From Sensor Networks to Internet of Things: - A Paradigm for Empowering an Infrastructure Technology

Vikram Gupta
Eduardo Tovar
Nuno Pereira
Raj Rajkumar

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Vikram Gupta, Eduardo Tovar, Nuno Pereira, Raj Rajkumar

IPP-HURRAY!
Polytechnic Institute of Porto (ISEP-IPP)
Rua Dr. António Bernardino de Almeida, 431
4200-072 Porto
Portugal
Tel.: +351.22.8340509, Fax: +351.22.8340509
E-mail: vigup@isep.ipp.pt, emt@isep.ipp.pt, nap@isep.ipp.pt,
http://www.hurray.isep.ipp.pt

Abstract

NA
Empowering Sensors as an Infrastructure Technology

Wireless Sensor Networks are limited to dedicated test-beds. The goal is to enable them to be an infrastructure technology, for independent users.

Programming Framework

Multi-layered Software Infrastructure to support multiple independent applications:
- Independent layers to conduct various responsibilities

From an Operating System to a Co-operating System

Traditional operating systems like TinyOS, NanoRK were built for individual devices:
- A new paradigm of OS is required to inherently support networked devices
- The delegation of applications, network management is distributed
- Modular design of OS for adding functionalities at the runtime

Support for Multiple Applications from Independent Users

Multiple applications on Networked Embedded System require ground-up building of software architecture:
- A network level compiler
- Network manager
- Network and node-level Application Manager

References

"A Framework for Programming Sensor Networks with Scheduling and Resource-Sharing Optimizations" (Invited Paper); Vikram Gupta, Eduardo Tovar, Karthik Lakshmanan, Ragunathan (Raj) Rajkumar In CPSNA 2011, Toyama, Japan in conjunction with RTCSA 2011

CISTER Research Centre/INESC-TEC
ISEP, Polytechnic Institute of Porto
Rua Dr. Antº Bernardino de Almeida, 431
4200-072 PORTO Portugal
fax: +351-228340509
tel: +351-228340502
cister-info@isep.ipp.pt