



## Indoor Navigation

Indoor Navigation in the TU-Mensa

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# Table of Contents

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Problem scenario & questions

Technology overview

Our approach

Timeline

# The mensa problem



- ▶ User wants to locate his/her friends using our app
- ▶ todo: Add produced user stories and use cases in a nice graphic

## Resulting project questions

- ▶ How to locate people inside buildings?
- ▶ How to find your friends inside buildings?
- ▶ How to address privacy and security issues?
- ▶ **todo: More...**

- ▶ No GPS in buildings etc. => topic **Indoor navigation**
- ▶ **todo: More...**

# Possible approaches to indoor positioning

- ▶ WiFi, Bluetooth, NFC, QR-Code, manual position pinning[BL09].
- ▶ **todo: Add technology matrix (last meeting)**

- ▶ With use of tubIT API.
- ▶ Provides building name, floor, coordinates.
- ▶ Problem: no coordinates in mensa and library, inaccurate coordinates elsewhere.



- ▶ Estimote beacons
- ▶ Possible positioning approaches
  - ▶ Indoor-Region Based Navigation
  - ▶ Live Indoor-Location Feedback Navigation
  - ▶ D2D Indoor-Navigation via Virtual Beacons
- ▶ Problem: possibly high battery usage

- ▶ How much interaction with mobile device are users willing to do?
- ▶ Always-on positioning. Requires always-on Bluetooth.
- ▶ Always-on positioning. Bluetooth turns on when WiFi positioning detects we are in mensa or library.
- ▶ Time based positioning. Application activates only in certain time intervals.
- ▶ Positioning while application is running and Bluetooth is on.
- ▶ Positioning on demand. User have to press a button to share position.
- ▶ User pins own position on map inside application.

## Our approach - application architecture

- ▶ Explain our visioned setup in a nice big graphic here
- ▶ Client-server architecture
- ▶ Server tasks
  - ▶ Retrieve details about bluetooth beacons.
  - ▶ Share location between users.
- ▶ todo: Add graphic - include (at least): Android app, iOS app, local

- ▶ Work plan for project (approximately)
- ▶ gantt diagram

# Do you have questions?

If not - we have! :)



Allan Brimicombe and Chao Li.  
*Location-based services and geo-information engineering*,  
volume 21.  
John Wiley & Sons, 2009.