



Safety Monitoring for Vulnerable Citizen Using Ubiquitous Location Tracking System: A Proposal

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Innovation for Life™



Crime & Safety Index

ASEAN Crime & Safety Index, 2016 Mid Year (Numbeo.com)

Rank	Country	Crime Index	Safety Index
1	Malaysia	65.56	34.44
2	Vietnam	53.45	46.55
3	Cambodia	52.72	47.28
4	Thailand	52.16	47.84
5	Indonesia	49.51	50.49
6	Philippines	38.99	61.01
7	Brunei	34.70	65.30
8	Singapore	16.49	83.51



In today's highly digitized society, ICT technologies can play a critical role to preserve the safety of vulnerable citizen especially women, children and the elderly.



ICT Technologies for Public Safety

- ICT technologies (public safety) :
 - Communications : Voice & Warning System
 - Monitoring : CCTV, Sensor and **Tracking**
- **There is a growing need for tracking family members (children) or even pets**

MaxisOne Kid



Stay Connected

Watch comes with data and unlimited calls to 10 numbers on any network.



Keep Track Of Your Kid

With real-time location reports, one touch SOS call function and safety zone settings.



Fun Features

2-way calling and 0.3MP camera



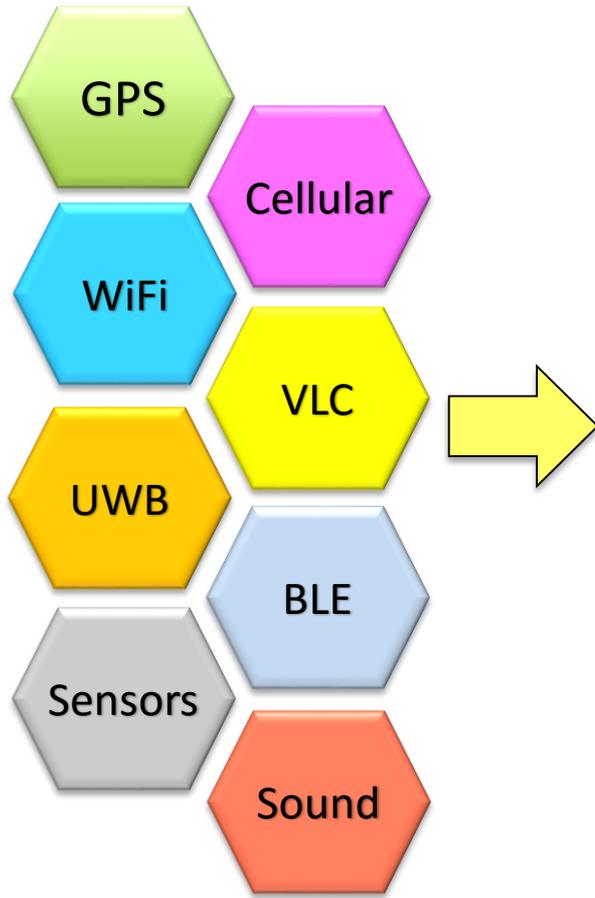
Problems

- Not usable in GPS-denied areas (indoor)
- Although crimes happen mostly outdoor but the rate is also increasing indoor or started indoor
- Hot and humid ASEAN climate → people spend most of their time indoor
- **Need a device which enables tracking anytime anywhere → opportunistically depending on signal availability**



Proposal

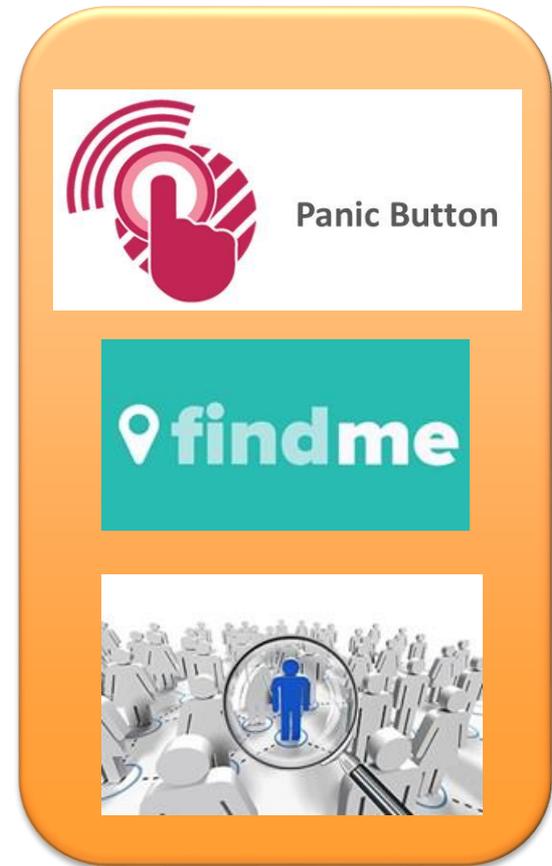
Localization Technologies



Wearable Device

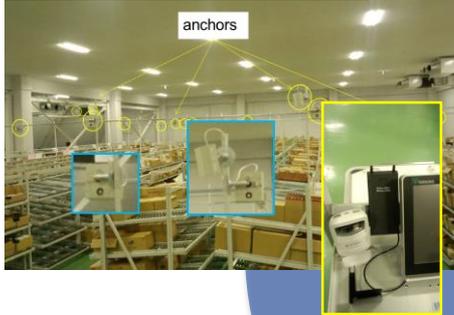


Services

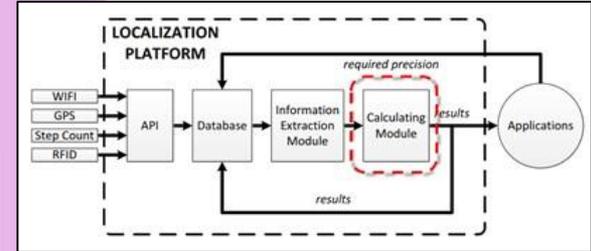




Current Expertise



UWB Indoor Positioning



Multimodal geospatial localization algorithms and protocols



Indoor Location Platform + Analytics (MIST)



Research Plan

- 1. Design and prototyping of wearable devices and systems – MIMOS & NICT**
- 2. Design and implementation of multimodal geospatial localization algorithms and protocols – MIMOS, MICA, and NICT**
- 3. Design and development of server-end data harvesting and analytic modules – MIMOS, MICA and NICT**
- 4. System trials – MIMOS (Kuala Lumpur) and MICA (Hanoi)**



Expected Results/Outcomes:

1. **Low cost, small form factor and energy-efficient wearable locator** or smartphone applications which provides localization function anywhere, anytime
2. **Real-time safety monitoring and analytic system** for vulnerable citizen based on location data
3. **Innovative indoor/outdoor location-based safety services**
4. **Insights & lessons learnt** from pilot trials with industry such as local mobile operators





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THANK YOU

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