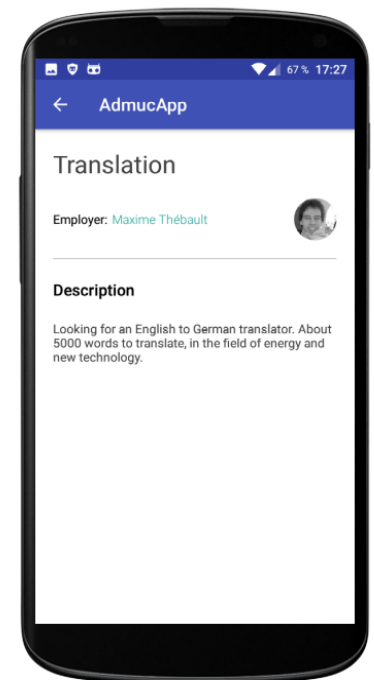
Team 8
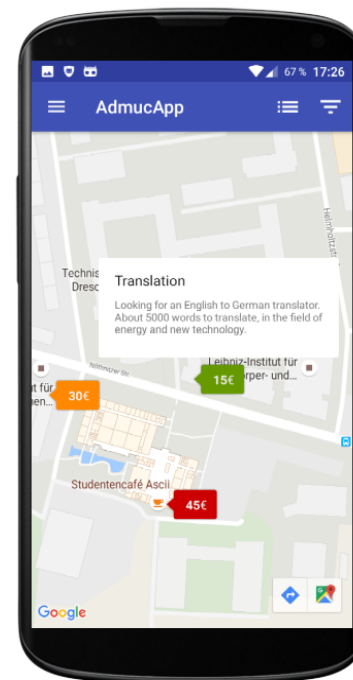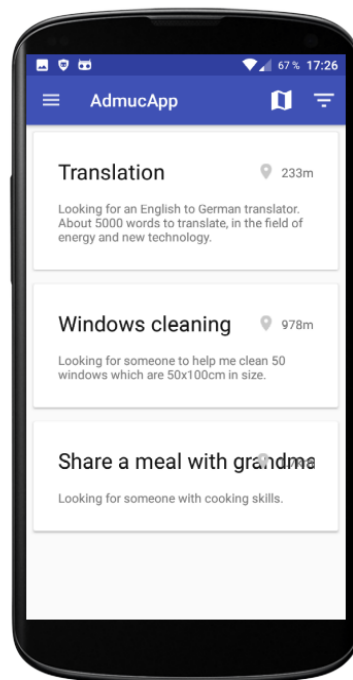**Maxime Thébault**
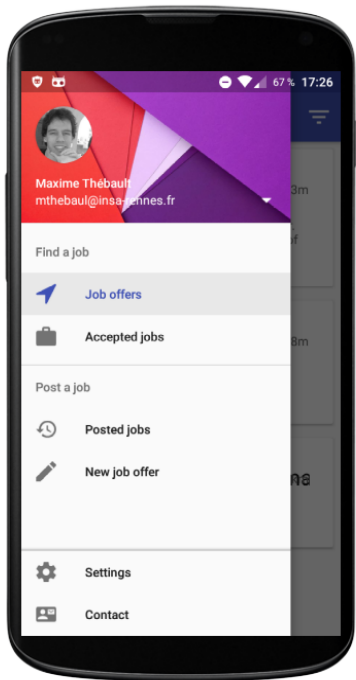**Sebastian Kunze**

Dresden, 16.12.2016

DRESDEN
concept
Exzellenz aus
Wissenschaft
und Kultur

HandHirer

- A location-based job application for...

  - Finding jobs around you
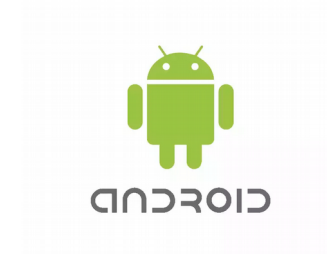
  - Creating job offers
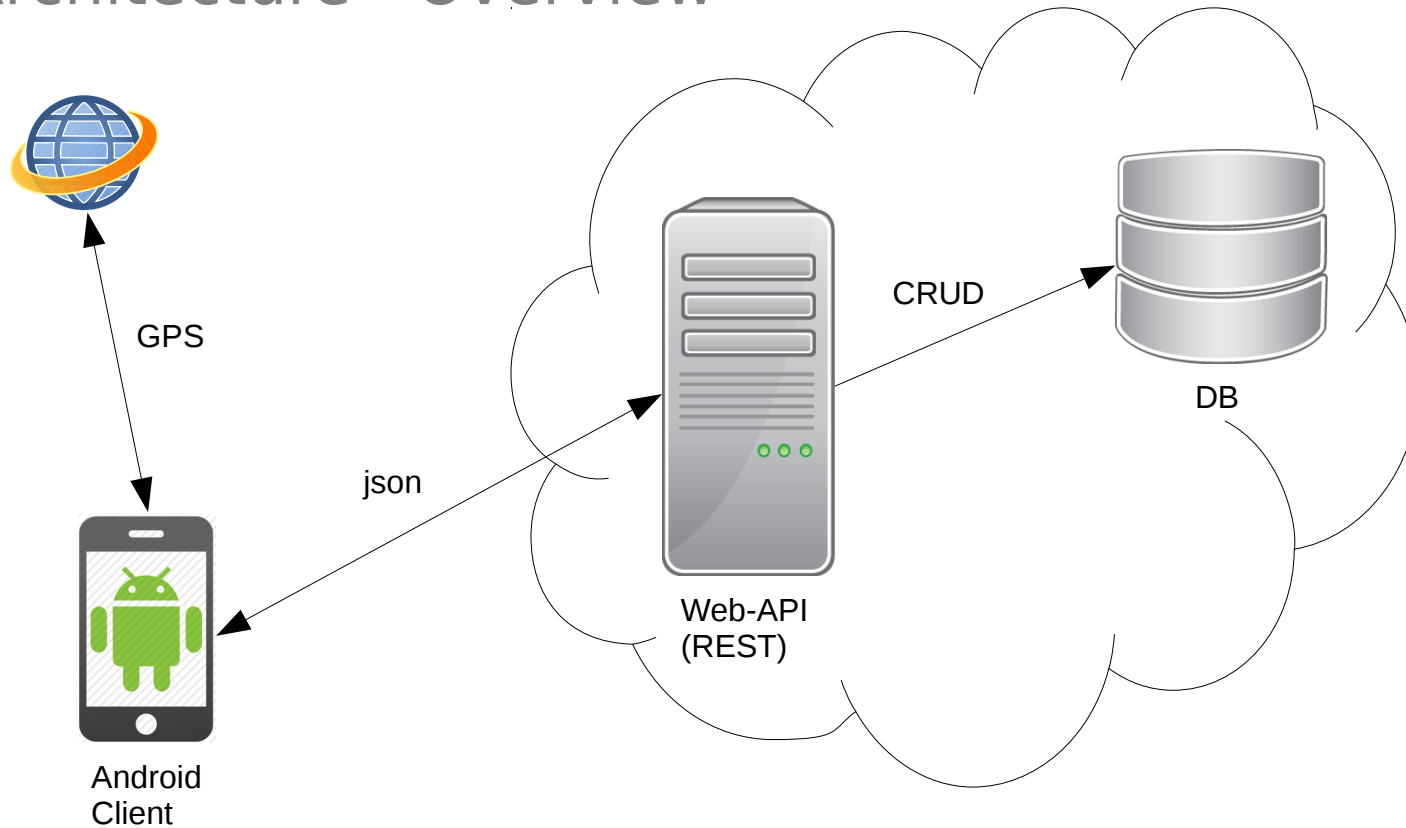
  - Managing jobs

GUI - Overview

Technologies

- Client:
  - Android (>= version 5.0, SDK 21)
  - Google Volley
  - Maps API

- Server:
  - Node.js + Express
  - MongoDB
  - Mongoose

Architecture - Overview

GPS

json

CRUD

DB

Web-API
(REST)

Android
Client

HandHirer – Adaptation concept

REST API

HTTP methods

- GET   /joboffers
- GET   /joboffers/<GEO>
- GET   /joboffers/:id
- POST   /joboffers
- PUT   /joboffers/:id
- DELETE   /joboffers/:id

```
GET /joboffers/:583f063fb0bacc0bb5010c52

"_id":"583f063fb0bacc0bb5010c52",
"name":"Translator needed 1h",
"description":"Need a translator
    German/French",
"reward":12,
"location": {
"coordinates":[13.7372625,51.0504016],
"type":"Point"
},
"free":true,
"updated":"2016-11-30T17:02:55.150Z"
```

Context features

- Technical:
  - Permissions (GPS)
  - Network connectivity
  - Device properties – detecting device size

```
if
(ActivityCompat.checkSelfPermission
        (this,Manifest.permission.ACCESS_FINE_LOCATION) !=
PackageManager.PERMISSION_GRANTED) {

ActivityCompat.requestPermissions(this,
                    new String[]{
Manifest.permission.ACCESS_COARSE_LOCATION,
Manifest.permission.ACCESS_FINE_LOCATION},
REQUEST_LOCATION_PERMISSION);}
```

Context features

- Physical:
  - Location fetched via GPS
  - Use of FusedLocationProvider instead of LocationManager
  - Coordinates saved to DB on job creation

```
public void onResult(LocationSettingsResult result) {
            final Status status = result.getStatus();
            switch (status.getStatusCode()) {
                case LocationSettingsStatusCodes.SUCCESS:

LocationService.getInstance().setMostRecentLocation(LocationServices.
FusedLocationApi.getLastLocation(googleApiClient));
```

Adaptation mechanisms

- Permissions
  - If GPS permission is denied, FusedLocationProvider displays prompt with possible activation

- Location
  - Map zooms to current location
  - Created jobs get GPS coordinates of device
  - Job documents in DB GeoJSON conform
    → use of MongoDB query operator „geoNear"
    possible
    → only jobs near current position are shown

Adaptation mechanisms

- Connectivity
  - Reduced feature set if offline → notice on refresh
  - Queueing through Volley
  - Basic browsing functionality through cached data

```
private void writeJobsToCache(Context context) {
        try {
            FileOutputStream fos = context.openFileOutput("job_cache",
Context.MODE_PRIVATE);
            ObjectOutputStream oos = new ObjectOutputStream(new
BufferedOutputStream(fos));
            oos.writeObject(mostRecentlyFetchedJobs);
            oos.close();
            fos.close();}
```

Adaptation mechanisms

- Device properties

    - Relative layout to adapt to screen size
    - No different profiles, but will look the same on different devices

    - FusedLocationProvider features profiles for reduced battery consumption
      → Possible to adapt to low battery

Questions?

Thank you for your attention!