Final Project Report
(Executive Summary)
Form

I. Title of Proposed Project:

IoT System for Public Health and Safety Monitoring with Ubiquitous Location Tracking

II. Project Leader:

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IV. Total Amount (US$):

USD 74,075

V. Duration (6-36 Months):

1 April 2017 – 31 March 2020 (36 Months)

VI. Executive Summary

In today's highly digitized society, ICT technologies play a critical role in preserving health and safety of vulnerable citizen especially women, children and the elderly. In recent years, there is a growing need for monitoring citizen's lifestyle including their health status. Besides health, continuous awareness of their current location is also becoming more critical.

   The main objective of this project is to design and develop a collaborative framework which facilitates real-time tracking of a target person even when GPS signal is not available, while collecting motion data to infer his or her lifestyle and health status. The framework orchestrates a wide range of technologies such as localization technologies, machine learning and AI, sensor data analytics and cloud computing. The overall framework design also takes into consideration the culture, lifestyles, behaviours and infrastructures of ASEAN countries.

   On location tracking, a mobile and cloud-based Indoor Location Platform (ILP) which incorporates multimodal localization means and assisted by other sensor fusion techniques is developed. In this platform, GPS and non-GPS positioning systems such as Wi-Fi/BLE fingerprinting, IR-UWB positioning, sensor-based and a hybrid of these localization techniques are adopted to provide continuous tracking of the subject of interest in both indoor and outdoor environments. Extensive trials have been carried out in not only laboratory testbeds, but also in factories and other commercial premises.

   On health or lifestyle monitoring, harvesting of motion data and context reasoning, using the IntelliHealth Solutions were carried out to assess, monitor and to provide feedback on a person's lifestyle. An intelligent knowledge base is formed and this enables the development of various transient wearable health OS solutions. In this project, wearable motion interfacing and reasoning devices for general public are developed to support trials and data collections involving people from public.