NAVIN – A Modular Indoor Navigation Platform for a Wide Range of Applications

P. Tatai, T. Rittling, R. Bocsi
AITIA International, Inc. Budapest, Hungary

Abstract

The development of a new system for every application is not cost effective. Our NAVIN platform is modular and can be customized for most particular needs. It is based on smartphones and BLE (Bluetooth Low Energy) beacons, but special hardware, such as UWB (Ultra Wide Band) tags or modules can be integrated, too.

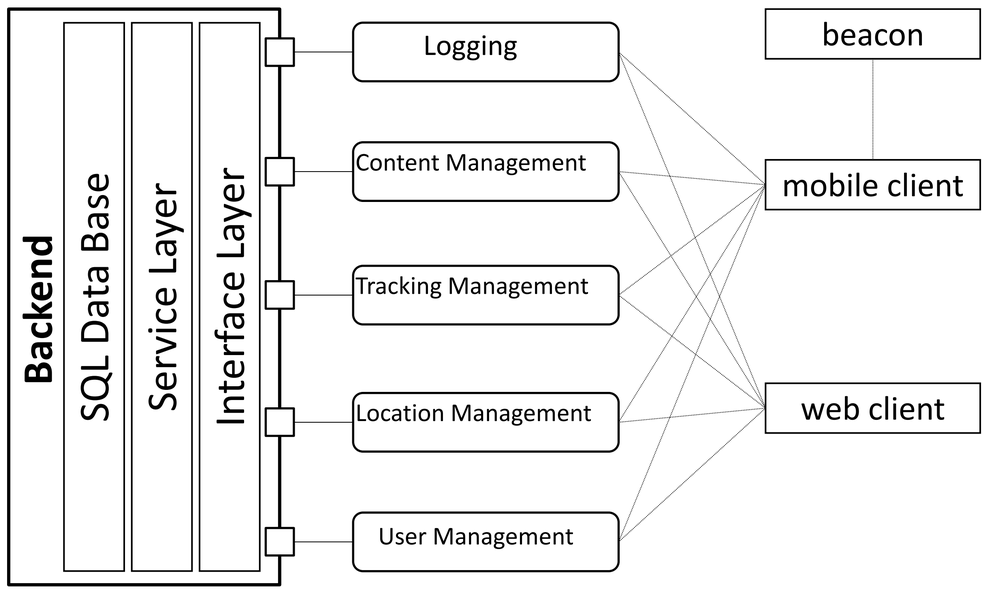
Positioning accuracy with BLE beacons is between 1-3 meters, with UWB tags, 10 cm can be achieved.

Both object tracking and person navigating are provided, and our extended navigation helps blind or visually impaired people to find places.

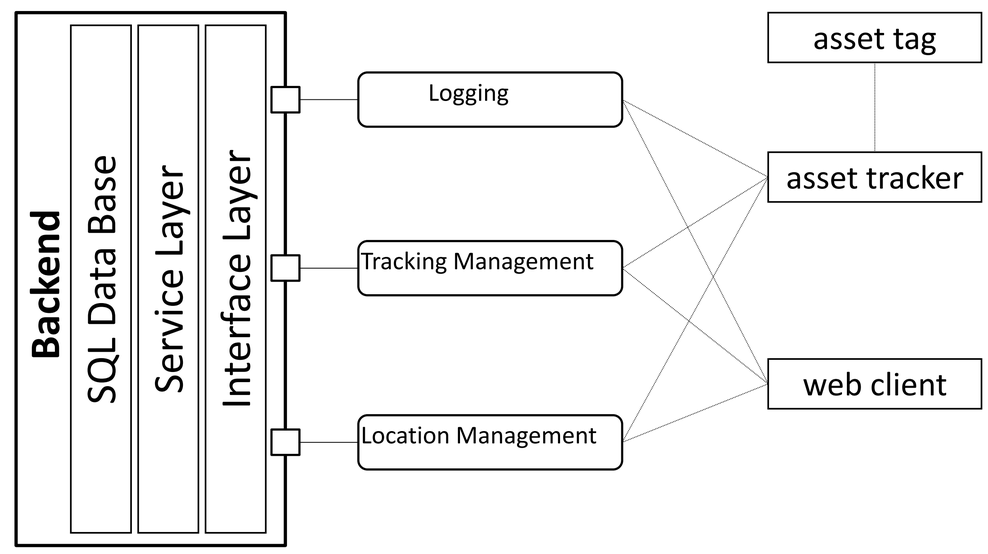
Two experimental systems have already been developed for proximity marketing in large stores and for asset tracking in factories.

Some potential applications:

- **Guiding in large buildings, museums, hotels, etc.**
- **Tracking assets, people in factories, hospitals, etc.**
- **Location based ordering in restaurants, cafes, etc.**
- **Proximity marketing in malls using coupons, etc.**
- **Analytics, statistics, feedback for service providers**



Overall architecture of indoor navigation using smartphones



Overall architecture of indoor asset tracking

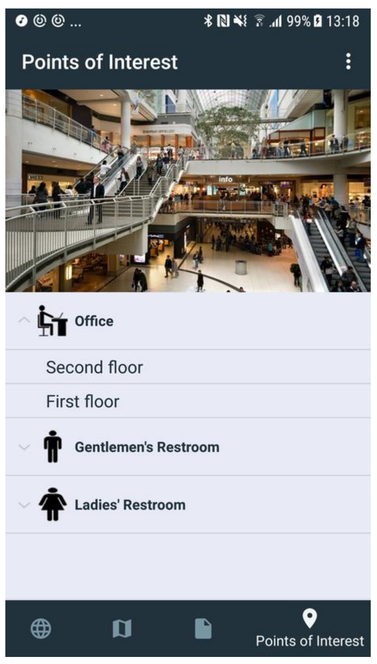
Asset tracking in factories

UWB tags

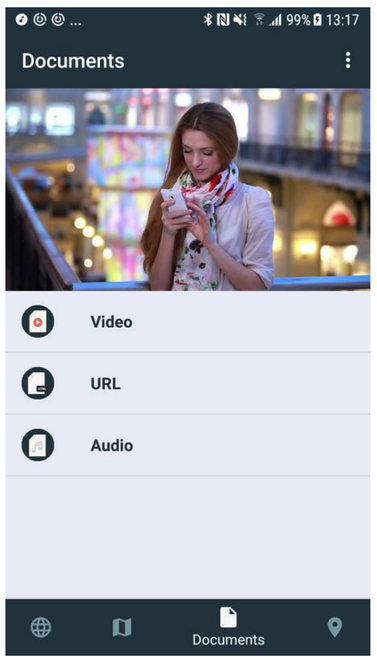
BLE beacon

Features

- **Based on smartphones and cheap BLE beacons**
- **Economic and modular positioning platform**
- **Easy customization to meet particular needs**
- **Both object tracking and person navigating**
- **Both Android and iPhone are supported**
- **Multi-floor positioning on a dynamic map**
- **Optimized BLE RSSI information collection**
- **The positioning accuracy of BLE is 1-3 meters**
- **The positioning accuracy with UWB tags is 10 cm**
- **Special purpose hardware tags can be integrated**
- **Optimal paths to predefined or selected positions**
- **<1 second response time for more than 500 users**
- **Navigation for blind or visually impaired people**

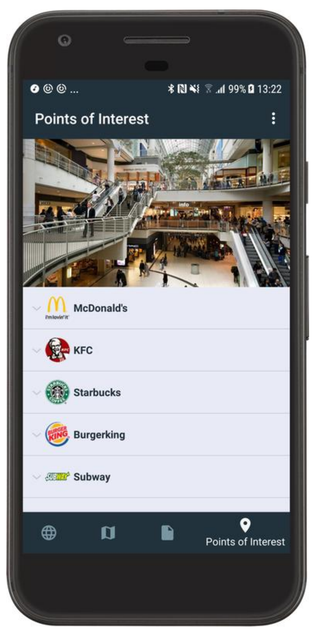


Finding places

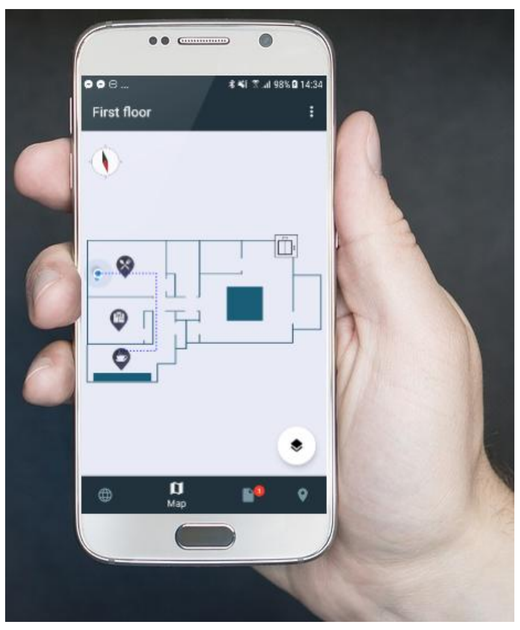


Browsing media

Promotions



Points of interest



Navigation