ICT Virtual Organization of ASEAN Institutes and NICT
ASEAN IVO Forum 2016
Call for Presentations

Submission and Registration Form

Please enter the relevant information in the fields below, giving an appropriate explanation when necessary. You may add supplemental pages and supporting data. If necessary, you may be asked to provide additional documents.

I. Title—Title of presentation:
IoT based platform for personal health care applications for smart communities.

II. Author(s)—Full name (First name family name):
(If you are already planning a project, please include the names of all team members)
Dzung Van Dinh

III. Organization(s):
(If you are already planning a project, please include the institutions of all team members)
Information Technology Institute (ITI), Vietnam National University, Hanoi (VNU)

IV. Topic selection:
(Select one from the topics listed in "Call for Presentations")
Smart Society: ICT applications for community and environment

IV. Abstract:
(Describe the purpose, background, objectives, content, plans for connected projects, expected results/outcomes, etc.)

Purpose

This presentation is to show potentials to research and develop an IoT based platform for personal health care applications for smart communities; and to discuss with other members about jointly implementing this project.

Background

- *IoT for health care applications*

Medical and healthcare

The medical and healthcare sector will be strongly affected by IoT. Advanced sensing devices allow real-time monitoring of medical parameters and vital functions (e.g., temperature, blood pressure, heart rate, cholesterol level). The gathered data is then transmitted via standard or specific communication technologies (e.g., Bluetooth, ZigBee, WirelessHART, ISA100) and made available to medical personnel for

diagnosis and control of the patients' health. Body Area Networks (BANs), formed by wearable devices connected to each other, allow doctors to continue the remote patient's monitoring out of the hospital[1].

Personal health care[2]

Manage Chronic Conditions

- Extend health care into the home / Improve overall disease management care
- Monitor specific disease progression utilizing biosensors and activity
- Schedule appointments / Trend analysis and alerts
- Remote consultation: e-mail, chat, video conferencing

Health & Wellness

- Extend health care system into the home
- Perform initial triage utilizing biosensors, images, e-mail/chat/video
- Schedule appointments / Record personal health data / Weight loss / Fitness
- Collect long-term data for medical baseline / Predictive alerts for high-risk conditions

Living Independently Longer

- Assistance with daily health and monitoring tasks
- Medical reminders
- Activity prompts
- Monitoring and early warning using bio-sensor data collection
- Automated dietician
- Emergency response
- Real-time alerts and communication

- *Open research and development issues*

Research trends in IoT-based health care include network architectures and platforms, new services and applications, interoperability, and security, among others. In addition, policies and guidelines have been developed for deploying the

[1] F. Delmastro, "Pervasive communications in healthcare, " *Computer Communications* 35 (11) (2012) 1284–1295.

[2] Continua Health Alliance

IoT technology in the medical field in many countries and organizations across the world. However, the IoT remains in its infancy in the healthcare field [3].

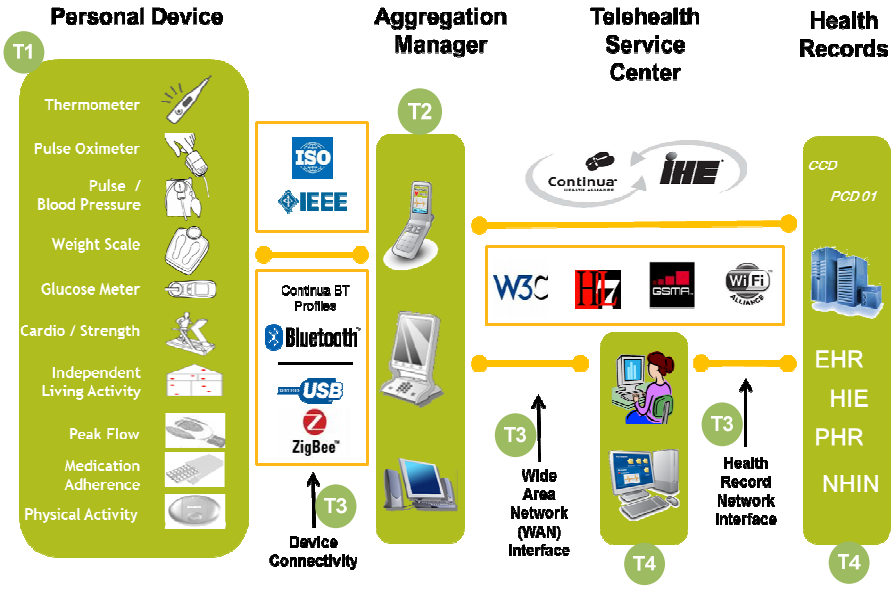
Objectives

This joint research project is:

+ To build an IoT based platform for personal health care applications for smart communities
+ To deploy the platform in ASEAN countries

Content

+ Investigating solutions for personal health care applications.
+ Developing an IoT based platform for personal health care applications (see the figure bellow).
  - Personal smart devices (T1)
  - Aggregation manager (T2)
  - Networking solutions (T3)
  - Tele-health service center (T4)



+ Setting up a trial of the platform in Vietnam and other ASEAN countries (see the second figure bellow).
  - Local VNU testbed

[3] Jorge Granjal et. Al., "The Internet of Things for Health Care: A Comprehensive Survey, "*IEEE Access*, Vol. 3, 2015, pp. 678 - 708.

- VNU – NICT – ASEAN IVO members testbed.

+ Building applications models for deploying the platform for personal health care applications in Vietnam and other ASEAN countries.

Expected results

+ Solutions for personal health care applications.
+ Platform for personal health care applications.
+ Models for deploying the platform for personal health care applications in Vietnam and other ASEAN countries.

Plan for the connected project

3 years joint R&D project, starting from 2017.

V. Speaker information:

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VI. Support for speaker—circle or underline any that you wish to request:

- Round trip fare at discount economy class
- Accommodation