Master Thesis – Bluetooth Low Energy

Background
Bluetooth Low Energy (BLE) is a highly energy efficient short-range wireless communication standard that is supported from Bluetooth v4.0. It enables communication between devices over short distances with a battery lifetime of months up to years. BLE is considered to be one of the short-range wireless technologies that will be deployed in mass market and will play a significant role in connecting devices in the future. This thesis is to implement and verify new BLE features in an existing radio simulator or prototype, and potentially evaluate new radio features progressing the BLE standard.

This work is carried out at Ericsson Research, which provides Ericsson with system concepts, technology and methodology, to secure long term competitive products. We drive world-class innovation through cooperation within Ericsson and with partners, customers, universities and research institutes.

Thesis Description
This Master thesis aims at implementing and verifying the BLE radio and protocol standard in an existing simulator or in a prototype environment, with potentially evaluating key BLE features as well as extensions to the standard. The thesis work includes protocol stack architecture design, network function implementation, unit-testing, use case design and system level performance verification. Additionally, the thesis worker might also be involved in the BLE device prototyping work, evaluating network performance in a test network. This thesis work requires a mix of short-range network modelling, simulator implementation and prototyping. For this reason a good background in wireless communication and programming is required.

Qualifications
This project aims at Master of Science (civilingenjör) students in electrical engineering, computer science, or computer engineering. Java and C are our primary tool for simulation and prototyping work, hence excellent Java and C programming skills is a must. Background in wireless communication is preferred. The successful candidate is creative, open-minded and flexible.

Extent
This position is for one student. Scope is for 30 university points (Swedish högskolepoäng).

Preferred Starting Date
January 2016

Keywords
Wireless, Java, C, Bluetooth Low Energy, Simulator, Prototype, Hardware

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