

Indoor Mapping and Navigation – Android Application

University of Zielona Góra

Faculty of Computer, Electrical and Control Engineering

Degree course: Computer Science

Specialization: Microinformatics Systems Engineering

Supervised by:
Mr. Jacek Bieganski

Submitted by:
Maciej Kaliszewski

Agenda:

1. Overview

2. Problem Definition

3. MapBox and Mapwize Plugin

4. Software and Hardware Used

5. Indoor Localizations

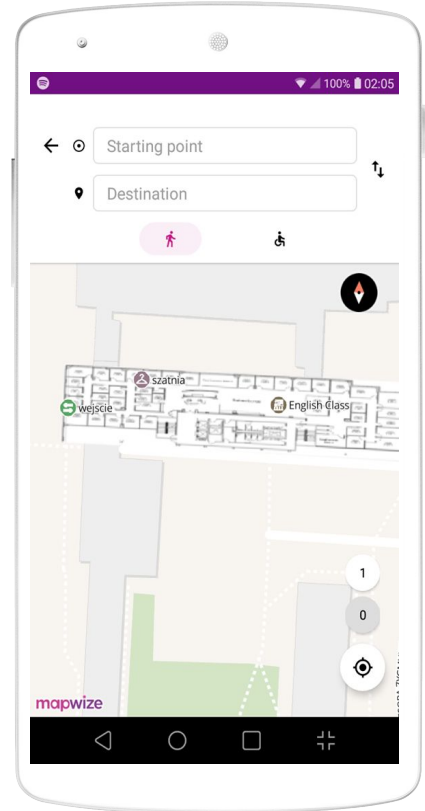
- manual
- GPS
- accelerometer and gyroscope
- wifi infrastructure

6. Floor map

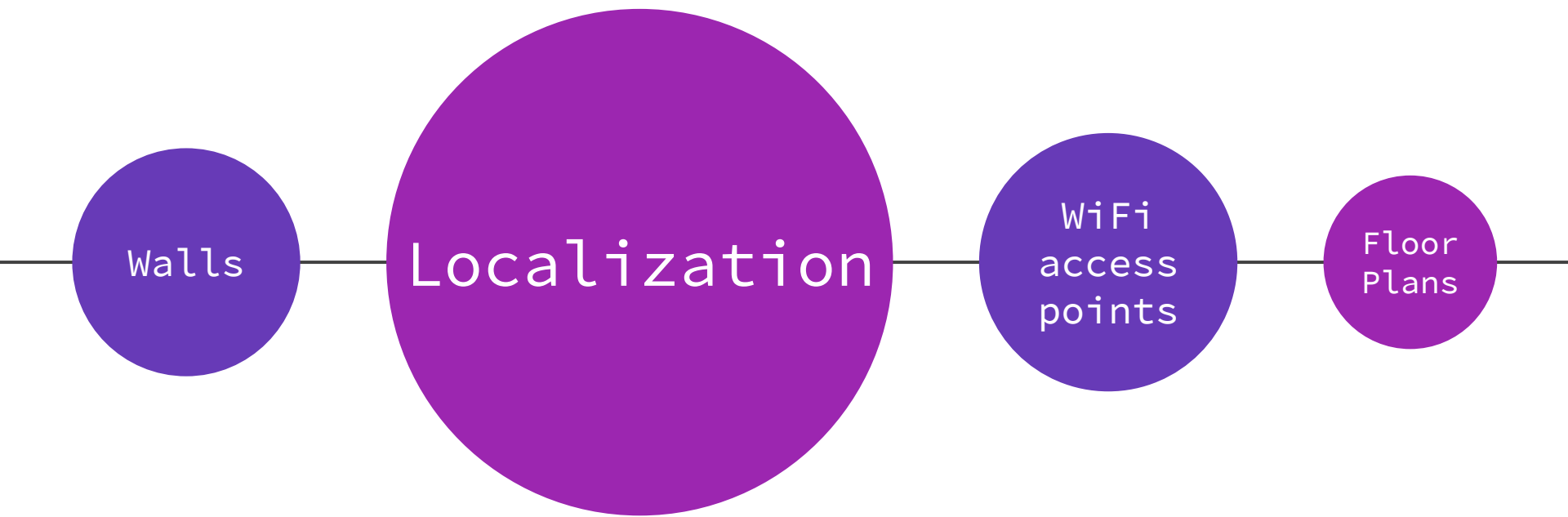
7. Summary

OVERVIEW

- Search places(rooms) in building
- Navigate to destination
- Change floors
- Friendly for invalids
- App for Open Day event at Faculty of Computer Science, Electrical and Control Engineering

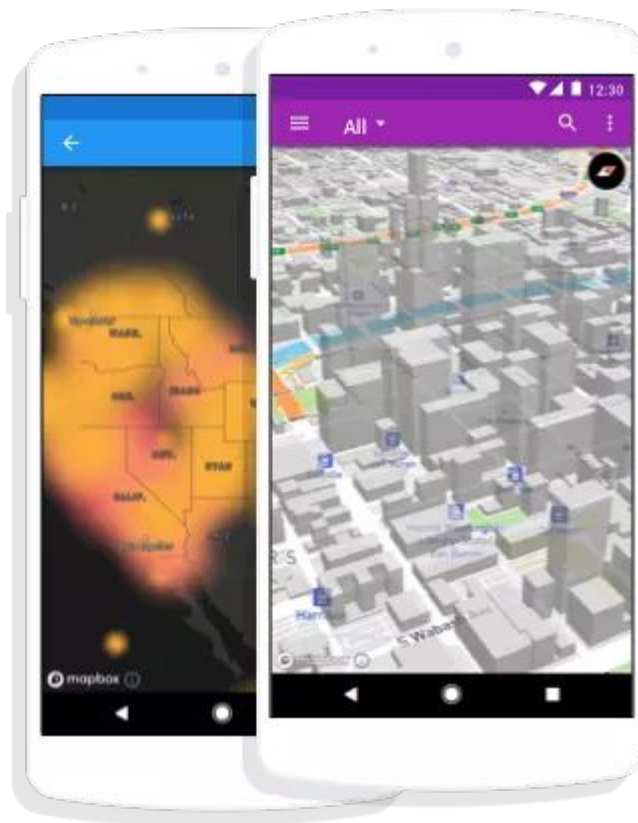


Problem Definition



MapBox

- Open source
- Good looking
- AR support
- Used by big corporations



Analysis

Search articles, quotes and multimedia

Search

Search sponsored by Qatar Airways

Advanced search

Home World Companies Markets Global Economy Lex Comment Management Life & Arts

July 31, 2013 6:34 pm

Middle East: Battlelines drawn

By Michael Peel

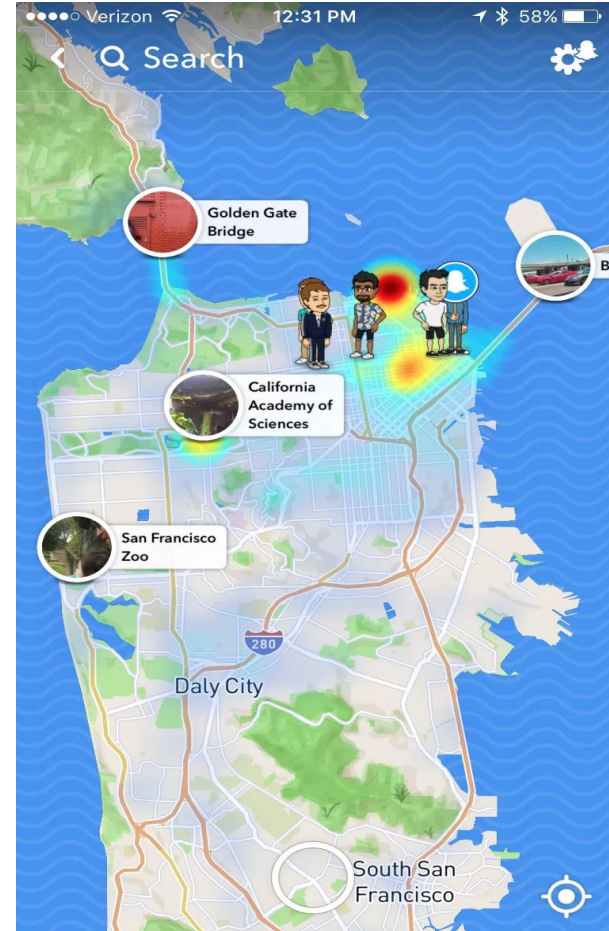
Fears are growing the Syrian war might become a region-wide religious conflict

The Syrian soldier unlocked a bullet-pocked gate at south Damascus's Sayyeda Zainab shrine, revealing a near-deserted street where sandbags and concrete blocks walled off the side-roads from the battlezone beyond.

The central thoroughfare of this once religiously-mixed area has for the past year been a dividing line, separating the peaceful government-controlled Shia Muslim-majority district on one side of the mausoleum from the rebellious Sunni-dominated suburbs on the other.



Notes: Colours not on the key indicate areas of religious overlap. Areas not designated to any group are typically desert or sparsely inhabited. Expatriate workers are not included in these figures. Shia includes Gholi, Alawites and Alevis. Wahhabism is often considered to be a branch of Sunniism. The majority of Kurds tend to be Sunnis.





- Open source
- Adding places and floor plans
 - Creating directions

Software and Hardware Used

- JAVA Programming language
- Android Open Source Operating system
- IDE: Android Studio
- Phones: LG K10 and Samsung Galaxy S8
- Wifi Access Points
- Server for storing distances

android



Indoor Localizations



Manual

GPS

















Gyroscope and
Accelerometer

WIFI

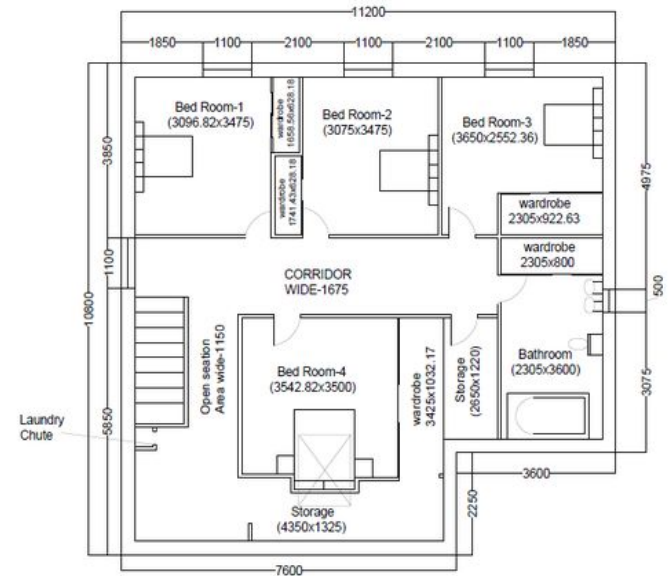


Comparison of different technologies for indoor positioning

Technology	Indoor / Outdoor	Accuracy	Range	Cross-Platform
GPS		 5-20 m	 global	 
Wi-Fi		 5-15 m	 < 150 m	
BLE		 1-3 m	 < 30 m	 

Floor Plans

- Floor Plans will be create using AutoCad software
- Each floor will have its own map plan
- Saved in PNG image format file



SUMMARY

- Android application for open day event at Faculty of Computer Science, Electrical and Control Engineering
- Navigation inside building between floor friendly for invalid persons
- Localization using WiFi infrastructure
- Navigation from current position
- Free and available for everyone

