Indoor Navigation

Indoor Navigation in the TU-Mensa

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Table of Contents

The mensa problem

Use cases

- 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...

Occuring problems

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

Possible approaches to indoor positioning

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

WiFi positioning

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

Bluetooth

- 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

NFC / QR code

- NFC stuff
- todo: Elaborate

- QR code stuff
- todo: Elaborate

Manual position pinning

- Probably will be the fallback if no location can be received
- todo: More...

Questions of concern

- 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.
- todo: Ask the 3 - 4 most important questions

Technology matrix

- Put in the technology matrix we talked about
- x Axis maybe: Accuracy, User interaction, Battery consumption, Privacy, Platform
- y Axis: All technologies we spoke about
- todo: Produce matrix

Our approach - vision

- todo: Add graphic - include (at least): Android app, iOS app, loca

Our approach - specifics

- Client-server architecture
- Server tasks
  - Retrieve details about bluetooth beacons.
  - Share location between users.
- todo: Finalize this

Timeline

- Work plan for project (approximately)
- todo: Gantt diagram

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Do you have questions?

If not - we have! :)

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Survey.


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