Current Development of Android's Location-Based Services in Indonesia

Sub-topic: LBS for Hazard Awareness

Work on progress, Oct 2011
(need your feedback)

R V Hari Ginardi (ITS Surabaya, Indonesia)
Andi Asrianto Sakka (IndosatM2, Indonesia)

LBS2011, Vienna - Austria

Motivation

Current popular LBS applications:

- Social Network
- Ad Maps
- Tracking / Locating
- Navigation

City	Facebook User
Jakarta	17 484 300
Istanbul	9 602 100
Mexico City	9 339 320
London	7 645 680

„makes life easier and more fun“

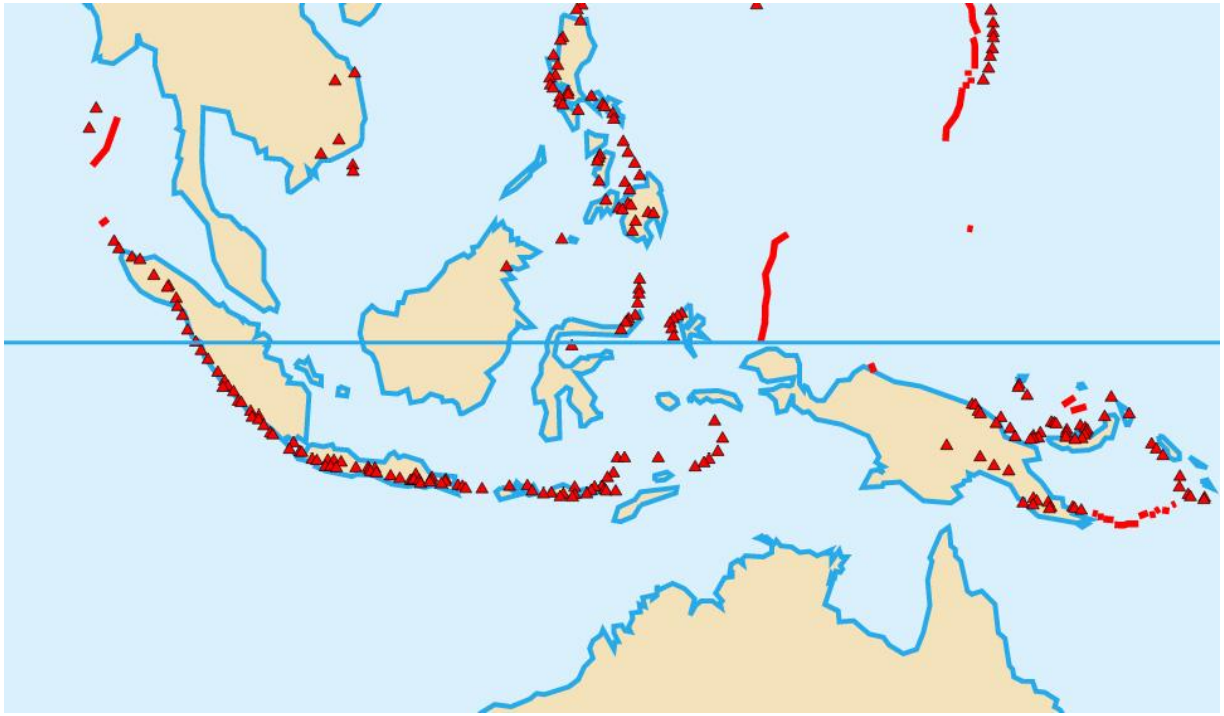
LBS can save lives:

Hazard (vulnerability) awareness mapping with Location Based Services

Where? →

Indonesia as a lab of hazards

Broad range
of natural hazards :



Landslides
Drought
Flood
Tsunami : from Pacific Ocean and Indian Ocean
Volcano (Eruption, Earthquake, Toxic gas, lahar): Pacific Ring and Asia Ring
Forest fire / hot spot (2006 Southeast-Asian haze)
Disease: Malaria, Dengue, Outbreak of Avian flu (H5N1), Swine flu (H1N1)

Human-made hazard →

Indonesia as a lab of hazards (cont.)

Human-made hazards also happened:

Crime, terrorism act, wild fire, transportation (Air disaster, Rail disaster, Road disaster, sea / water disaster)

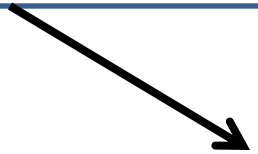
Risk? →

Natural hazard:

Flood, drought, earthquake, tsunami, storm, landslide, volcanic eruption

Man-made hazard:

Crime, fire, power outage, transportation accident, terrorism



Threat: Disaster

"disasters occur when hazards meet ***vulnerability***"

Vulnerability mapping & management

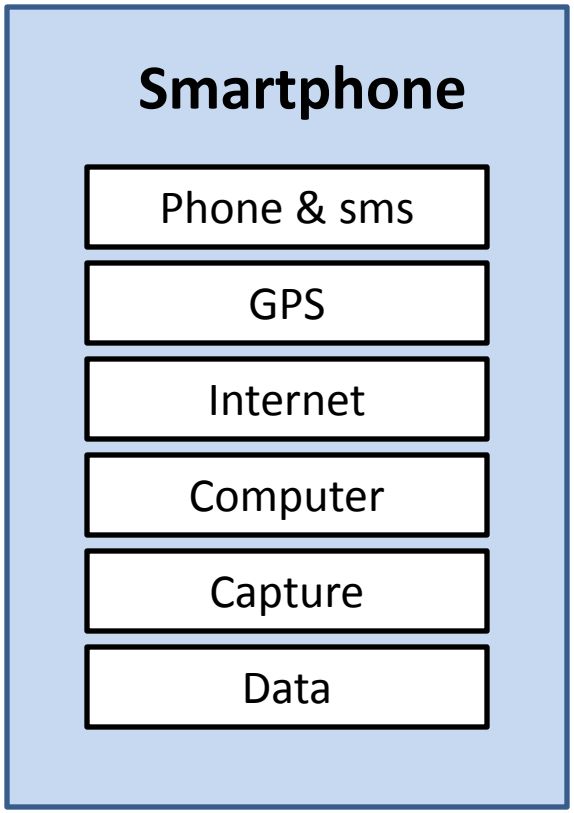
LBS experts are required →

Mission

Provide a **public service application**
which **helps people to mitigate any hazard**
which **may occur around their location**,
and optimize **the use of mobile device**
as a **community based mapping** tools
when certain **area is struck by a disaster**

Portrait & approach →

How to connect peoples in vulnerable area?



Smartphone usage in Indonesia (30m user):

Internet Access:
- Higher market share than via fixed line (150 mil vs 30 mil)
- Popular applications: Email, Social network (facebook), Micro-blogging (Twitter), messaging

Subscription:
-Prepaid system is a preferred (97%)
-Data packet starts from 3 USD per-month
-BlackBerry service in prepaid mobile

Smartphone users can be located (tracked), can communicate with the community (phone and internet), as long as the preloaded voucher is sufficient.

The Current Example
(of LBS using smartphone in Indonesia)

The statistic from May 2011 shows that **Indonesia** is the **2nd largest Facebook user** in the world, and **4th largest twitter user** in the world.
→ Communities are socially active

Mount Merapi disaster relief (2006 and 2010).
2006: Location based service in Indonesia is initiated with sms-based application. LBS-service is voluntarily coordinated, without using the map interface, and the collected information are not stored.
2010: A web-based information for crisis centre has been implemented

Koprol, the Indonesian LBS application similar with Foursquare.

Other Applications: Admarkt, Travel info, Traffic updates, Navigation supports, Tracking and locating,

Current development of Android-based LBS by Informatics Department (2011)

Vulnerability reduction (prevention), e.g: Real time train position monitoring, Surabaya City Guide, hazard knowledge base, travel routing with dynamic obstacles, hazard mapping

Early warning system through Smartphone, e.g.: Real-time hazard monitoring / alert

Emergency and Rescue, e.g: location-based friend finder, smartphone locater, routing optimization using ant colony algorithm

Recovery (under construction)

Opportunities:

- Network providers can deploy battery-powered BTS quickly if the normal BTS struck by the disaster
- Growth of the number of smartphone users In Indonesia is high (currently 20%)
- Android platform dominates the current sales of new smartphones and tablets

What next? →

Next Steps

Hazard awareness + Spatial Orientation + Community

In Smartphone platform

For location-based hazard mapping

Example of implementation:

- Awareness of regional-temporal specific hazard (eg. malaria, avian flu, dengue, rabies, flood)
- Awareness of the localized hazard events
- Check-in to the local community-based-information
- Applications are available for "everybody"
- Soft computing to mitigate and model the disaster

Thank You

R V Hari Ginardi
Informatics Department, Faculty of Information Technology, ITS Surabaya
hari@its.ac.id

Andi Asrianto Sakka
General Manager of IndosatM2 regional East Java, Bali, Nusa Tenggara
andi.asrianto@indosatm2.com

(questions?)

INDOSATM2
Internet & Multimedia Services