

# Chapter 11

## An Android Mobile–Based Environmental Health Information Source for Malaysian Context

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### ABSTRACT

*An anticipated research activity in healthcare is the involvement of populations and social media to identify health problems, including environmental ones. In this chapter, the authors propose an Android mobile-based system for collection and targeted distribution of the latest alerts and real-time environmental factors to the Malaysian population. This mobile system is designed to facilitate and encourage research into environmental health quality issues by providing a comprehensive tracking and monitoring tool correlated to social media networks. This system is embedded with Google Maps and Geocoding services to visualize the location and environmental health reports from the aggregated social media news feeds; the output is also shared across the social media networks.*

### INTRODUCTION

Social media networks help in creating big impact and public awareness toward environmental health tracking and monitoring. Tracking disease through online activity has been done before; Google

found that search terms were good indicators of flu activity in 2008 and 2009 (Lowensohn, 2008; Google, 2012). Later Google introduced public estimation for flu activity through Google flu tracking system. Unlike basic internet searches from traditional search engines like Google or

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Yahoo, social media networks seem to have introduced crowd-sharing and posting information across the given platforms. “Traditional” search requests are generally motivated only by a desire to learn more about given subject, such as infectious disease and healthcare topics, but social media networks seem to be motivated by the desire to gain more popularity by doing what one’s friends do. For example, if haze is forming near one’s living location, the person can easily make a short written post on Facebook or Twitter, so the short written post can ideally “go viral” and be exposed to others in the social media network. In other words, social media networks inherently explore more contexts to the individual’s situation surrounding them. For someone who reads and writes a lot about the environment, Twitter and Facebook provide a great way to keep track of what others in the same field are working on.

Social media network is nowadays inseparable from Mobile. With smart phone usage projected to grow exponentially across the region, and with mobile data speeds increasing, and with the roll-out of wireless internet services and social media networks improving their mobile offering, social networking is becoming more mobile-oriented by nature (Firefly, 2012). There is no denying that the growth of social networking cannot be separated from increasing mobility, and will only be fuelled further by the advance of the smart phone in consumer’s lives. So does the growth of the smart phone and increased mobility signify a new phase or dimension for social media? These situations imply and drive mobile users’ behavior towards the way they receive environmental health information.

In this research, the establishment of an Android mobile-based environmental health information system associated with social media networks will play a key role in helping to provide the information needed to ideally improve public health. This paper presents several study

areas such as environmental health tracking, the use of social media networks in tracking diseases, the social media network in RSS, and the use of mobile health technologies in Malaysia. Besides, it also includes the proposed solutions such as multi-tier architecture that used in developing Android mobile applications, word level n-gram approach used to match social media text inputs against a dictionary of known patterns, integrated environmental health ontological model in Malaysian context adopted in Android mobile-based environmental health information system, and the evaluation of system accuracy testing results.

## **BACKGROUND**

In the past, many environmental health issues were not delivered to the public efficiently. The print and television press often did not headline environmental news. The mobile technologies revolution in the late 1990s mostly served the purpose of providing voice communication over the phone. People were passive consumers of news reports about environmental health hazards, seldom ones which could affect their own health.

In the early 2000s several studies of environmental health tracking tools were established with a main goal: to protect communities by providing federal, state, and local agencies with information they could use to plan, apply and evaluate environmental health actions (California Environmental Health Investigation Branch, 2012; Center for Disease Control and Prevention, 2010; European Environment Agency, 2011; Freifeld & Brownstein, 2007; Wisconsin Department of Health Services, 2011). While existing environmental health surveillance systems have been proven to serve as an effective mode for spreading health information to their respective users, the idea of “borderless” information dissemination should be also considered.

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