Indoor Navigator for the Visibly Impaired: A Proposal

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Motivations

- A visibly impaired person has limited freedom to roam around public areas → only limited to familiar places.
- Smart phones are widely available and affordable
- Smart phone-based indoor positioning technologies which rely on built-in wireless interfaces and sensors are maturing
- **A cost-effective application for visibly impaired**
- **MIMOS working on indoor positioning application for local retail market**

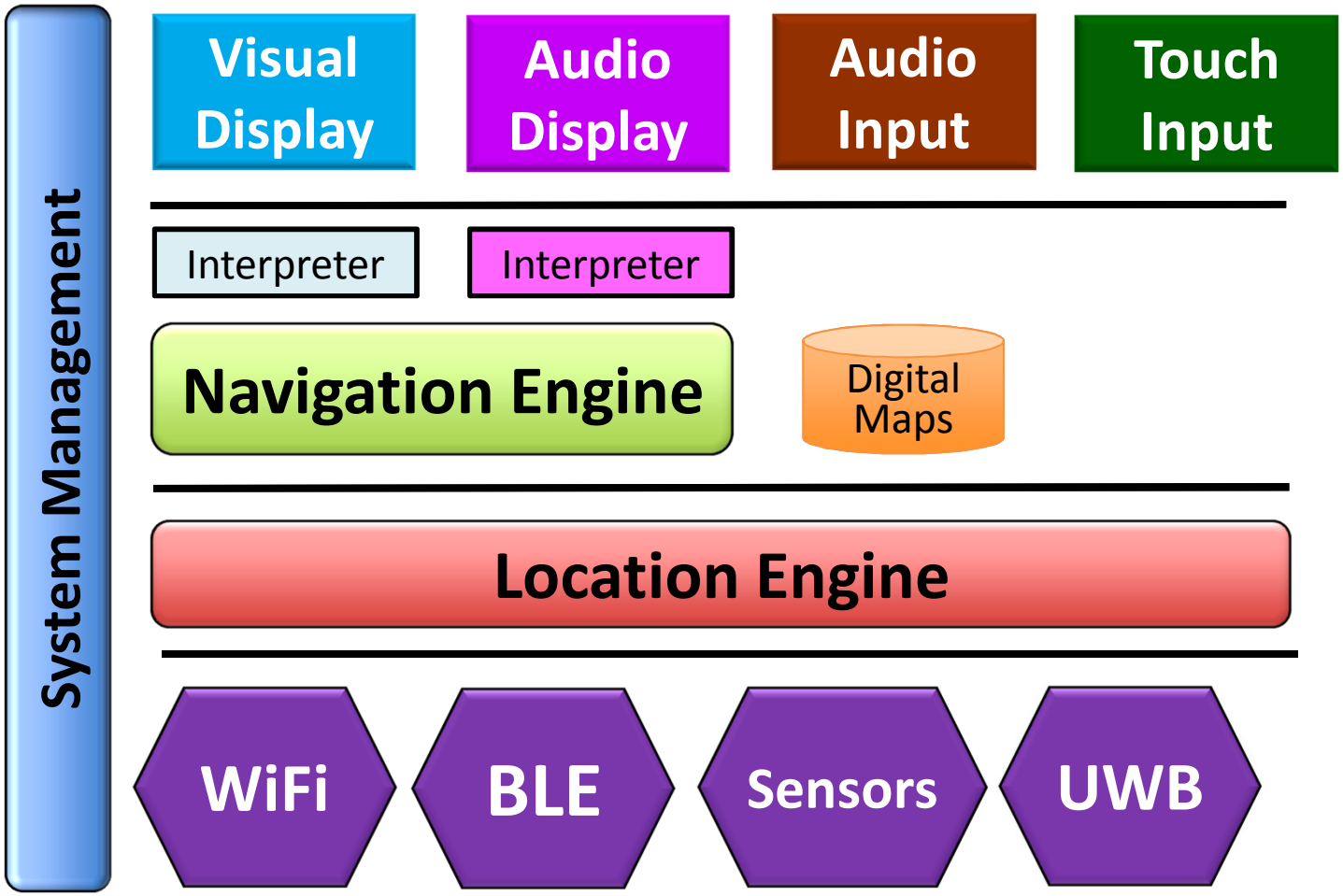
Current Challenges

- **GPS unavailable** indoor
- Most commercial indoor positioning technologies requires **expensive infrastructure setup**
- There are **still many research problems** in indoor positioning especially on lower cost approaches
- Lacked of **commercial motivations** to support the handicaps

Proposal

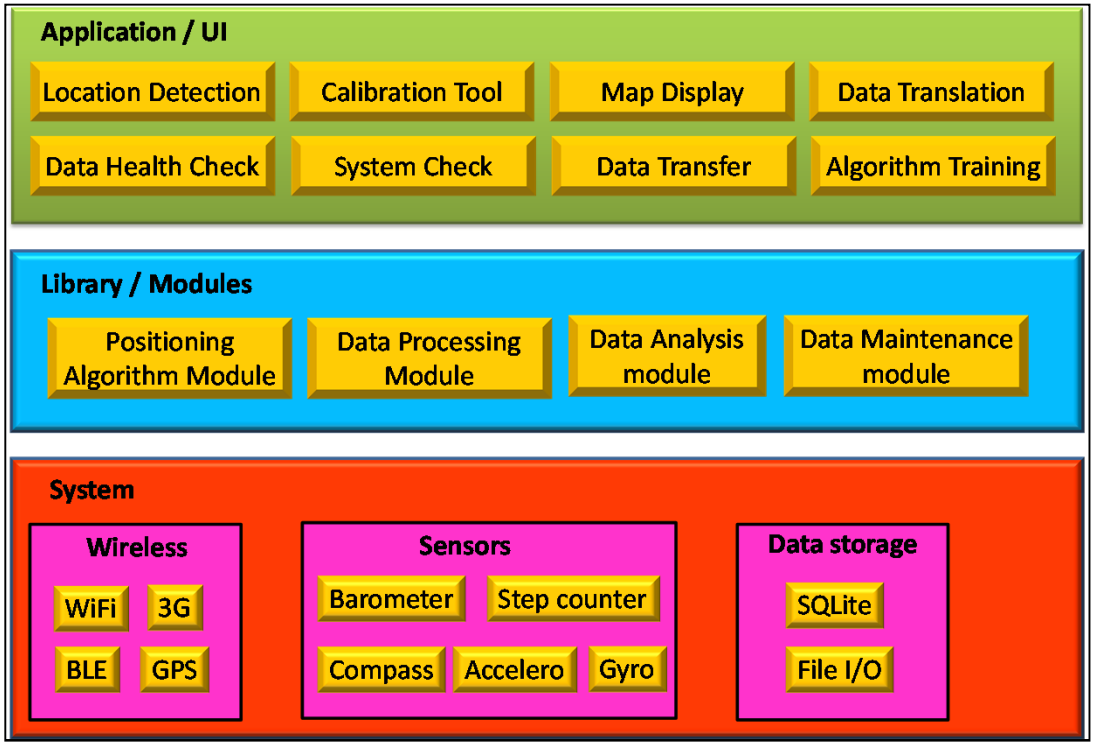
- A mobile application which provides a better real-time spatial or location awareness to the visibly impaired
- Rely on wireless interfaces and sensors
- Example applications:
  - **Find retail items** and how to get there
  - **Find public amenities** such as toilet, info desk, drinking water machines, rubbish bin, etc.
  - **Hazard warnings** e.g. construction or cleaning in front, dangerous object on the floor, etc.
  - **Inform your buddy** where you are

High Level System Design



MIMOS Indoor Positioning Platform

Applications



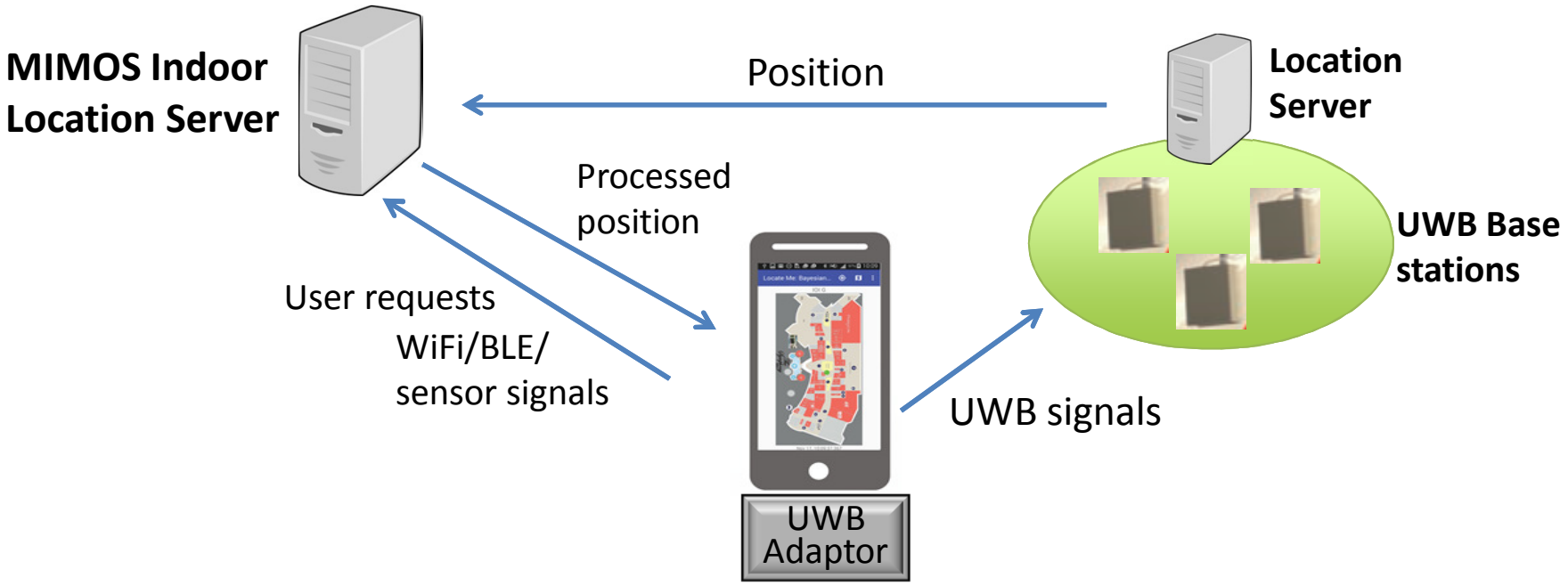
MIMOS Location Platform Architecture

Collaboration Ideas

1. Improving accuracy → sub meter
2. Orientation and Mobility
3. Joint trials and commercialization

1) Improving Accuracy

- Integrate with NICT's UWB system for better accuracy. On top of WiFi, BLE & sensor-based techniques



2) Orientation and Mobility

- How to establish direction, movement and speed?

Putting them altogether

- How to manage surrounding objects/events?
  - Classification
  - Notifications

TERIMA KASIH

THANK YOU

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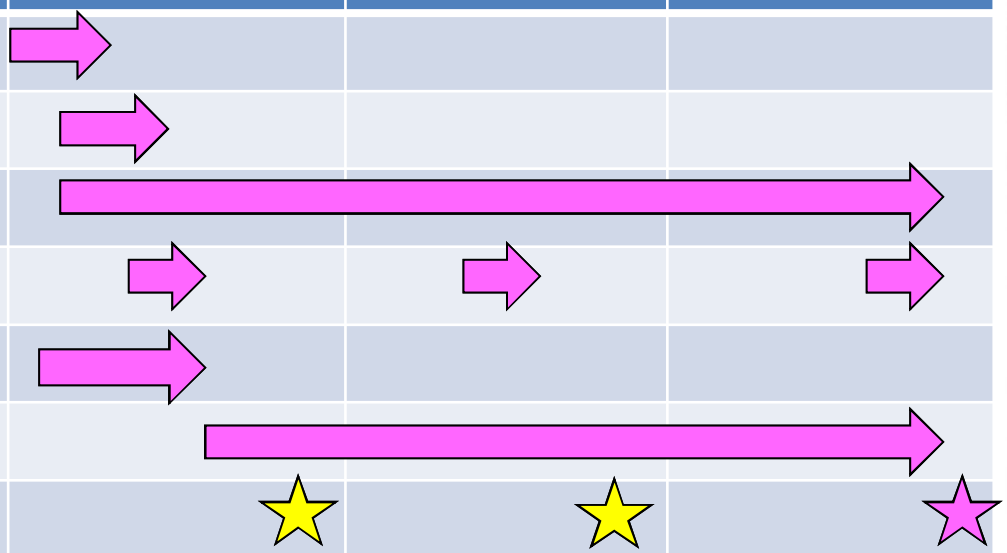
Plan

Item	Description	2016	2017	2018
A	Background study, system design			
B	HW/SW acquisition, preparation			
C	System development			
D	System integration (with NICT)			
E	Pilot Site Acquisition/deployment			
F	Analysis/pilot trials			
G	Demo/Press/Project closure			



Research Budget

- MIMOS Researchers = 2 or 3 FTE
- NICT Researchers =
- Travel expenses =
- Training =
- Consumables =