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

Submission and Registration Form

I. Title—Title of presentation:

Management Optimization of Power Consumption for Autonomous Wireless Sensor Networks used in Smart Buildings

II. Author(s)—Full name (First name family name):
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III. Organization(s):
MICA Institute, Hanoi University of Science and Technology, Vietnam (MICA)
MIMOS, Malaysia (MIMOS)
National Institute of Information and Communications Technology, Japan (NICT)

IV. Topic selection:
Smart City – autonomous ICT systems, IoT, WSN, smart homes
Smart Community – green ICT, energy saving

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

Wireless sensor networks (WSN) are becoming more and more popular in smart buildings since they are highly customizable, easy to deploy in large and complex environments. Smart buildings require many kind of sensors such as temperature, humidity, light, consumed energy, smoke, etc. However, one of the challenge in deploying wireless sensors is how to power them. Beside using wireless technologies to replace communication cables, we also need to free the sensors from being powered using wires.

A number of technologies have been proposed for powering autonomous sensors so far, e.g.:
- Solar energy: can produce high power and is stable for long periods, but only work in outdoor environments.
- Wind energy: only work in outdoor environments too.
- RF energy: work also in indoor environments but can produce very low power.

Due to above considerations, sharing energy between nodes in WSN will be absolutely necessary. However, the sharing need to be done in an optimal manner. In terms of energy, a WSN used in smart buildings can be very heterogeneous:

- A node can be giver, receiver, or both at different moments
- Certain nodes may be more prioritized (i.e., more important) than others
- Each node has very limited information about its neighbors

Objectives
- Developing wireless energy-sharing techniques
- Modeling the energy consumption, harvesting and sharing in an autonomous WNS
- Optimization of the energy sharing in autonomous WNS that allow to have different objectives and constraints, such as:
    o To have maximum life time of the whole network
    o To have maximum life time of certain important nodes

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

None required.